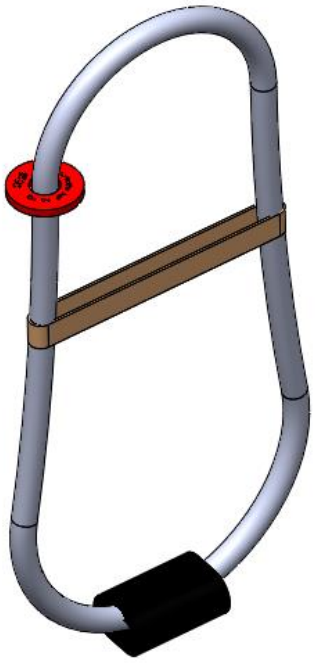
STARCON



STARCON

Cast-in Lifting Loop 0.8S to 25S

Lifting and handling systems for concrete elements.

User and design manual

1 Nomenclature

Symbol	Description	Unit
α	Diagonal pull angle between sling and axial direction	°
β	Tilting angle between element and axial direction	°
γ	Turning angle between element and horizontal direction	°
$°C$	Temperature Celsius	$°C$
σ_{ele}	Concrete strength of the element at the time of lifting	MPa
COG	Center of gravity	$[-]$
D	Diameter of Cast-in Lifting Loop	mm
F_S	Load in diagonal direction	N
F_Z	Load in axial direction	N
H	Length of Cast-in Lifting Loop	mm
h_{ef}	Embebment depth	mm
H_{mesh}	Width of reinforcement mesh	mm
L_{mesh}	Length of reinforcement mesh	mm
S	Load group symbol (STARCON)	$-$
S_Z	Distance between Cast-in Lifting Loop	mm
S_r	Minimum of wall thickness	mm
WLL	Working Load limit	$tonne$

Table 1 Nomenclature

Starcon Precast Concrete Design & Lifting Manual

2 Identification

Table 2 provides insight into the revision number of this document. It facilitates tracking changes and ensuring version control for accurate referencing and updates.

Version	Responsible	Creator	Date	Comment
A	CERTEX Denmark	JLJ	11-02-2025	New documentation

Table 2 Revision table

3 Introduction Starcon Cast-in Lifting Loop 0.8S to 25S

Read this instruction manual before using the spherical anchor. Incorrect use can cause injury or danger!
Safety is paramount when using lifting devices and equipment.
Only trained individuals should operate them as per national law.
Familiarize yourself with the instruction manual before using the Starcon lifting system to ensure safe operation.
Adhering to these guidelines reduces the risk of accidents.
Consult relevant national regulations as they may supersede these instructions.
All individuals involved with the equipment must read and understand this manual.
Always keep the manual with the product. Contact information is provided on the last page.
Contact Certex for assistance or clarification.

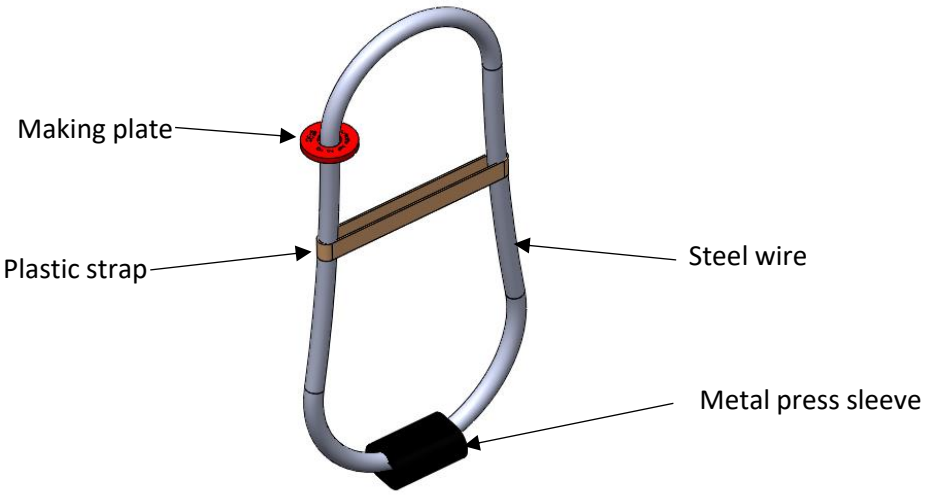
General concept of the use Cast-in Lifting Loops:

The Starcon Cast-in Lifting Loop consists of a galvanized steel wire rope formed into a loop by pressing the rope ends together using a metal press sleeve, shown on Figure 1.

