TECHNICAL MANUAL

COLIFT Mounting System

Safe and Time-Saving Lifting of Precast Columns

Version PEIKKO GROUP 10/2020

peikko®

COLIFT Mounting System

Safe and Time-Saving Lifting of Precast Columns

The COLIFT Mounting System is designed for easy and time-saving lifting and handling of precast concrete elements such as columns or precast beams. The mounting system can be remotely released with a cord.

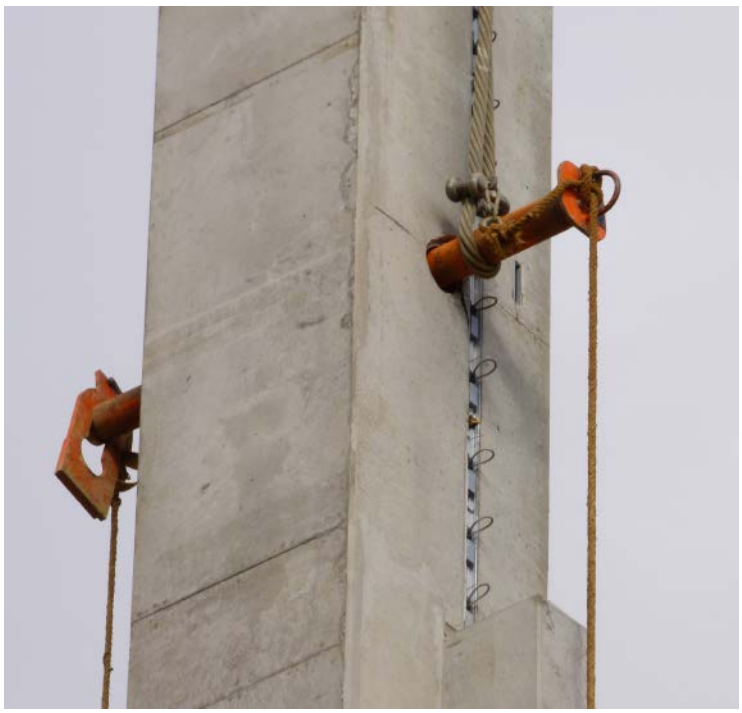
- Fast and secure mounting of precast concrete elements
- Can be remotely released with a cord
- CE marking
- Standardized mounting system for various load levels
- Minimum need for maintenance.

The COLIFT system is labeled and CE-marked according to the Machinery Directive 2006/42/EC.

The system consists of a mounting shaft with a slip guard and a rope strut and serves as a mounting device for lifting, moving, and placing precast concrete elements.

By attaching a releasing cord to the slip guard, the system can be remotely released after securing the element in place.

Related lifting slings, wires, and cords are not part of the COLIFT Mounting System delivery.



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About COLIFT

1. Product properties

The COLIFT Mounting System is designed for lifting and handling of precast concrete columns or beams on the construction site. The design of the COLIFT Mounting System follows the requirements defined by the European Machinery Directive 2006/42/EC.

The COLIFT Mounting System is intended for lifting and tilting up concrete elements from the ground. It can also be used simultaneously in pairs for lifting long and heavy beams. The remote function of the COLIFT Mounting System enables the lifting device to be released from ground level without requiring an additional elevated working platform. The system's versatility makes it possible to attach it to precast elements of various dimensions and to use different types of slings.

COLIFT Mounting System introduction

The COLIFT Mounting System consists of the following main parts.

- Mounting shaft
- Slip guard
- Rope strut
- Slings (customer selection).

The mounting shaft (*Figure 2*) is installed in a hole in the precast element and it transfers the weight of the precast element to the slings. The mounting shaft is available in four standard models offering different safe working load ranges.

The slip guard secures the position of the slings on the mounting shaft and allows remote disassembling of the system from the precast element. After removing the slip guard with the attached cord, the mounting shaft can be pulled out from the precast element.

The rope strut (*Figure 3*) is attached to the lifting slings, ensuring that the slings are always vertical and do not touch the precast element. The rope strut enables the precast column to be tilted up. The distance of the slings from the precast element can be adjusted using a threaded rope holder.

The rope strut also transfers compressive load from the inclined legs of the slings. The rope struts are available in three models and selected according to the dimensions of the lifted item. They can be combined with all four mounting shaft models.

Figure 1. Assembled COLIFT Mounting System.

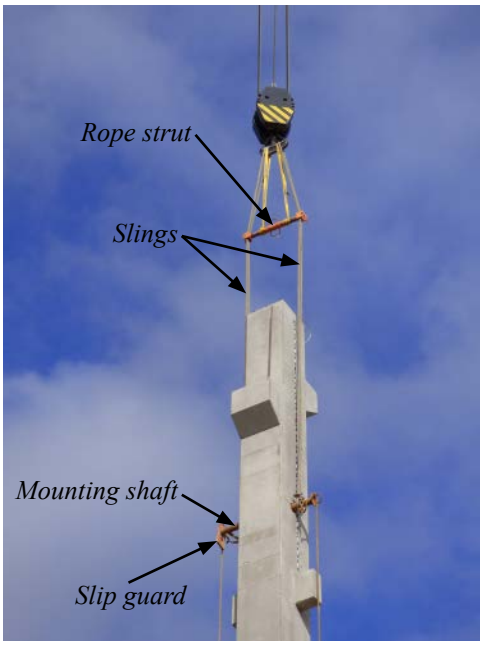


Figure 2. Mounting shaft with slip guard.

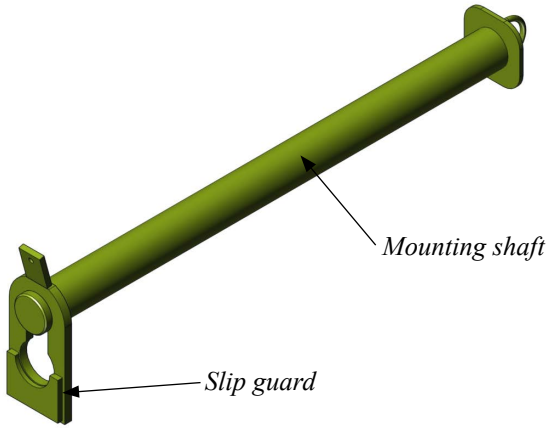
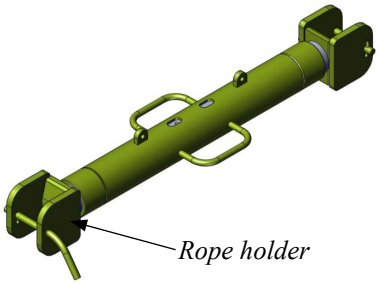


Figure 3. Rope strut.



1.1 Material properties and quality

The COLIFT Mounting System's parts are produced from special steel according to *Table 1*:

Table 1. Materials of the COLIFT Mounting System.

Mounting shaft	Alloy steel	EN 10083-3
Slip guard	Structural steel	EN 10025-2
Rope strut	Structural steel	EN 10025-2
End plate	Structural steel	EN 10025-2
Nuts	Carbon steel	EN ISO 898-1

The COLIFT Mounting System is supplied with standard primer rust protection.

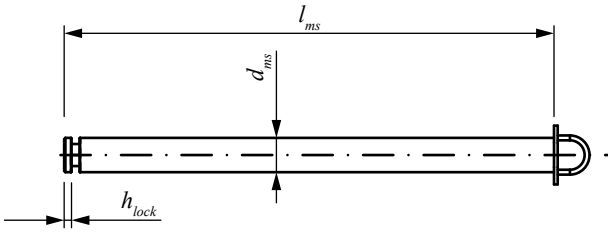
Peikko Group's production units are controlled externally and audited periodically on the basis of the production certifications and product approvals provided by various independent organizations.

1.2 Dimensions and weights of system components

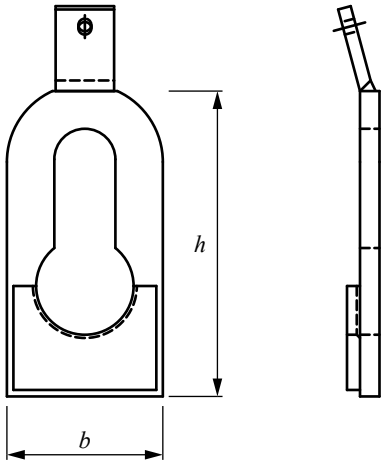
The dimensions of the standard models of COLIFT Mounting System are in *Table 2* and *Table 3*.

Table 2. Dimensions of the mounting shaft and slip guard.

Mounting shaft

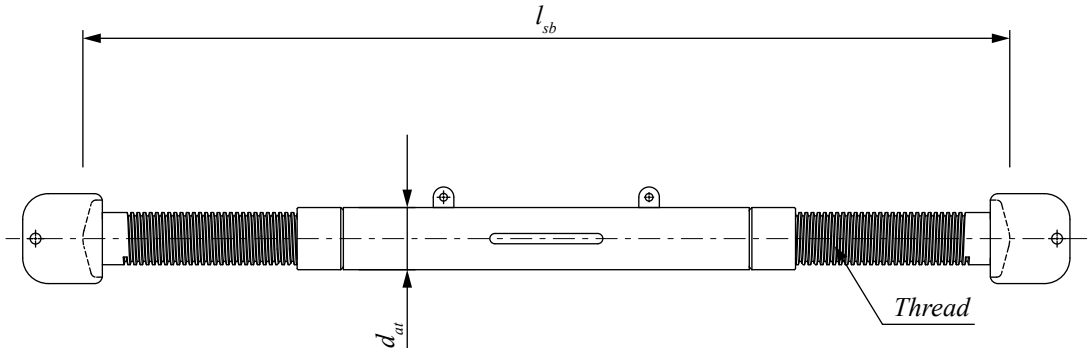


Slip guard



	Units	MW d70	MW d90	MW d115	MW d140
d_{ms}	mm	70	90	115	140
l_{ms}	mm	1200	1400	1800	2000
h_{lock}	mm	15	18	23	33
h	mm	307	364	438	470
b	mm	170	190	220	240
Mounting shaft	kg	39	73	153	247
Slip guard	kg	5.9	9.4	15.3	22.3

Table 3. Dimensions of the rope strut.



	Units	PS 01	PS 02	PS 03
d_{at}	mm	121	121	121
Thread		M100 × 12	M100 × 12	M100 × 12
$l_{sb,min}$	mm	1124	824	624
$l_{sb,max}$	mm	1804	1204	904
Weight	kg	73	61	54

* The rope strut can be combined with every mounting shaft model.

Note:
Standard delivery for each COLIFT Mounting System includes a mounting shaft, a rope strut, and a slip guard. Lifting slings and connecting ropes are not supplied by Peikko.

Warning:
All parts of the COLIFT Mounting System produced by Peikko Group are intended only for the purposes stated in this technical manual. Never use any part of the mounting system for other purposes.

1.3 Standard safe working load for the COLIFT Mounting System

The resistance of the COLIFT Mounting System is determined by a design concept that refers to the following standards and regulations:

- Machinery Directive 2006/42/EC
- EN ISO 12100
- EN 13001
- DIN 15429:1978
- DGUV 100-500
- DGUV 201-002
- DGUV 209-013

The limiting factor that determines the working life of the COLIFT Mounting System is the fatigue of the material. Based on the requirements according to EN 13001, the COLIFT Mounting System is designed for 90,000 load cycles.

The minimum working distance between the lifting slings and the closest element surface is 50 mm. For columns with no corbels, this is measured from the element surface. If corbels are used, it is the distance between the corbel and the lifting sling (*Figure 4* and *Figure 5*).

Figure 4. Minimum spacing between slings and column without corbels.

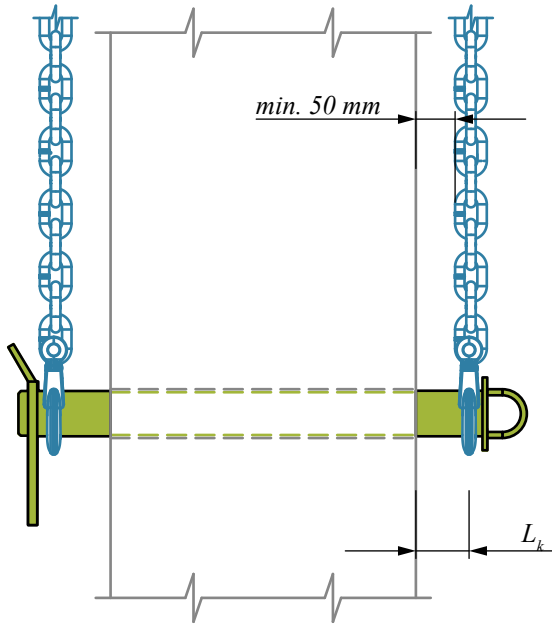
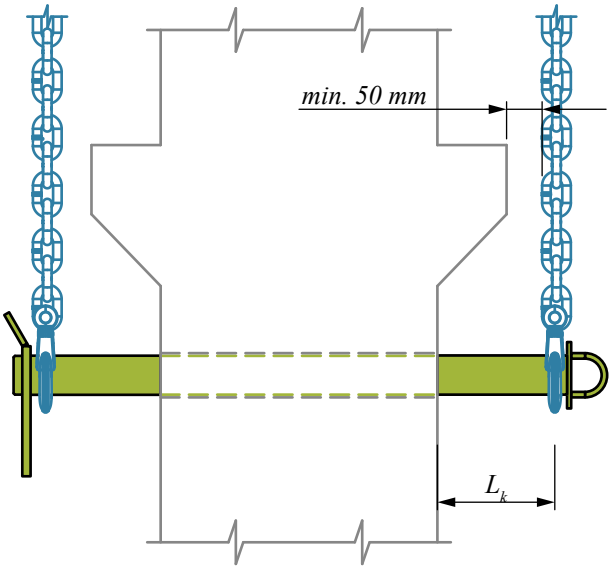


Figure 5. Minimum spacing between slings and column with corbels.



The COLIFT Mounting System can be used in compliance with two design concepts:

- Standard safe working load
- Extended safe working load.

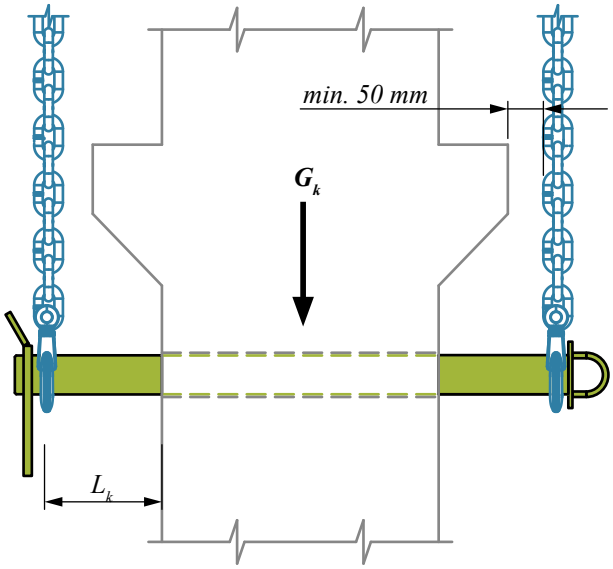
Standard safe working load

The standard safe working loads are determined for the most demanding case that can occur during the lifetime of the COLIFT Mounting System, where the maximum allowed wear of the mounting shaft is 5% with the maximum dynamic factor equal to 1.3 (maximum lifting speed 0.6 m/s and hoisting class *HC2*). The standard solution capacities in *Table 4* are based on the dimensions of the mounting shaft and the lever arm L_k.

Note:
Before selecting the mounting shaft, please consider that the minimum compressive strength of the precast concrete element must be at least 40 MPa.

If the compressive strength of the concrete is less than 40 MPa, use a different lifting system for demolding and transportation. The design criteria for lower concrete strength can be found in Annex B.

Table 4. Standard safe working load (SWL) capacities of the COLIFT Mounting System [tons].



G_k = *Weight of the element [tons]*

Spacing length		MW d70	MW d90	MW d115	MW d140
		SWL [t]	SWL [t]	SWL [t]	SWL [t]
L_k [mm]	50	15.8	37.0	58.0	90.0
	250	7.0	15.5	26.5	45.5
	300	6.3	13.0	23.0	40.0
	350	5.6	11.5	20.0	35.5

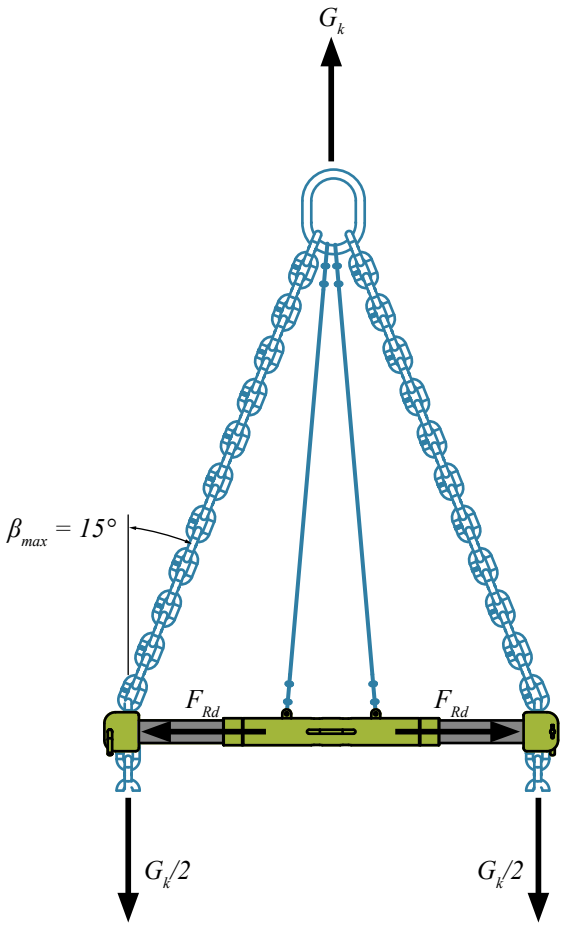
Warning:
The mounting shaft must be loaded symmetrically during the lifting process. The spacing between the slings and the lifted element surface must be equal on both sides. The symmetry of the load on the mounting shaft must be checked and adjusted every time.

Extended safe working load

The extended safe working load solution provides a more precise definition of the safe working load based on the real wear of the mounting shaft, the dynamic factor, and the concrete grade of the precast element. This solution requires individual justification of the wear and defining dynamic factor based on the real lifting speed and the type of crane. More information can be found in Annex B.

The rope strut is designed to transfer horizontal forces from the slings in combination with all mounting shaft models. The horizontal forces in the rope strut depend on the lifting sling inclination (angle β) and the lifted weight of the element. **The maximum permitted angle of the lifting sling is 15°** (*Figure 6*). Greater angles are not permitted due to excessive load increase.

Figure 6. Transfer of horizontal forces to rope strut.



Note:
The concrete element must be designed to withstand its own dead-weight during lifting and handling. Additional reinforcement may be needed to handle these effects during lifting. Please consider requirements according to EN 13369 and EN 13225.

Warning:
Never assume sufficient reinforcement – make precise calculations. Too little reinforcement can result in severe accidents and collapsing elements.

1.4 Placing of the COLIFT Mounting System

The mounting shaft is placed into a hole in the precast element with both ends of the shaft protruding from the element by the same length (the precast element is balanced on the middle of the shaft). An appropriate diameter of the mounting shaft must be considered before casting the precast element. The hole for the mounting shaft is created using a plastic tube with diameters presented in *Table 5*.

The diameter of the casted tube should be at least 10 mm bigger than the diameter of the mounting shaft. The resulting center of gravity of the precast element must be considered when placing the tube in the formwork to ensure that the element will be in a balanced position during lifting and handling on the construction site.

Check Annex C (Application conditions) before designing and using the COLIFT Mounting System.

Figure 7. Hole for mounting shaft in precast element.

Figure 8. Mounting shaft placed in the hole.

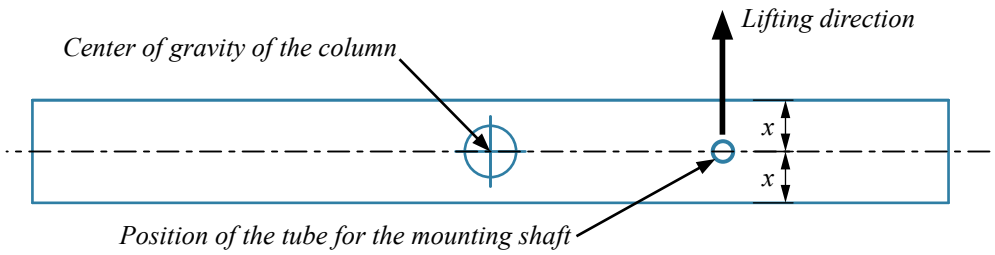
The minimum inner diameters of tubes used for mounting shafts are presented in the following table.

Table 5. Minimum tube diameter for the mounting shaft.

		Units	MW d70	MW d90	MW d115	MW d140
Minimum inner diameter of tube	**Ø**	[mm]	80	100	125	150

The maximum diameter of the hole is limited to 1.5 times the mounting shaft diameter. If the hole is too big for the mounting shaft, the precast element may move unexpectedly.

Figure 9. Installation position of the tube for the mounting shaft.

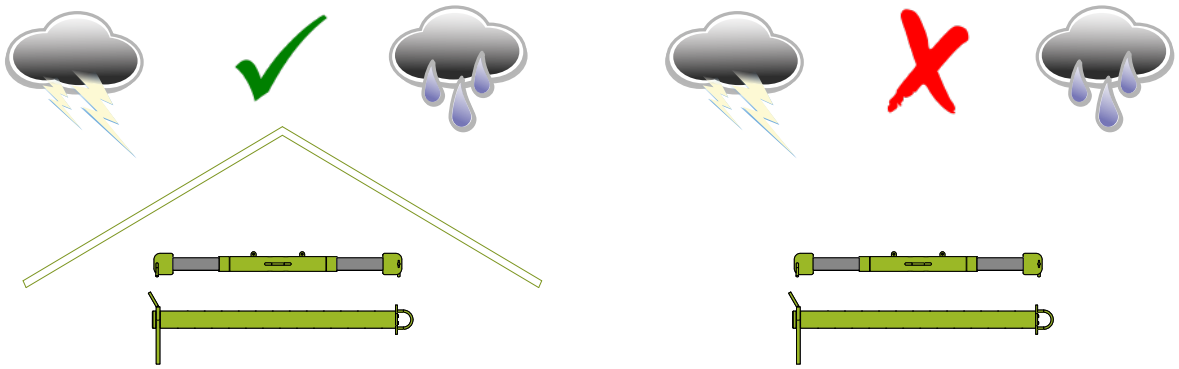


1.5 Environmental conditions

The COLIFT Mounting System can be used at temperatures of between -20 °C and +80 °C.

COLIFT Mounting System's components must be stored and protected in dry conditions, preferably under a roof or suitable storage location (see *Figure 10*). Components may corrode if they are unprotected and exposed to outdoor weather conditions such as large temperature variations, ice, humidity, acidic atmosphere, or salt and sea water impact.

Figure 10. Proper storage of COLIFT parts.



Selecting COLIFT Mounting System

2. Selecting COLIFT Mounting System

The use of the COLIFT Mounting System must be taken into account during the design of the precast element. Although the COLIFT Mounting System is a lifting device that is only temporarily attached to the precast element on the construction site, the system requires an opening for the mounting shaft with the correct diameter and position to be created when the element is cast.

The following aspects must be considered when selecting an appropriate model of COLIFT Mounting System:

- What are the element properties (size, weight, geometry)?
- Where is the center of gravity?
- What is the lifting process after production and who is responsible for it? (Acceleration forces, type of crane, trained personnel)
- Which equipment is needed for the lifting process to ensure that design assumptions are realized?

The COLIFT Mounting System can be selected and used only by trained personnel who are familiar with the information presented in this technical manual and local requirements for safe handling and lifting.

2.1 Element weight

The weight of the precast element can be calculated according to EN 1991-1-1. The total weight of concrete element is known during the design of the element, so this information is used to select the correct diameter of the mounting shaft and the diameter of the tube to be placed in the formwork at the precast factory. With heavily reinforced elements, the weight of the reinforcement should be considered separately.