To ensure proper placement of the Cast-in Lifting Loop in the finished concrete product, Cast-in Lifting Loop is always installed in the open top surface of the precast element. They can be oriented longitudinally or transversely, with the loop end containing the metal press sleeve positioned in the formwork. Once the concrete reaches a strength of at least 15 MPa, transport can commence at the factory. At the installation site, transport can only begin once the concrete has reached a strength of at least 25 MPa. Contact CERTEX DK for lower strength values. Transport can be initiated by attaching the respectably rated lifting/crane hook to the head of the Starcon Cast-in Lifting Loop.

The Starcon Cast-in Lifting Loop and systems use the guidelines described in the German guidelines VDI/BV-BS 6205 and Technical Report CEN/TR 15728, combined with EN 13155-2009. This ensures the highest level of safety when using our products.

Material: Galvanized steel wire (GSW)
Surface treatment: Hot dip galvanized (HDG) (Corrosion class: C3, ISO 12944).



Cast-in Lifting Loop
Figure 1 Starcon lifting system.

4 Safety instructions before use

- Starcon Cast-in Lifting Loops that are exposed to corrosion, or damaged must not be used.
- The Starcon Cast-in Lifting Loops are not subjected to bending when storing the precast elements.
- The Starcon Cast-in Lifting Loop can be connected directly to a lifting hook or crank hook with the same weight rating.
- The Starcon lifting and handling system must not be used to lift more than the specified load.
- The Starcon lifting and handling system must not be used for personnel lifting.
- The Starcon products are designed for one-time lifting only.
- The Starcon lifting system must only be used by skilled, trained employees.
- A lifting accessory used with the lifting eye must be correctly marked and approved for lifting.
- Before use, check the weather conditions. Never operate the system if there is a likelihood of lightning in the area and avoid use in extreme weather conditions such as storms, heavy rain, or snowing.
- The concrete safety factor assumes a factory production control complying with EN13369. If these requirements are not fulfilled, a safety factor of $\gamma = 2{,}5$ shall be used.
- All relevant concrete failure modes shall be verified by the pre casting manufacturer of the concrete elements; the different failure modes and verification methods are specified in EN13155 (Annex H).

5 Advantages of the Starcon system.

The Starcon system offers Cast-in Lifting Loops. These Cast-in Lifting Loops are used to safely lift and secure precast concrete elements during transportation and installation.

The Starcon system is available in load groups 0.8S to 25S. It is typically embedded in the concrete element during the prefabrication stage and provides a secure lifting point for cranes or hoists.

The system's efficiency has been proven through many years of successful use and numerous laboratory tests. Components are regularly tested during production and are clearly marked with the maximum load. The Cast-in Lifting Loops are individually tested and come with a traceability batch code.

5.1 Note

The information in this manual is for guidance only, and the use of the manual does not in any way exempt the manufacturer from ensuring that the chosen lifting system is suitable for the intended purpose. The information and data listed in this manual only refer to original Starcon products supplied by *CERTEX DANMARK A/S.*

6 Using the Starcon system

The Starcon system comprises a wide range of Cast-in Lifting Loops in a load group from 0.8S to 25S per Cast-in Lifting Loop with various lengths. The principle for using the system is the same for the entire range.