2.2 Selecting lifting slings for the COLIFT Mounting System

The lifting slings transfer the element's load from the mounting shaft to the crane. The load transferred by the slings depends on the inclinations of the chain above the rope strut. This inclination is defined by angle β from the vertical. The maximum permitted angle that can be used with the COLIFT Mounting System is 15°. Grater angles are not permissible due to excess load increase. The correct lifting slings must be selected by trained personnel. Selecting the wrong slings may cause failure of the system and severe injuries or death.

The minimum safe working load that can be transferred by one leg of the sling is $0.67 \times G_k$ whereas G_k is the element's dead-weight as shown in *Figure 11*.

If two COLIFT Mounting Systems are used to lift a precast beam, each leg of the lifting slings is load-bearing. The minimum safe working load transferred by one leg of the slings is equal to $0.67 \times G_k/2$ when the beam is horizontal (*Figure 12*). Inclination of the beam during lifting must be considered as additional load on the slings.

Lifting accessories (shackles, hooks, etc.) that are used for attaching the slings to the COLIFT Mounting System must have sufficient capacity to allow a safe working load on the slings.

Figure 11. Minimum capacity for one leg of the sling with a precast column.

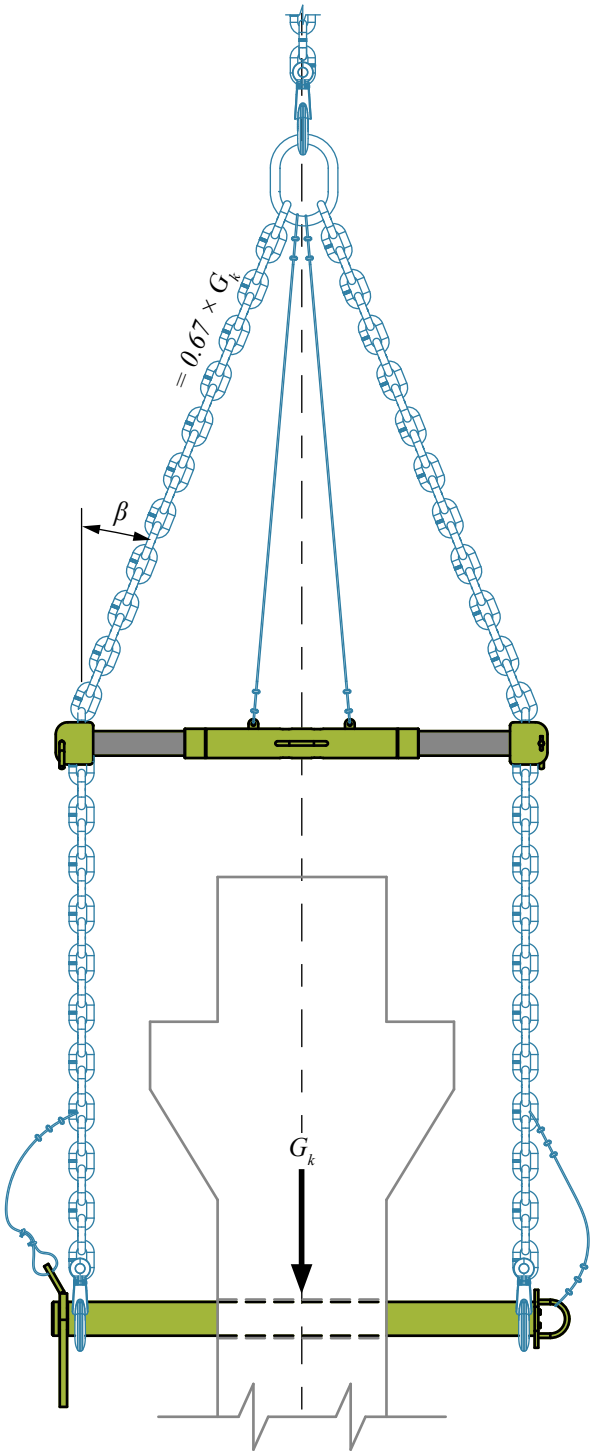
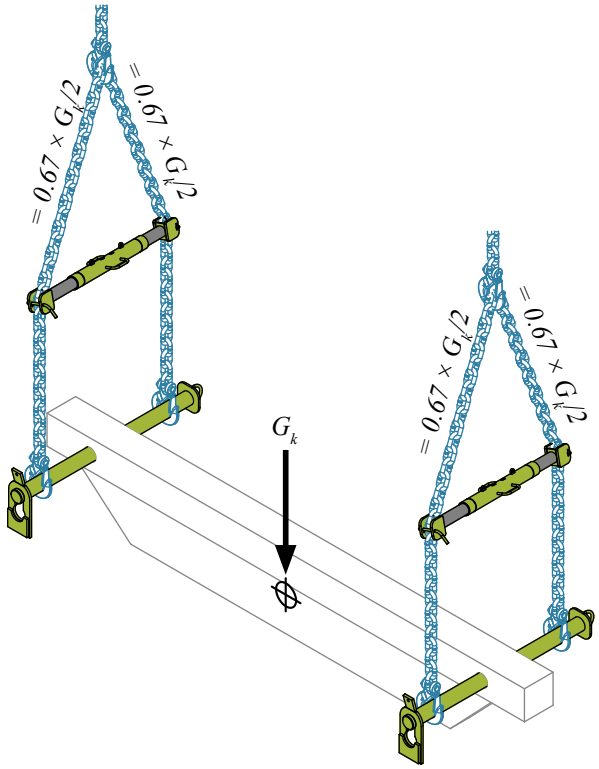


Figure 12. Minimum capacity for one leg of the sling with a precast beam.



Note:
Please note that the precast element must always be placed symmetrically on the mounting shaft to ensure that loads are the same in both legs of the slings.

Annex A – Security connections

For safety purposes, the mounting shaft, rope strut, and slip guard must be connected to lifting slings (or a hook) using additional cords, wires, or slings. These transfer the self-weight of the mounting system parts during lifting or removal from the precast element. Steel wires must have sufficient strength to transfer the self-weight of the part increased by the dynamic effect caused when removed from the precast element (*Table 6*). Check for adequate tensile resistance of the connecting wires, slings, or cords when using a material other than steel wire.

Table 6. Minimum requirements for connecting wires.

Minimum diameter of the steel wire	Minimum tensile resistance	Standard
Ø6	19 kN	EN 12385-4

Figure 13. Attaching the mounting shaft to the lifting sling with steel wire.

Figure 14. Attaching the slip guard to the lifting sling with steel wire.

Note:
Use an appropriate length of cord for remote control of the slip guard to have a safe distance to operate this from.

Figure 15. Attaching the rope strut to the oblong ring with steel wire.

Figure 16. Whole system assembled, including cords for removing the slip guard and mounting shaft.

Note:
The safety cords, or wires must be attached to the COLIFT's parts properly. Use appropriate accessories such as shackles or rope clips to attach wires. EN 13411 could be considered.

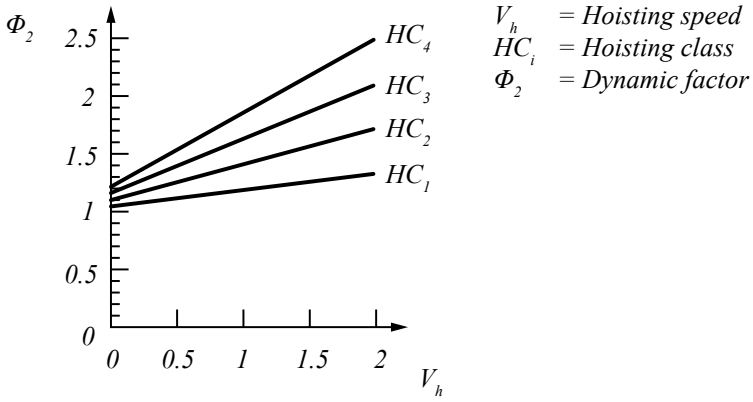
Annex B – Extended safe working load

The calculations for extended safe working load can provide a more precise solution for selecting the COLIFT capacity. Selection of the safe working load depends on the real wear of the mounting shaft, which is defined by a trained user, the lever arm L_k and the dynamic factor defined on the real lifting speed, and the type of the crane. This solution also provides further design principles for precast elements using concrete with a compressive strength of less than 40 MPa.

Acceleration forces

The mounting system must withstand the hoisting and acceleration forces that are present during lifting and it transfers those loads into the lifting unit. The hoisting load coefficient, called the “dynamic factor”, is defined according to the lifting speed and the hoisting class of the crane (according to EN 13001-2).

Figure 17. Interaction between hoisting classes, hoisting speed and dynamic factor.



Note:
The individual hoisting coefficient must be considered for the entire chain of transportation between the precast plant and element installation on the construction site.

Wear out

Regular use of the mounting shaft reduces the amount of material in the areas subject to the greatest load. This reduction is represented by wearing of the mounting shaft diameter and it limits the safe working load of the COLIFT. Wear of the mounting shaft is regularly controlled during inspection of the COLIFT Mounting System (Annex D) and further use is allowed when the load is limited according to *Tables 7*, *8*, *9*, and *10*.

Figure 18. Spacing length of slings and wear of the mounting shaft.

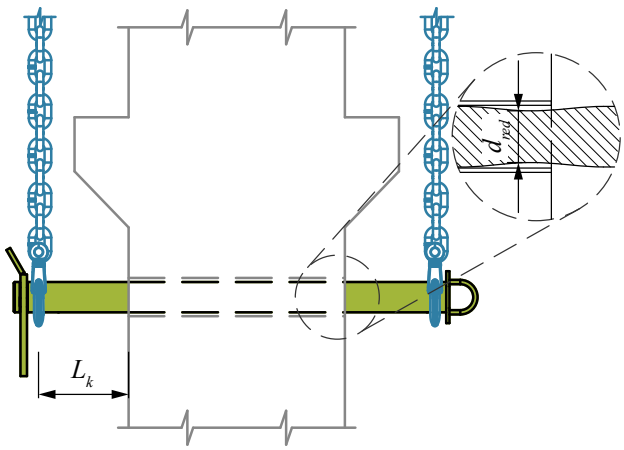


*Table 7. Safe working loads (SWL) for mounting shaft **MW d70** under various dynamic factors [tons].*

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		70	69	69	68	67.2	66.5
1.05*	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9
1.10	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9
1.15	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9
1.20	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9
1.25	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9
1.30	50	15.8	15.8	15.8	15.8	15.8	15.8
	100	13.6	13.6	13.6	13.6	13.6	13.6
	200	9.2	9.2	9.2	9.2	9.2	9.2
	300	6.3	6.3	6.3	6.3	6.3	6.3
	400	4.9	4.9	4.9	4.9	4.9	4.9

* Dynamic factor 1.05 is defined for a lifting speed equal to 0 m/s.

*Table 8. Safe working loads (SWL) for mounting shaft **MW d90** under various dynamic factors [tons].*

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		90	89.1	88.2	87	86.4	85.5
1.05*	50	44.0	44.0	44.0	44.0	44.0	44.0
	100	40.5	39.5	38.5	37.5	36.5	35.5
	200	26.5	25.5	25.0	24.5	23.5	23.0
	300	19.0	18.5	18.0	17.5	17.0	16.5
	400	15.0	14.5	14.0	13.5	13.0	12.5
	500	12.0	11.5	11.5	11.0	10.5	10.5
1.10	50	44.0	44.0	44.0	44.0	44.0	44.0
	100	38.5	37.5	36.5	35.5	34.5	34.0
	200	25.0	24.5	24.0	23.0	22.5	22.0
	300	18.0	17.5	17.0	16.5	16.0	15.5
	400	14.0	13.5	13.5	13.0	12.5	12.0
	500	11.5	11.0	10.5	10.5	10.0	10.0
1.15	50	44.0	44.0	44.0	44.0	43.0	42.0
	100	37.0	36.0	35.0	34.0	33.0	32.5
	200	24.0	23.5	23.0	22.0	21.5	21.0
	300	17.5	17.0	16.5	16.0	15.5	15.0
	400	13.5	13.0	12.5	12.5	12.0	11.5
	500	11.0	10.5	10.5	10.0	9.5	9.5
1.20	50	44.0	44.0	43.0	42.0	41.0	40.0
	100	35.0	34.5	33.5	32.5	32.0	31.0
	200	23.0	22.5	22.0	21.0	20.5	20.0
	300	16.5	16.0	15.5	15.0	15.0	14.5
	400	13.0	12.5	12.0	12.0	11.5	11.0
	500	10.5	10.0	10.0	9.5	9.0	9.0
1.25	50	43.5	42.5	41.5	40.5	39.5	38.5
	100	34.0	33.0	32.0	31.5	30.5	29.5
	200	22.0	21.5	21.0	20.5	20.0	19.0
	300	16.0	15.5	15.0	14.5	14.0	14.0
	400	12.5	12.0	11.5	11.5	11.0	10.5
	500	10.0	9.5	9.5	9.0	9.0	8.5
1.30	50	41.5	41.0	40.0	39.0	38.0	37.0
	100	32.5	31.5	31.0	30.0	29.5	28.5
	200	21.5	20.5	20.0	19.5	19.0	18.5
	300	15.5	15.0	14.5	14.0	13.5	13.0
	400	12.0	11.5	11.0	11.0	10.5	10.0
	500	9.5	9.5	9.0	9.0	8.5	8.0

* Dynamic factor 1.05 is defined for a lifting speed equal to 0 m/s.

Table 9. Safe working loads (SWL) for mounting shaft **MW d115** *under various dynamic factors [tons].*

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		115	114	113	112	110	109
1.05*	50	68.0	68.0	68.0	68.0	68.0	68.0
	100	65.0	63.5	62.0	60.5	59.0	57.5
	200	44.5	43.5	42.0	41.0	40.0	39.0
	300	33.0	32.0	31.0	30.0	29.5	28.5
	400	25.5	25.0	24.5	23.5	23.0	22.0
	500	21.0	20.5	20.0	19.0	18.5	18.0
1.10	50	68.0	68.0	68.0	68.0	68.0	68.0
	100	62.0	60.5	59.0	57.5	56.0	55.0
	200	42.5	41.5	40.5	39.0	38.0	37.0
	300	31.5	30.5	29.5	29.0	28.0	27.0
	400	24.5	24.0	23.0	22.5	22.0	21.0
	500	20.0	19.5	19.0	18.5	18.0	17.0
1.15	50	68.0	68.0	68.0	68.0	67.5	65.5
	100	59.5	58.0	56.5	55.0	54.0	52.5
	200	40.5	39.5	38.5	37.5	36.5	35.5
	300	30.0	29.0	28.5	27.5	26.5	26.0
	400	23.5	23.0	22.0	21.5	21.0	20.0
	500	19.0	18.5	18.0	17.5	17.0	16.5
1.20	50	68.0	68.0	66.0	66.0	64.5	63.0
	100	57.0	55.5	53.0	53.0	51.5	50.0
	200	39.0	38.0	36.0	36.0	35.0	34.0
	300	29.0	28.0	26.5	26.5	25.5	25.0
	400	22.5	22.0	20.5	20.5	20.0	19.5
	500	18.5	18.0	17.0	17.0	16.5	16.0
1.25	50	68.0	66.5	65.0	63.5	62.0	60.5
	100	54.5	53.5	52.0	50.5	49.5	48.0
	200	37.5	36.5	35.5	34.5	33.5	32.5
	300	27.5	27.0	26.0	25.5	24.5	24.0
	400	21.5	21.0	20.5	19.5	19.0	18.5
	500	17.5	17.0	16.5	16.0	15.5	15.0
1.30	50	65.0	64.0	62.5	61.0	59.5	58.0
	100	52.5	51.5	50.0	48.5	47.5	46.5
	200	36.0	35.0	34.0	33.0	32.0	31.5
	300	26.5	26.0	25.0	24.5	23.5	23.0
	400	21.0	20.0	19.5	19.0	18.5	18.0
	500	17.0	16.5	16.0	15.5	15.0	14.5

* Dynamic factor 1.05 is defined for a lifting speed equal to 0 m/s.

Table 10. Safe working loads (SWL) for mounting shaft **MW d140** *under various dynamic factors [tons].*

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		140	139	137	136	134	133
1.05*	50	120.0	120.0	119.5	116.5	114.0	106.5
	100	104.0	101.5	99.5	97.0	94.5	88.0
	200	75.0	73.0	71.0	69.5	67.5	62.5
	300	57.0	55.5	54.0	52.5	51.0	47.0
	400	45.5	44.0	43.0	41.5	40.5	37.5
	500	37.5	36.5	35.5	34.0	33.0	30.5
1.10	50	119.0	116.5	114.0	111.5	109.0	106.5
	100	99.5	97.0	94.5	92.5	90.0	88.0
	200	71.5	70.0	68.0	66.0	64.5	62.5
	300	54.5	53.0	51.5	50.0	48.5	47.0
	400	43.5	42.0	41.0	39.5	38.5	37.5
	500	35.5	34.5	33.5	32.5	31.5	30.5
1.15	50	114.0	111.5	109.0	106.5	104.0	101.5
	100	95.0	93.0	90.5	88.5	86.5	84.0
	200	68.5	66.5	65.0	63.5	61.5	60.0
	300	52.0	50.5	49.0	48.0	46.5	45.0
	400	41.5	40.0	39.0	38.0	37.0	35.5
	500	34.0	33.0	32.0	31.0	30.5	29.5
1.20	50	109.0	107.0	104.5	102.0	100.0	97.5
	100	91.0	89.0	87.0	85.0	82.5	80.5
	200	65.5	64.0	62.5	60.5	59.0	57.5
	300	50.0	48.5	47.0	46.0	44.5	43.0
	400	39.5	38.5	37.5	36.5	35.5	34.0
	500	32.5	31.5	31.0	30.0	29.0	28.0
1.25	50	105.0	102.5	100.0	98.0	96.0	93.5
	100	87.5	85.5	83.5	81.5	79.5	77.5
	200	63.0	61.5	59.5	58.0	56.5	55.0
	300	48.0	46.5	45.0	44.0	42.5	41.5
	400	38.0	37.0	36.0	35.0	34.0	33.0
	500	31.5	30.5	29.5	28.5	28.0	27.0
1.30	50	100.5	98.5	96.5	94.0	92.0	90.0
	100	84.0	82.0	80.0	78.0	76.5	74.5
	200	60.5	59.0	57.5	56.0	54.5	53.0
	300	46.0	44.5	43.5	42.5	41.0	40.0
	400	36.5	35.5	34.5	33.5	32.5	31.5
	500	30.0	29.5	28.5	27.5	27.0	26.0

* Dynamic factor 1.05 is defined for a lifting speed equal to 0 m/s.

Annex B – Extended safe working load

Reduction factor for lower concrete grades

The safe working loads presented in *Table 7*, *Table 8*, *Table 9*, and *Table 10* are determined for precast elements made from concrete with a minimum compressive strength of 40 MPa.

For precast elements produced from lower concrete grades or during the demolding process when concrete has a lower compressive strength, the reduction factors presented in *Table 11* must be used.

Table 11. Reduction factor for lower concrete strength.

Compressive strength of the concrete f_{ck} [MPa]	Reduction factor ξ_{con} [-]
15	0.654
20	0.743
25	0.818
30	0.885
35	0.943

Use linear interpolation for intermediate values.

Reduced safe working loads for precast elements with a concrete strength lower than 40 MPa are calculated according to the following equation:

$$SWL_{red} = SWL \cdot \xi_{con} \quad (1)$$

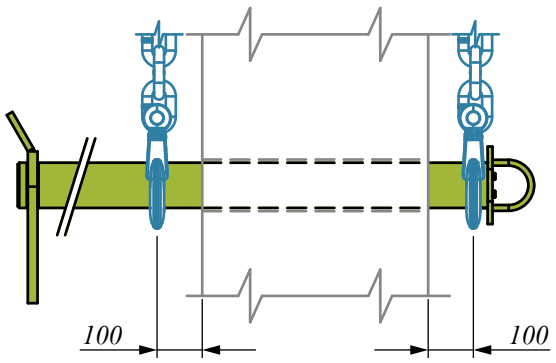
Where:

SWL = Safe working load according to *Table 7*, *Table 8*, *Table 9*, *Table 10* [tons]

ξ_{con} = Reduction factor for lower concrete strength *Table 11* [-]

Example 1 – Selecting the SWL based on extended safe working loads:

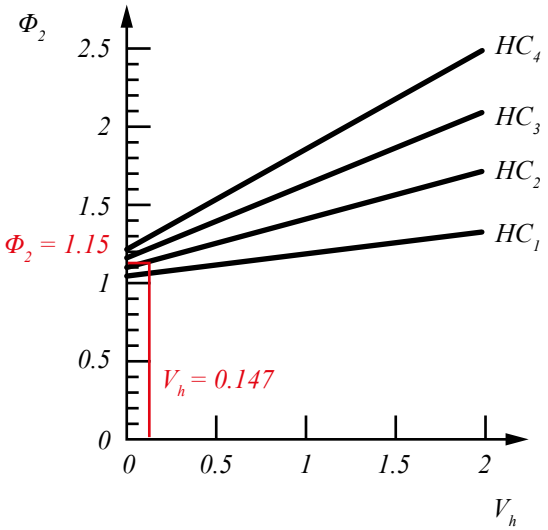
Figure 19. Dimensions of Example 1.



The average wear out of the mounting shaft MW d90 is equal to 2%. On the construction site, the most commonly used distance of the slings from the precast element is 100 mm and the lifting speed v_h used during erection of the element is 0.147 m/s.

The dynamic factor for lifting speed 0.147 m/s is equal to 1.15.

Figure 20. Definition of dynamic factor Ø2 based on lifting speed v_h.



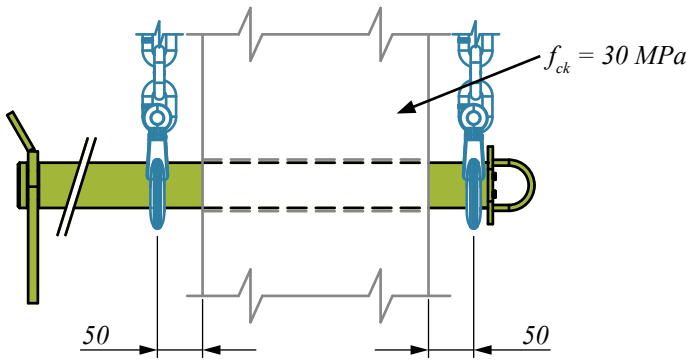
The current safe working load for mounting shaft MW d90 with the aforementioned boundary conditions is **35 t** (see *Table 12*).

Table 12. Selecting a SWL for 2% wear out of MW d90.

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		90	**89.1**	**88.2**	**87**	**86.4**	**85.5**
1.15	50	44.0	44.0	44.0	44.0	43.0	42.0
	100	37.0	36.0	35.0	34.0	33.0	32.5
	200	24.0	23.5	23.0	22.0	21.5	21.0
	300	17.5	17.0	16.5	16.0	15.5	15.0
	400	13.5	13.0	12.5	12.5	12.0	11.5
	500	11.0	10.5	10.5	10.0	9.5	9.5

Example 2 - Selection of SWL based on extended safe working loads and a lower concrete grade:

Figure 21. Dimensions of Example 2.



A precast element is produced from concrete with a compressive strength of 30 MPa. The average wear out of the mounting shaft is 0%. Mounting shaft MW 115 will be used for the lifting with slings spacing equal to 50 mm. Based on the lifting speed and the type of crane, the dynamic factor is equal to 1.20.

Table 13. Selecting of SWL for 0% wear out for MW d115.

Dynamic factor [-]	Spacing length L_k [mm]	Wear out					
		0%	1%	2%	3%	4%	5%
		d_{red} [mm]					
		115	114	113	112	110	109
1.20	50	68.0	68.0	66.0	66.0	64.5	63.0
	100	57.0	55.5	53.0	53.0	51.5	50.0
	200	39.0	38.0	36.0	36.0	35.0	34.0
	300	29.0	28.0	26.5	26.5	25.5	25.0
	400	22.5	22.0	20.5	20.5	20.0	19.5
	500	18.5	18.0	17.0	17.0	16.5	16.0

The safe working load selected in *Table 13* is determined for concrete with a compressive strength of 40 MPa. During lifting, the precast elements will have a compressive strength of concrete equal to 30 MPa. For this reason, the safe working load must be reduced by the reduction factor ξ_{con}.

$$SWL_{red} = SWL \cdot \xi_{con} = 68\ tons \cdot 0.885 = 60.18\ tons$$

The reduced safe working load of the mounting shaft MW115 with spacing L_k equal to 50 mm and compressive strength of concrete of 30 MPa is **60 tons**.