6.1 Starcon Cast-in Lifting Loop

Starcon Cast-in Lifting Loops are devices used embedded in the concrete element during the prefabrication stage and provide a secure lifting point for cranes or hoists. Typically made of steel wire, they come in sizes to suit different lifting capacities and applications. Starcon Cast-in Lifting Loops undergo rigorous testing to ensure their safety. Each loop is marked with its article number, identification number, and maximum working load, along with a clear indication of a 3:1 safety factor. Additionally, a certificate is issued with every delivery for complete documentation.
An additional safety measure is that the Starcon system is available in several non-compatible load groups. It is not possible to incorrectly assemble components from different load groups, thus avoiding failure of the lifting arrangement.

7 Safety factors for Cast-in Lifting Loop systems:

For the calculations of the Cast-in Lifting Loop system, the following safety factors shown Table 3 have been applied to ensure its reliability and safety. These factors, in accordance with the recommendation of EN13155, have been carefully selected as guidelines to ensure optimal safety during the system's operation.

Failure safety factors	
Steel failure of Cast-in Lifting Loop	$SF_{Steel} = 3$
Concrete pull out failure	$SF_{concrete} = 2{,}5$
Failure in the lifting hook	$SF_{Link} = 4$

Table 3 Failure safety factors

8 General information

This section provides essential details on the Starcon Cast-in Lifting Loops, offering clarity and guidance for safe and efficient usage.

8.1 Marking on the Cast-in Lifting Loop

Each Cast-in Lifting Loop is clearly labeled with its load capacity, length, and manufacturer's identification, ensuring easy and secure identification of the systems, even post-installation show on Figure 2.

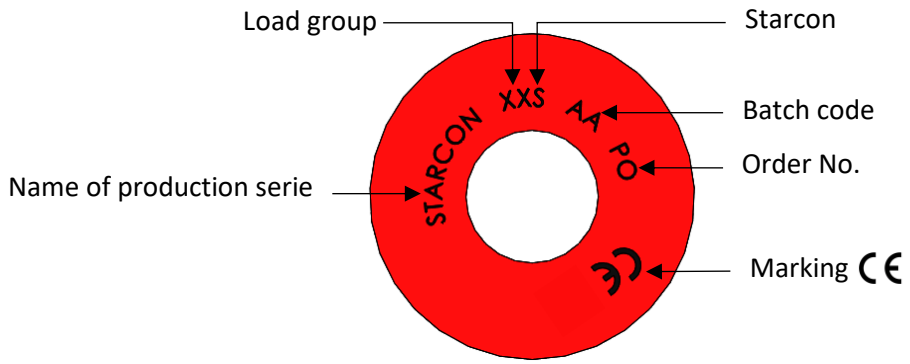


Figure 2 Marking plate attached to the Cast-in Lifting Loop.

8.2 Guidelines for Cast-in Lifting Loop selection

When selecting Cast-in Lifting Loop, it's essential to consider various factors to ensure safety and effectiveness. The tables provided contain crucial information such as maximum load capacities, edge distances, and installation values for different Cast-in Lifting Loop types. Key points to consider:

- Weight of the precast element.
- The number of Cast-in Lifting Loop.
- How the Cast-in Lifting Loops are arranged.
- The load-bearing capacity of the Cast-in Lifting Loop.
- Sling handling angle.
- The diagonal pulls properties of the Cast-in Lifting Loop.
- Environmental impact on the use.
- Dynamic factor.

8.3 Guidelines for installation

For the Starcon Cast-in Lifting Loops to be appropriately installed, it is imperative to ensure compliance with specific technical criteria and prerequisites:

- Adherence to load capacity specifications of the Cast-in Lifting Loop.
- Maintaining appropriate edge spacing.
- Ensuring the concrete grade is suitable.
- Verifying alignment with the load direction.
- Additional reinforcement requirements.

8.4 Guideline for load capacity

Load capacity of a Cast-in Lifting Loop relies on several factors:

- The strength of the concrete at the moment of lifting, as determined by a cube-test with dimensions of 15 × 15 × 15 cm.
- The length of the Cast-in Lifting Loop.
- The spacing between the Cast-in Lifting Loop and the edges, both axially and along the edge.
- The direction of the applied load.
- The arrangement of reinforcement within the concrete structure.