Annex C – Application conditions

Essential rules to be considered before using the COLIFT Mounting System:

C1. Personnel and safety requirements

- All local regulation for safety of lifting and hoisting must be kept in mind at all times together with the assumptions described in this manual.
- The operator of the COLIFT Mounting System must be properly educated and trained to handle this device. The personnel must be familiar with the requirements presented in this technical manual.
- No untrained personnel may work with COLIFT Mounting System.
- An increased risk of crushing of hands can arise during the slinging procedure. Personal safety equipment must be used when working with the COLIFT Mounting System.

Note:
Never exceed the maximum allowable weight that can be carried by one person according to the work safety regulations. Use a crane to lift and move COLIFT parts if necessary.

- Only one person may give hand signals to the crane operator during lifting.

C2. Loading, lifetime, and environmental conditions

- Visually inspect the mounting system, the lifting slings, and additional cords and wires before every use for any damage (cracks, bands, twisted and knotted slings) and ensure that all parts fit together according to this technical manual. Use a competent person who is familiar with the requirements of the COLIFT Mounting System.
- Take damaged components out of service immediately.

Note:
Do not use COLIFT Mounting System with missing or damaged parts (slip guard, end plate, rope strut, slings, additional wires, etc.) it can lead to hazardous situation, damage of the property or sever injures or death.

- Select the correct diameter of the mounting shaft based on the weight and dimensions of the lifted element. Do not overload the COLIFT Mounting System.

Warning:
When the COLIFT Mounting System is severely overloaded or subjected to large dynamic load, plastic deformation of the mounting shaft can occur. When the deformation exceeds the allowable limit defined in Annex D, the mounting shaft must be taken out of service.
Do not use the mounting shaft if the diameter is significantly worn down (see Annex D).

- Use a sufficient length of the mounting shaft for the precast element to ensure that the slings have enough space for slinging to the shaft and that they are not in contact with precast element.
- All parts of the COLIFT Mounting System must be secured by wire cords before lifting to prevent parts of the mounting system from falling (see Annex A).
- Use a sufficient diameter of tube for the mounting shaft when casting the precast element.
- Lifting accessories (shackles, slings, ropes, hooks) with sufficient capacity must be used. The final capacity of the COLIFT Mounting System is based on the resistance of the weakest element of the system.

Warning:
Do not use slings or any other lifting accessories that are not designed for lifting purposes as this can lead to damage to property, severe injures or death.

- It is strictly prohibited to weld anything on any parts of the COLIFT Mounting System. It is also strictly prohibited to shorten the mounting shaft or the rope strut or make any modifications to any parts of the COLIFT Mounting System.
- The lifting slings can be attached to the mounting shaft through hooks, shackles or ties from the rope with a sufficient shackle dimension (see *Figure 22*; *Figure 23*; *Figure 24*).

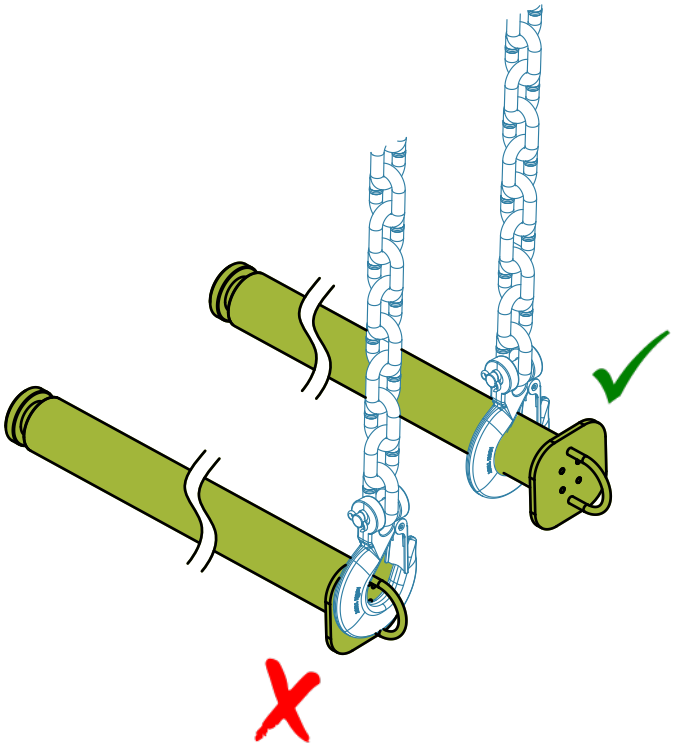
Figure 22. Slings attached with hooks.

Figure 23. Slings attached with shackles.

Figure 24. Slings attached with rope loop and shackle.

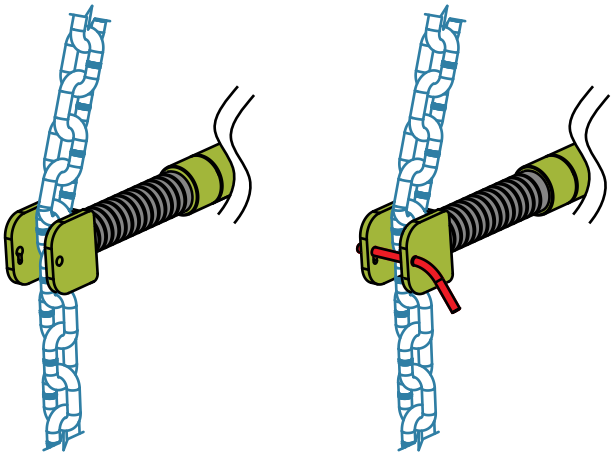
- Do not attach the lifting slings to the lifting ring at the mounting shaft when lifting the precast element. This ring is only for transporting the mounting shaft (see *Figure 25*).

Figure 25. Attaching the lifting sling to the mounting shaft.



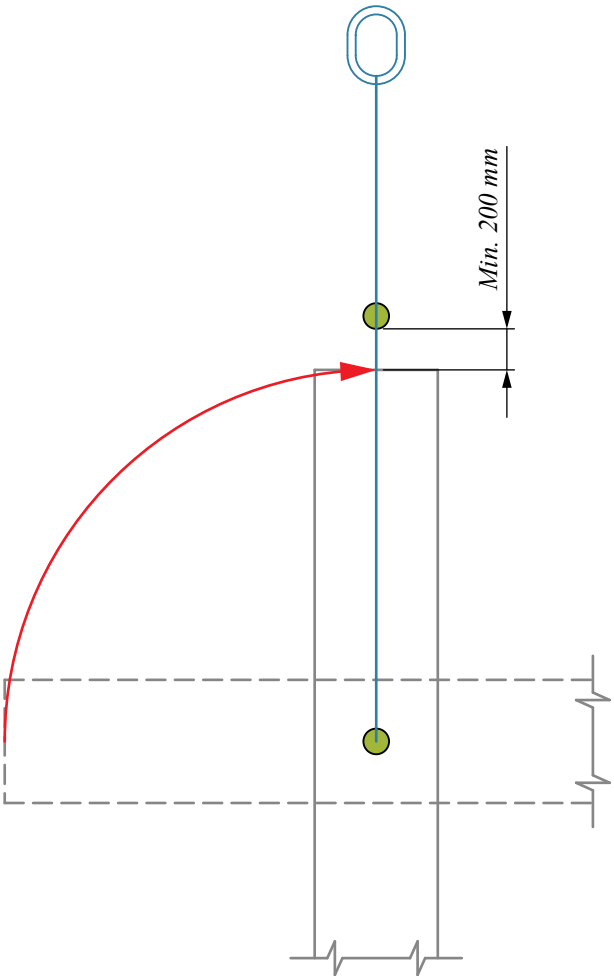
- Always use a securing pin with the rope strut to secure the position of the sling at the rope holder.

Figure 26. Securing the sling at rope strut.



- The minimum clear distance between the top surface or anything protruding out of the precast element and the rope strut is 200 mm. This enables the precast element to be tilted up without collision with the rope strut (*Figure 27*).

Figure 27. Minimum clear distance between column surface and rope strut during tilt-up.



C3. Interaction with the precast element

- The precast concrete element must be designed properly to resists the loads from the mounting shaft during lifting.
- The COLIFT Mounting System is not intended for use in precast elements made from lightweight concrete, lightweight aggregate concrete, or autoclaved aerated concrete.
- Know the position of the center of gravity of precast element. To ensure stability during lifting, the mounting shaft must be attached above the center of gravity of the lifted element. (*Figure 28*; *Figure 29*) This ensures that the precast element does not tilt down during lifting.

Figure 28. Position of the lifting point compared to the center of gravity of a column.

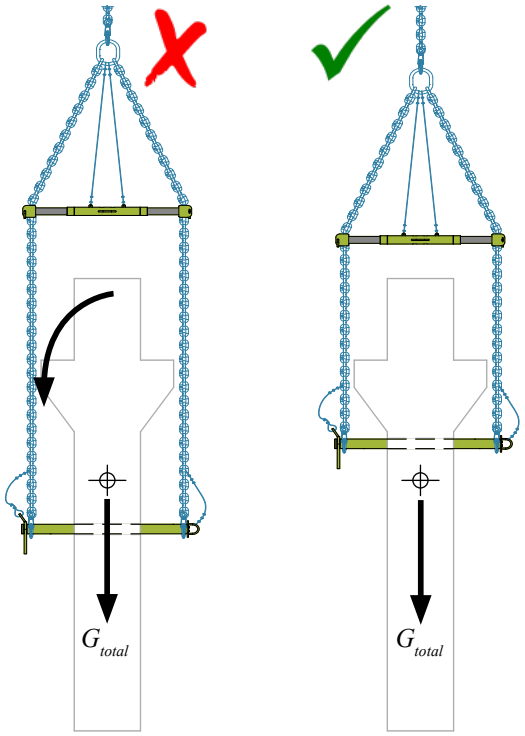
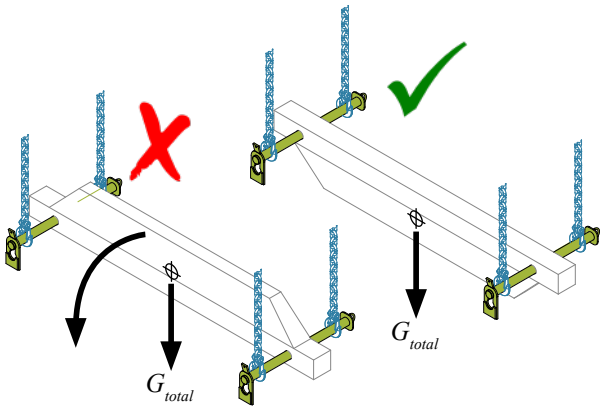


Figure 29. Position of the lifting point compared to the center of gravity of a beam.



- The precast element must be placed in the middle between slings. If the precast element is placed eccentrically, the chains will not be loaded equally. This could cause overloading on one leg of the slings and failure of the mounting system. (See *Figure 30*.)
- The mounting shaft and the rope strut must be always placed horizontally. (See *Figure 31*.) The inclination of the mounting shaft or rope strut or different lengths of sling legs could cause unexpected movement of the load on the mounting system during lifting.

Figure 30. Position of the load on the COLIFT Mounting System.

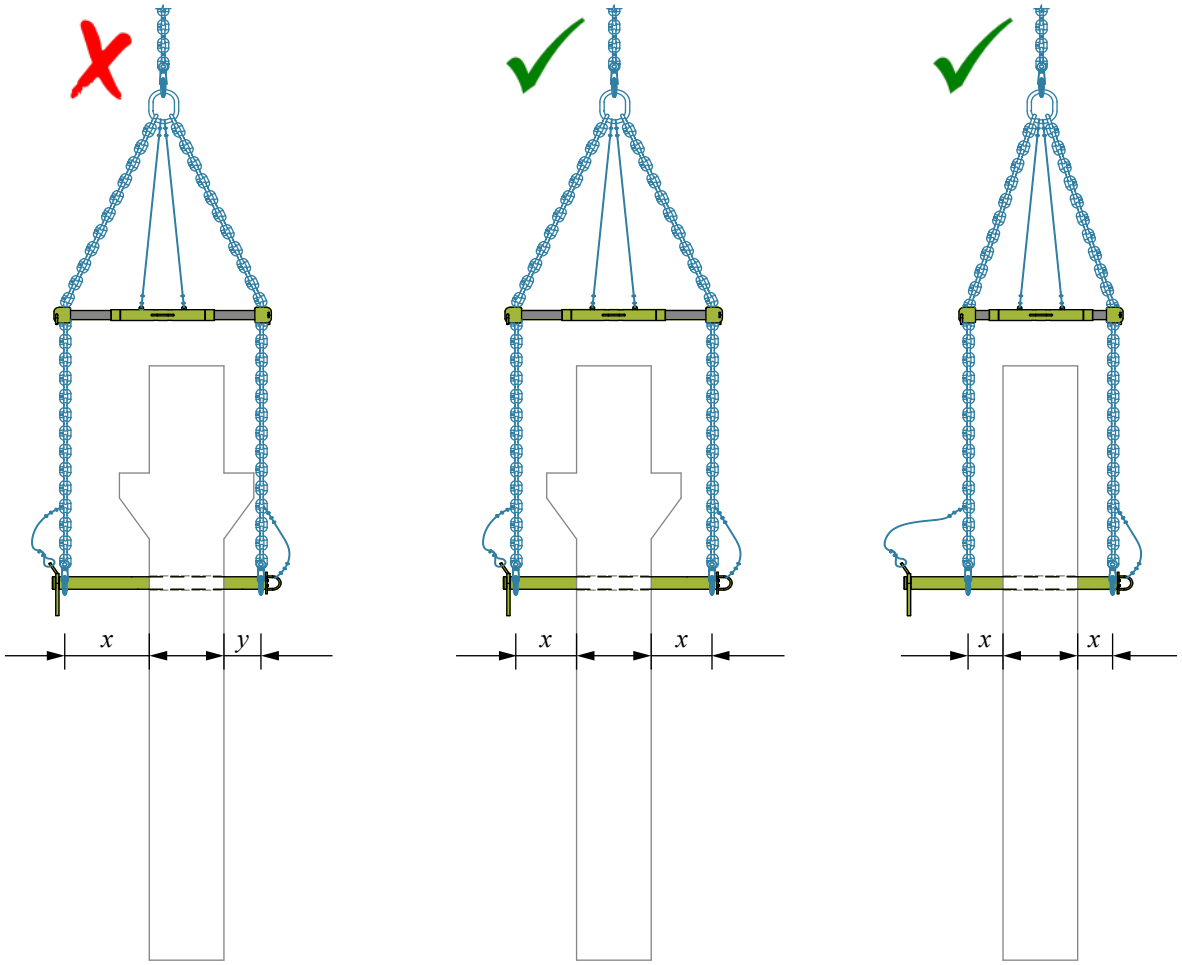
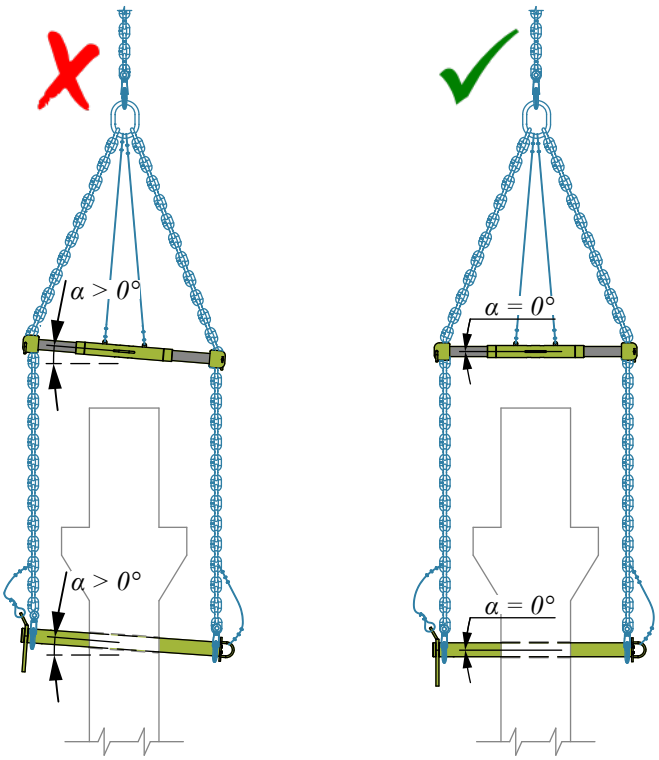
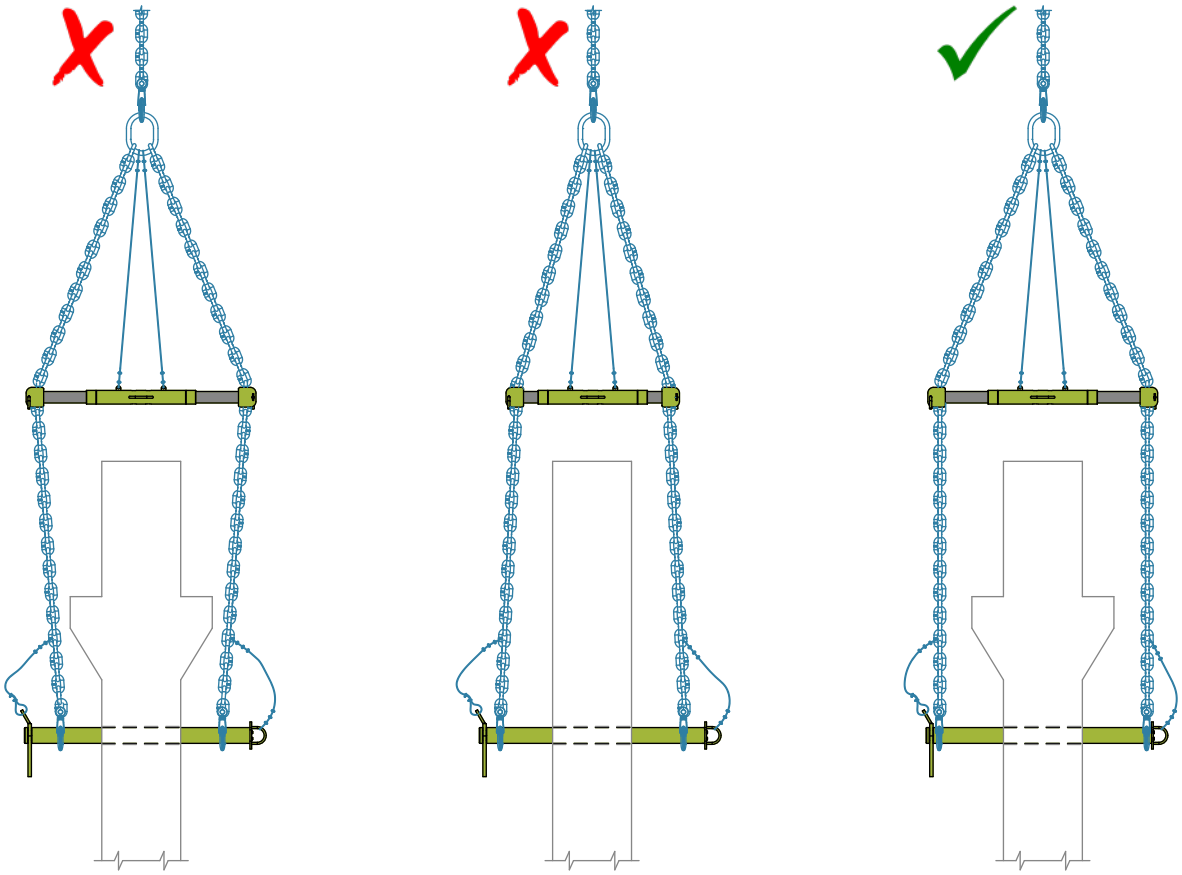


Figure 31. Allowable inclination of the COLIFT Mounting Shaft.



- The slings between the rope strut and the mounting shaft must always be vertical. No inclination is allowed. (*Figure 32*).

Figure 32. Position of the slings on the mounting shaft.



C4. Lifting and handling process

- Avoid abrupt lifting. Avoid sudden acceleration or deceleration of the load during lifting. Do not exceed the maximum allowed lifting speed presented in this technical manual.
- During lifting, no-one must be in the danger zone.
- The weather conditions must be optimal during the lifting process. Do not use the COLIFT Mounting System when the maximum crane wind loads are exceeded.
- Do not rotate (pinning) the precast element during lifting or tilt-up when the element is still in contact with ground. This is to reduce the risk of unexpected movement of the load on the mounting shaft.
- Never work under a suspended load unless it is adequately supported from the ground.
- Never leave a suspended precast element unattended in mid-air when the crane does not have an operator.
- The operator must guide the crane operator so that the precast element does not come into contact with any obstacles or personnel. Moving elements during lifting and handling can cause crushing or severe injuries.
- Parts of the COLIFT Mounting System must always be visible when handling the precast element on the building site.
- Never remove the slip guard from the mounting shaft until the precast element is properly attached to the loadbearing construction.
- The COLIFT Mounting System should not be used in an area where it could be exposed to acids or acidic fumes or other chemicals that could potentially harm the parts of the mounting system. All parts should be covered before exposure to weather that could cause corrosion of the steel parts.

Annex D – Inspection of the COLIFT Mounting System

Inspection of the COLIFT Mounting System

The parts of the COLIFT Mounting System must be regularly inspected in accordance with national safety standards such as DGUV 100-500 in Germany. As a lifting item, the COLIFT Mounting System can be affected by overloading, damage during misuse, weather, and fatigue, which could lead to failure of the part and severe damage to property or person. For this reason, a thorough visual inspection of all of the parts of the mounting system must be carried out at least once per year. Inspection of the cracks in the material must be carried out at least once per three years.

All inspections of the COLIFT Mounting System must be carried out by qualified personnel who have appropriate technical training and experience in the field of lifting equipment and related safety regulations.

The following points should be checked when inspecting the COLIFT Mounting System:

Inspection process

Clean all components of the mounting system before every inspection.

Mounting shaft and slip guard:

- Carry out a visual inspection at least once per year for external damage such as:
  - Plastic deformation (bend) due to overloading.
  - Wear out.
  - Deformation of the end plate and welded bar.
  - Missing bolts in the end plate.
  - Damage or deformation of the channel for the slip guard.
  - Plastic deformation of the slip guard.
- Crack inspection at least once every three years.
- No visible cracks or gauges.
- No welding in any location.
- The tolerances provided by the manufacturer must be complied with.

Rope strut:

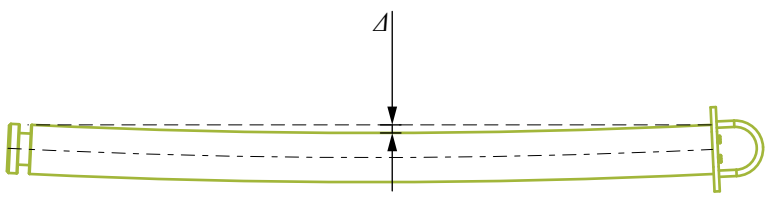
- No visible cracks or deformation.
- No damage of the thread; thread can move smoothly.
- No damage of the spring pins; threaded tube cannot be removed completely.

Note:

Inspection of the lifting accessories (slings, ropes, chains, shackles, additional wires) attached to the COLIFT Mounting System must be carried out according to instructions defined by manufacturer of these accessories.

When the plastic deformation Δ of the mounting shaft exceeds 3 mm, the mounting shaft must be removed from the service (*Figure 33*).

Figure 33. Measuring plastic deformation of the mounting shaft.



When the wear of the mounting shaft diameter exceeds 5% of the original diameter, the mounting shaft must be taken out of service (see *Figure 34*). The limit diameters for the mounting shaft are presented in *Table 14*.

Figure 34. Wear of the mounting shaft.