9 Design method

This section covers the design method for lifting operations as well as illustrations of various lifting techniques. It describes when the different types of lifts occur, including axial lifting, diagonal lifting, tilting, and rotation of elements. Additionally, the casting process is discussed, including the transfer of load to the concrete and the importance of correctly placing formwork and Cast-in Lifting Loops during casting to avoid errors and risks. Warnings are given regarding the correct size of formwork and the risk of errors with incorrect sizes, which can lead to potentially dangerous situations.

9.1 Illustration of lifting methods

Figure 3 shows a description of when the different types of lifts occur:

- **Axial pull**: occurs in the same direction as the pulling force and happens within the range of $0° \leq \alpha \leq 10°$.
- **Diagonal pull:** occurs when slings/chains are angled between $10° \leq \alpha \leq 30°$ relative to the lift.
- **Tilting:** occurs when the object needs to rotate around its COG on the long side of the element.
- **Turning**: occurs when the object needs to rotate around its COG on the long side of the element

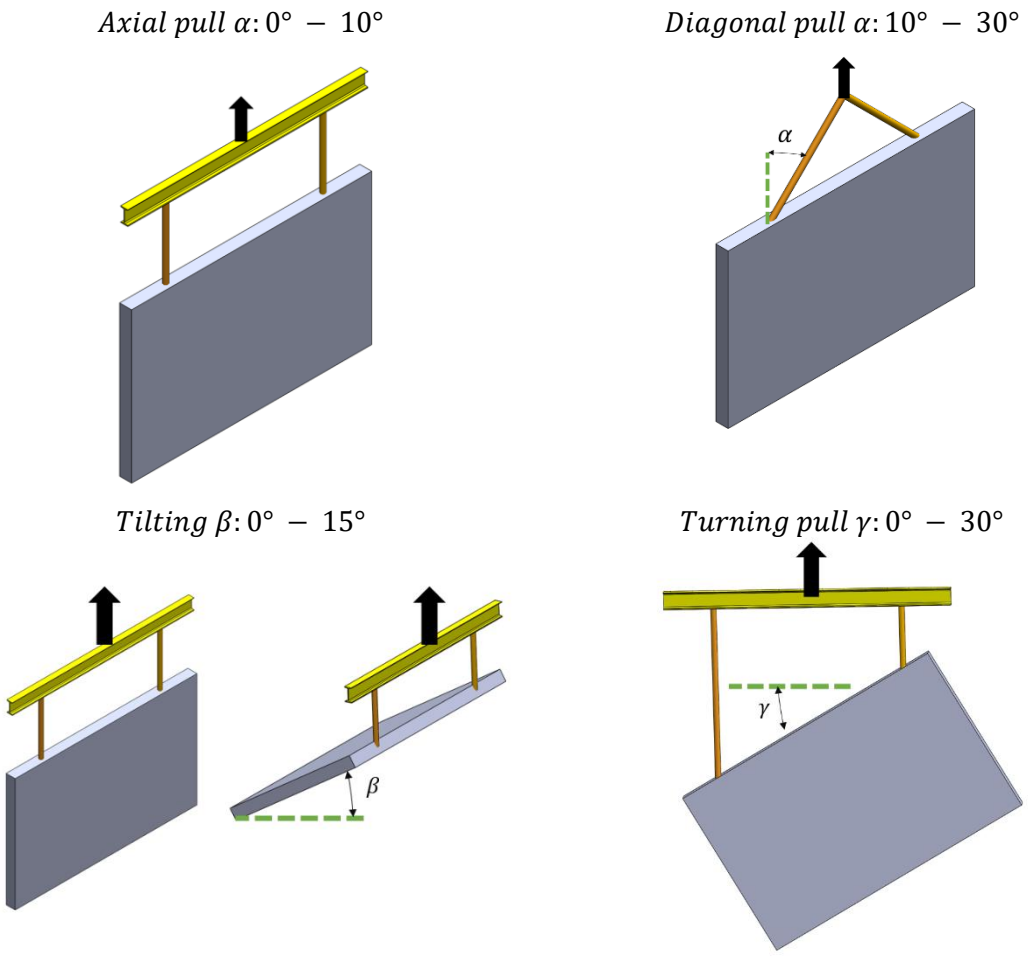


Figure 3 Lifting methods.