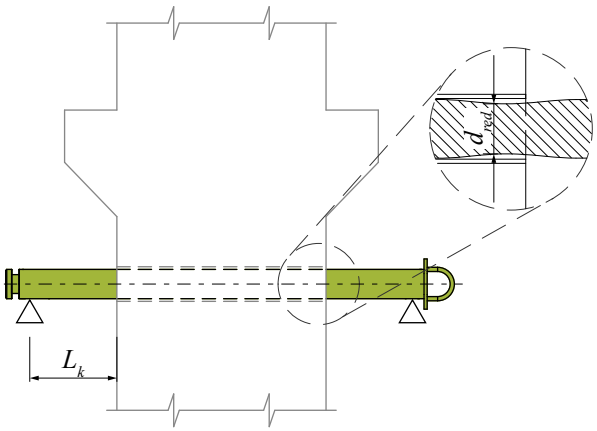
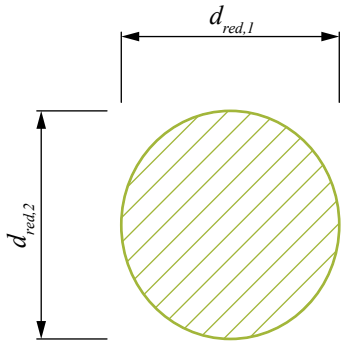


Figure 35. Reduced diameter of the mounting shaft.



$$d_{red} = \frac{d_{red,1} + d_{red,2}}{2}$$

Table 14. Limit diameters of the mounting shaft in the event of wear out.

		Unit	COLIFT d70	COLIFT d90	COLIFT d115	COLIFT d140
Limit diameter	$< d_{red}$	mm	66.5	85.5	109.25	133

Inspection of the following regions is recommended:

Figure 36. Inspection area for Rope Strut.

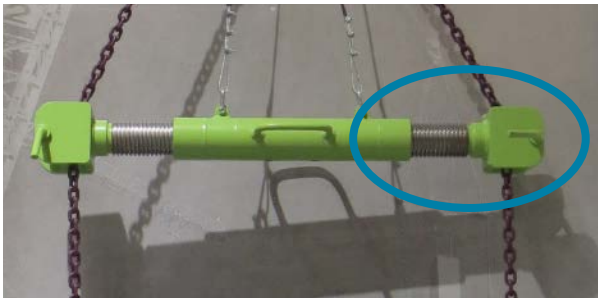
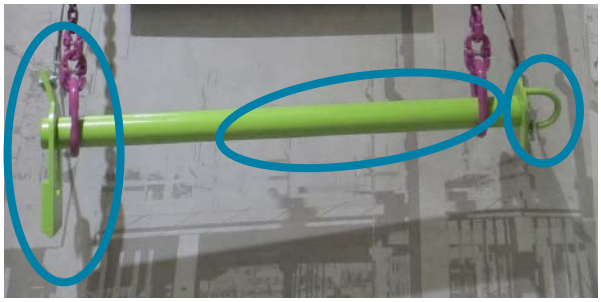


Figure 37. Inspection areas for Mounting Shaft.



It is recommended to record the inspections of all items with the serial number on record cards as shown in *Figure 38*.

Figure 38. Example of a record card for the mounting system.

<table>
<tr><td colspan="2">Chain record card
DGUV 209-063
(previous BGI 879-2)
Release: September 2015</td><td colspan="3">☐ Hoist chain
☐ Chain sling with welded in master and end links
For assembled chain sling made from parts a chain record card according DGUV 209-062 must be used</td><td>peikko group
CONCRETE CONNECTIONS
Peikko Group Corp.
Voimakatu 3
FI-15101 Lahti
www.peikko.com</td></tr>
<tr><td colspan="2">Name of the chain</td><td colspan="3"></td><td></td></tr>
<tr><td rowspan="2">Order No.</td><td rowspan="2">Chain No.</td><td colspan="4">Capacity SWL</td></tr>
<tr><td rowspan="2">Hoist chain

t</td><td rowspan="2">1-strand

t</td><td colspan="2">Chain sling
-strands/legs</td></tr>
<tr><td>Grade</td><td>Nominal thickness
mm</td><td>β ≤ 45°
t</td><td>β ≤ 60°
t</td></tr>
<tr><td>Length
m</td><td>Weight
kg</td><td>Manufacturer symbol*)</td><td colspan="2">Inspection certificate
No. / Date</td><td>Delivery from:</td></tr>
<tr><td colspan="4">Next inspection date</td><td rowspan="2">Taken into use on:</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td rowspan="2">Taken out of use on:</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Annex E – Declaration of conformity

Peikko Group Oy
Voimakatu 3
FI-15101 Lahti
www.peikko.com

EU Declaration of conformity according to Machine Directive 2006/42/EC, attachment II 1A
EG Konformitätserklärung gemäß EG Maschinenrichtlinie 2006/42/EG, Anhang II 1A

The manufacturer/ der Hersteller: Peikko Group Oy, Voimakatu 3, FI-15101 Lahti, FINLAND

With production plants/ mit Produktionsstätten:

Peikko Deutschland GmbH
Brinker Weg 15
D-34513 Wladeck
GERMANY

Declares that the following lifting device acc. to article 2d)	Erklärt folgende Lastaufnahmemittel nach Artikel 2 d) mit der
Product name/ Produktbezeichnung:	COLIFT Mounting System
COLIFT Mounting Shaft/ Montagewelle	MW d70; MW d90; MW d115; MW d140
COLIFT Rope Strut/ Seilspreize	PS 01; PS 02; PS 03
With surface treatment/ mit Oberflächenbehandlung:	Standard primer rust protection
Complies, due to its conception and construction, with the following cited regulations:	Aufgrund Konzipierung und Bauart den Bestimmungen der nachfolgend aufgeführten Richtlinien entspricht
EU Machine Directive 2006/42/EC - EG Maschinenrichtlinie 2006/42/EG	

Considered harmonized standards/ Angewandte harmonisierte Normen

EN ISO 12100: 2011-03 Safety of machinery – Generals principles for design – Risk assessment and risk reduction/ Sicherheit von Maschinen – Allgemeine Gestaltungsleitsätze Risikobeurteilung –Risikominderung
EN 13001-1: 2009-12 Cranes – General design – Part 1: General principles and requirements/ Krane – Konstruktion allgemein –Teil 1: Allgemeine Prinzipien und Anforderungen
EN 13001-2: 2012-06 Crane safety – General design – Part 2: Load actions/ Kransicherheit – Konstruktion allgemein – Teil 2: Lasteinwirkungen
EN 13001-3: 2012+A1:2013 Crane – General design – Part 3-1: Limit states and proof competence of steel structures/ Krane – Konstruktion allgemein – Teil 3-1: Grenzzustände und Sicherheitsnachweis von Stahltragwerken

Other considered standards or specifications/ Sonstige angewandte Normen oder Spezifikationen

DGUV Regel 100-500 Use of work equipment, section 2.8/ Betreiben von Arbeitsmitteln Kapitel 2.8

Responsible commissioner for preparation and management of technical documentation is / Verantwortlicher Bevollmächtigter zur Erstellung und Führung der technischen Dokumentation ist:

Jakub Mecar, M.Sc. (Eng.)
R&D Engineer, Peikko Group Oy

Lahti 22.09.2020

Mr. Žygimantas Kačinskas
Quality Manager
Peikko Group Oy

PEIKKO GROUP CORPORATION

Annex F – Type label

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Mounting shaft MW d70			
Dimensions [mm]:	Ø70 x 1200			
Serial No.:				
Weight [kg]:	45			
Manufacture year:				
Spacing of slings L_k [mm]:	50	250	300	350
Safe working load [tons]:	15.8	7.0	6.3	5.6

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Mounting shaft MW d90			
Dimensions [mm]:	Ø90 x 1400			
Serial No.:				
Weight [kg]:	83			
Manufacture year:				
Spacing of slings L_k [mm]:	50	250	300	350
Safe working load [tons]:	37.0	15.5	13.0	11.5

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Mounting shaft MW d115			
Dimensions [mm]:	Ø115 x 1800			
Serial No.:				
Weight [kg]:	168			
Manufacture year:				
Spacing of slings L_k [mm]:	50	250	300	350
Safe working load [tons]:	58.0	26.5	23.0	20.0

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Mounting shaft MW d140			
Dimensions [mm]:	Ø140 x 2000			
Serial No.:				
Weight [kg]:	269			
Manufacture year:				
Spacing of slings L_k [mm]:	50	250	300	350
Safe working load [tons]:	90.0	45.5	40.0	35.5

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Rope Strut PS 01	
Dimensions [mm]:	Ø121 x 1124-1804	
Serial No.:		
Weight [kg]:	73	
Manufacture year:		
Length l_{sb} [mm]:	1124	1804
Characteristic resistance F_{Rk} [kN]:	230	230

Peikko Deutschland GmbH
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COLIFT

Type:	Rope Strut PS 02	
Dimensions [mm]:	Ø121 x 824-1204	
Serial No.:		
Weight [kg]:	61	
Manufacture year:		
Length l_{sb} [mm]:	824	1204
Characteristic resistance F_{Rk} [kN]:	230	230

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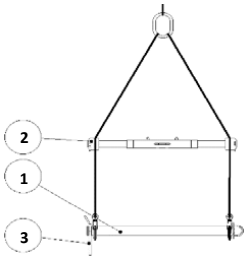
COLIFT

Type:	Rope Strut PS 03	
Dimensions [mm]:	Ø121 x 624-904	
Serial No.:		
Weight [kg]:	54	
Manufacture year:		
Length l_{sb} [mm]:	624	1804
Characteristic resistance F_{Rk} [kN]:	230	230



COLIFT Mounting System:
1- Mounting shaft
2- Rope strut
3- Slip Guard

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Slip Guard
Part of:	Mounting shaft MW d70
Serial No.:	
Weight [kg]:	5.9
Manufacture year:	

Peikko Deutschland GmbH
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Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Slip Guard
Part of:	Mounting shaft MW d90
Serial No.:	
Weight [kg]:	9.4
Manufacture year:	

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Slip Guard
Part of:	Mounting shaft MW d115
Serial No.:	
Weight [kg]:	15.3
Manufacture year:	

Peikko Deutschland GmbH
Brinker Weg 15, 34513 Waldeck, Germany
Tel. +49 5634 99470
Web: www.peikko.com

COLIFT

Type:	Slip Guard
Part of:	Mounting shaft MW d140
Serial No.:	
Weight [kg]:	22.3
Manufacture year:	

Note:
The entire labeling has certificate status and may not be modified or obscured.

Installation of the COLIFT Mounting System

The COLIFT Mounting System is intended for use on construction sites.

The following points must be taken into account before using the COLIFT Mounting System:

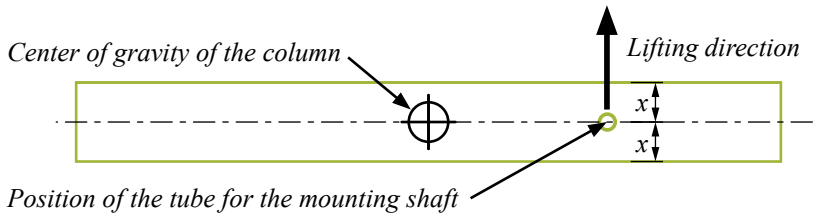
- All workers fulfill the requirements of the documentation and are familiar with it.
- The limitations of applications and restrictions are known.

Preparation at the precast factory

The proper diameter of the mounting shaft must be considered during the casting of the precast element. The center of gravity of the precast element must be considered before installing the tube in the formwork.

Note:
A minimum concrete strength of 40 MPa is to be used for precast elements when the COLIFT Mounting System is used.

Figure 39. Installation of the tube for the mounting shaft above the center of gravity.



Warning:
Do not use the COLIFT Mounting System when the precast element has an incompatible diameter of the tube for the mounting shaft or when the location of the tube does not guarantee that the element is properly balanced.

Installation on the building site

Visually inspect all of the parts of the mounting system before every use.

Installation of the COLIFT Mounting System is divided into three steps:

- Connecting the COLIFT to the crane.
- Attaching the mounting shaft to the precast element.
- Removing the mounting shaft from the precast element.

Note:
The COLIFT Mounting System must always be installed by trained personnel who are familiar with the requirements defined in this technical manual as well as the local lifting and safety regulations.

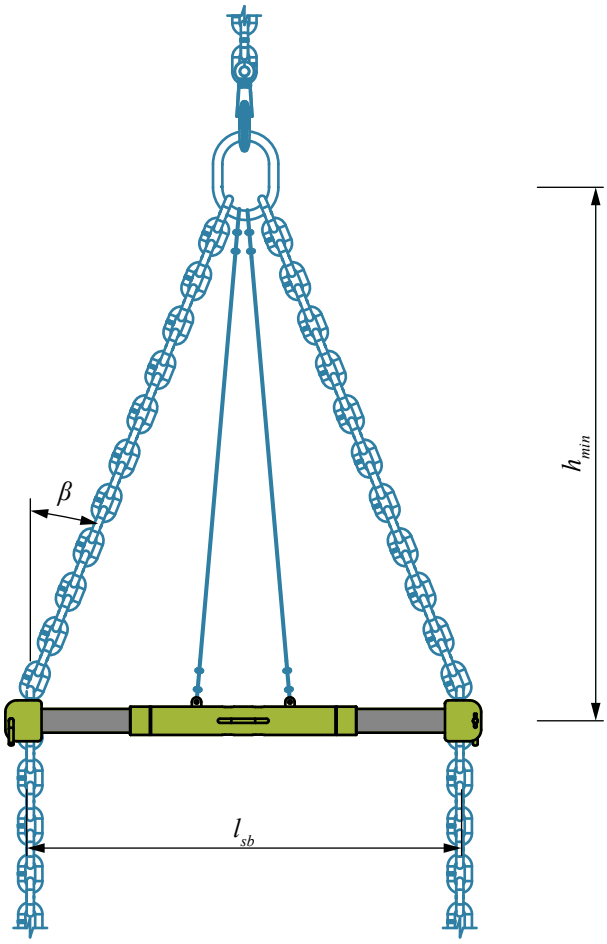
Warning:
Always select the correct diameter of mounting shaft and correct slings according to the weight and dimensions of the lifted item.

Connecting the COLIFT Mounting System to the crane

The correct lifting slings are selected based on the weight of the precast element and the intended lifting speed. The rope strut is hung on the lifting hook with additional securing wires or slings. The weight of the rope strut is not carried by the lifting slings used for the precast element but by additional wires or slings.

The slings are placed on the rope holders at the end of the rope strut and secured by safety bolts. Angle β must not be greater than 15°. The threaded rope holders are screwed out/in to adjust the distance between the slings and the precast element surface.

Figure 40. Maximum allowable angle β for slings 15°.



Type of spreader beam	Length of spreader beam [mm]	Minimum height to lifting ring h_{min} [mm]
PS 01	$l_{sb,min}$ = 1124	2100
	$l_{sb,max}$ = 1804	3370
PS 02	$l_{sb,min}$ = 824	1540
	$l_{sb,max}$ = 1204	2250
PS 03	$l_{sb,min}$ = 624	1165
	$l_{sb,max}$ = 904	1690

For safety purposes, the mounting shaft must be attached to the sling with steel wire (see Annex A). This ensures that the mounting shaft does not fall during removal from the precast element.

The slip guard is connected by a wire to the second leg of the sling and to the cord that enables remote unlocking. The cord must have sufficient length to ensure that the operator will be a safe distance from falling parts.

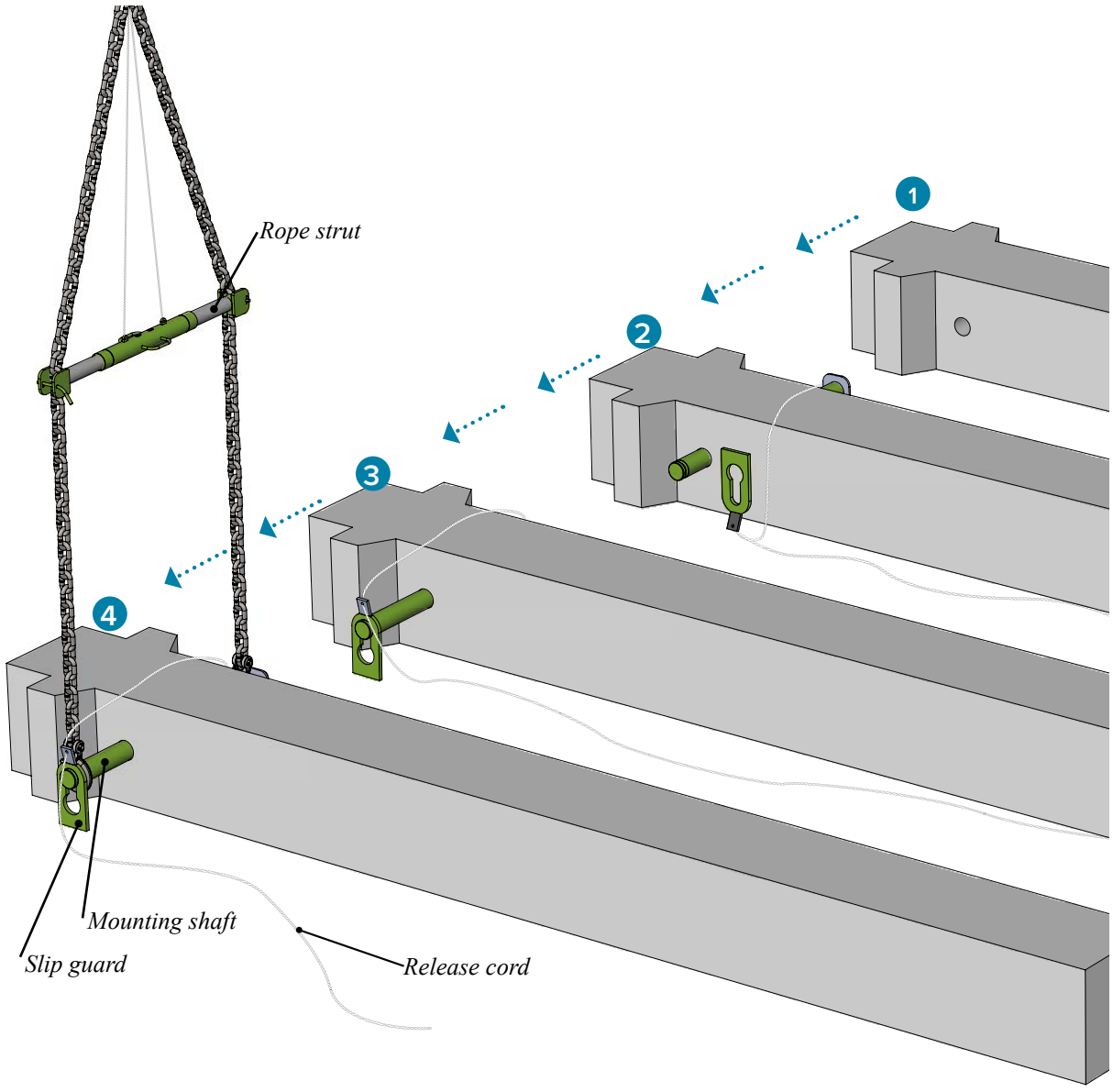
Attaching the COLIFT Mounting System to the precast element

The mounting shaft is installed in the precast element through the hole that is cast in the element at the precast factory. The precast element must be placed in the middle of the mounting shaft. After centering the element, the slings can be attached to the mounting shaft.

The same spacing between the precast element's face and slings from both sides will ensure an even distribution of weight from the lifted element to the slings. The slip guard is installed in the final position. Before starting lifting, all of the components must be visually inspected to ensure they are attached correctly to the slings and all of the components are also secured by additional wires.

Note:
The load must be always in the middle between the slings. The slings must have equal spacing to the precast element surface during lifting.

Figure 41. Installing the COLIFT mounting system into the precast element.

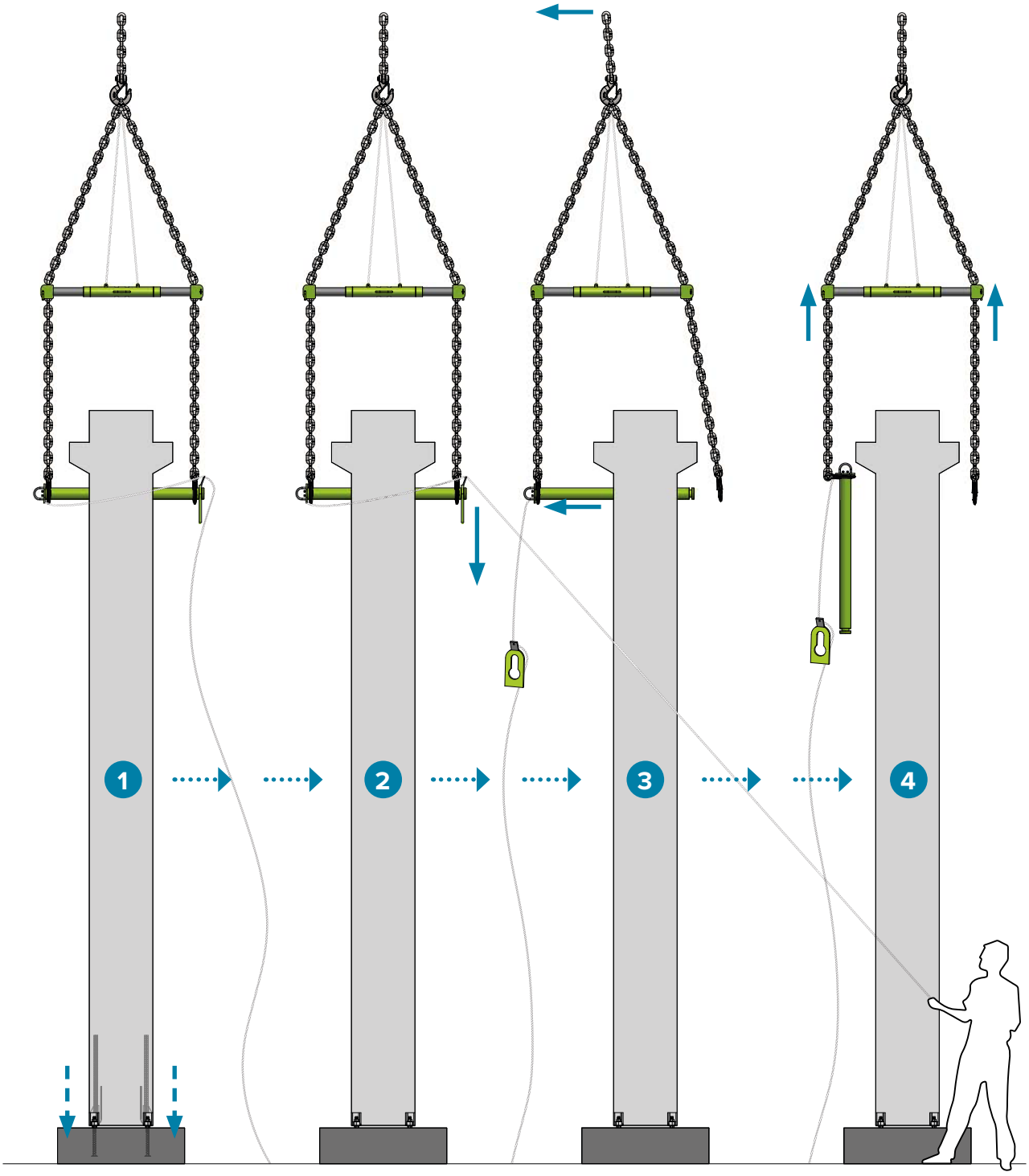


Removing the COLIFT Mounting System

Before removing the COLIFT Mounting System from the precast element, make sure that the element is properly connected in the final position.

To remove the mounting shaft, the operator must pull the connected cord to turn the slip guard upside-down and then remove it from shaft by pulling the cord from the column. The operator must have a sufficient length of cord to be out of range of accidental falling parts. After removing the slip guard, the mounting shaft can be pulled out by crane from the column. Make sure that mounting shaft is pulled out parallel to the direction of the tube in the column. Lateral pulling could exert additional forces on the column and damage the connection of the precast element.

Figure 42. Removing the COLIFT Mounting System from the precast element.



Revisions

Version: PEIKKO GROUP 10/2020. Revision: 003

- Updated to latest layout style.
- DoC Updated.

Version: PEIKKO GROUP 12/2017. Revision: 002*

- New cover design for 2018 added.

Resources

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Use our powerful software every day to make your work faster, easier and more reliable. Peikko design tools include design software, 3D components for modeling programs, installation instructions, technical manuals and product approvals of Peikko's products.

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