9.2 Load Transfer with Cast-in Lifting Loop Casting

Loads are transferred to the concrete easily due to the large contact area which minimizes the risk of stress concentration at one point as shown on Figure 4. However, with very thin elements, these concentrated loads can cause lateral spalling because of the strong pulling forces. The concrete must withstand a minimum resistance of 2.5 units before experiencing structural failure.

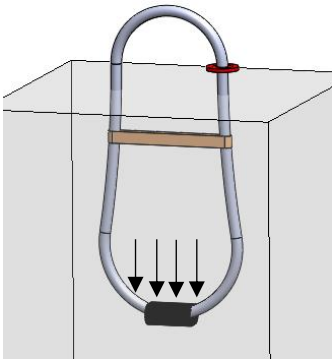


Figure 4 Load transfer.

9.2.1 Correct placement Cast-in Lifting Loop during casting.

If Cast-in Lifting Loops are installed on the open side of a formwork as shown in Figure 5, they must be securely fastened to the reinforcement mesh to ensure the required embedment depth.
When installing Cast-in Lifting Loops on a closed side of the formwork, a slot is necessary as show in Figure 6. After installation, the slot must be closed to prevent the Cast-in Lifting Loops from shifting. To ensure the Cast-in Lifting Loops maintain their position during connection and compression, they must be fixed to the reinforcing bar. Additional steel bars might be necessary to achieve the correct placement. Importantly, these steel bars should not be placed directly on the Cast-in Lifting Loops. Always ensure the Cast-in Lifting Loop size matches the identified appropriate size.

Caution: Avoid welding or other strong thermal influences on the Cast-in Lifting Loops.

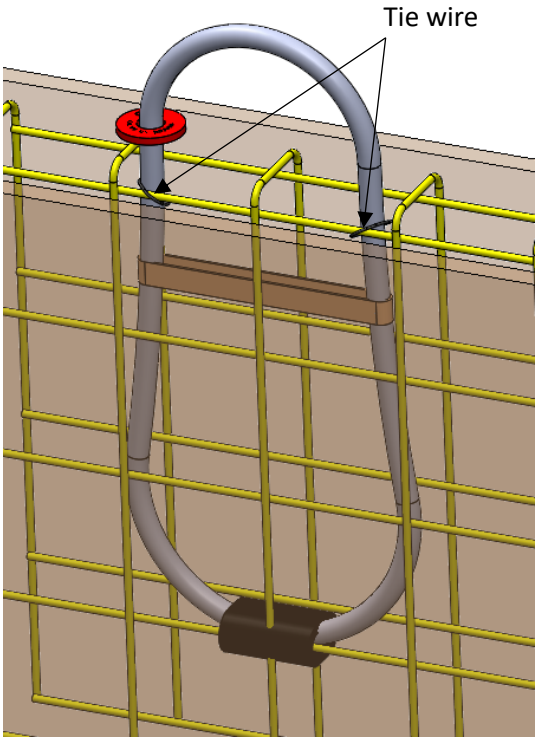


Figure 5 The open side of a formwork.

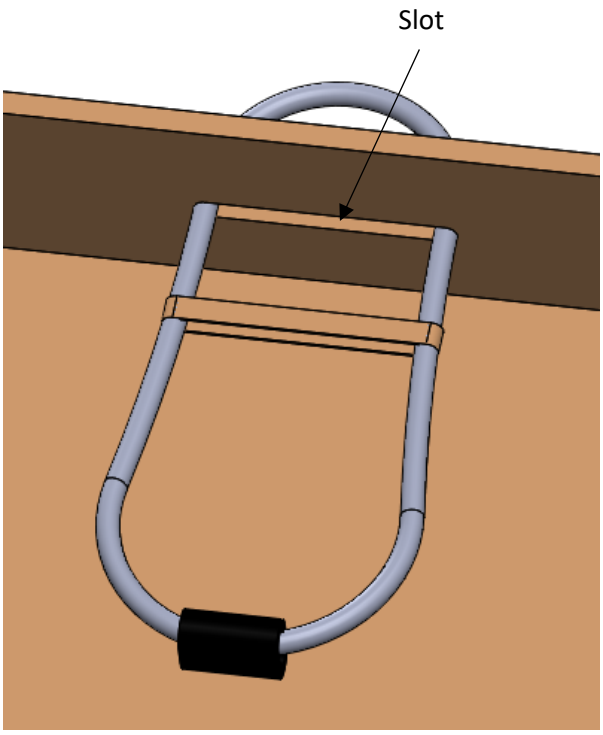


Figure 6 The closed side of a formwork.

9.2.2 Correct hook/shackle for Cast-in Lifting Loop.

As shown in Figure 7, using a hook that is too small or has sharp edges will reduce the lifespan of the Cast-in Lifting Loop. Therefore, the transition radius of the hook used must be greater than or equal to 2 times the diameter of the wire rope. If using a shackle, the pin diameter must be greater than or equal to 5 times the diameter of the wire rope.

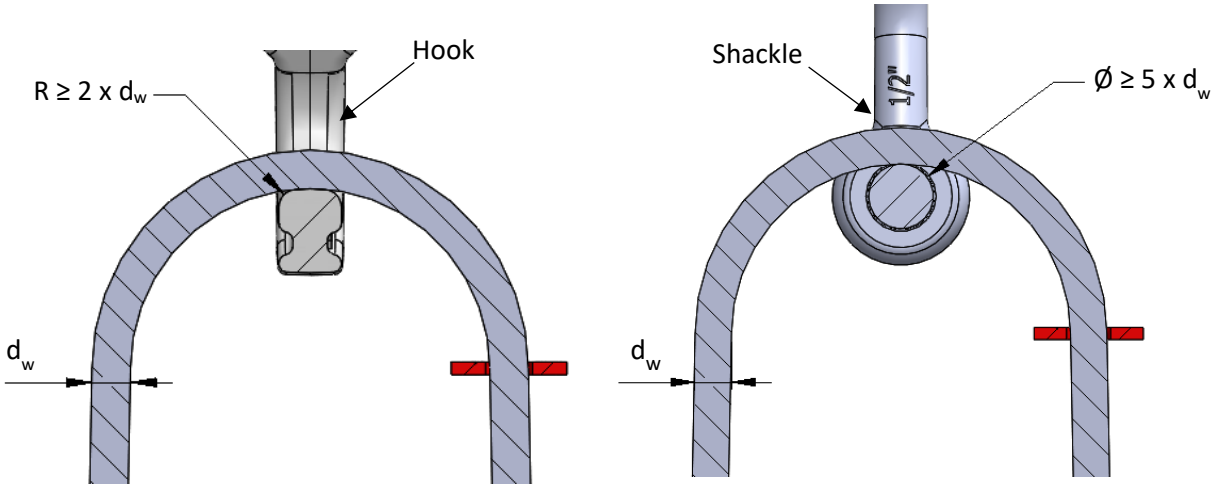


Figure 7 Correct hook/shackle for Cast-in Lifting Loop.

9.3 Calculate load cases of removing from formwork and transport.

To ensure proper Cast-in Lifting Loop, each Cast-in Lifting Loop must consider several factors: weight of the element, adhesion to the mold, shock load, sling angle, and the number and position of the Cast-in Lifting Loops.

When lifting a concrete unit from a form, consider the adhesion factor between the concrete and the form. For complex shapes, adhesion can increase Cast-in Lifting Loop load, especially when concrete strength is at its lowest. Calculate the total weight of the elements in tons, including all equipment and accessories attached to the device.

9.3.1 Load case removing the formwork and transport of the element.

The tension force F_A in each the anchor:

1. **Load case when removing the element from the formwork:** $\boldsymbol{F_A = \frac{(F_Z + S * Pa) * F_s}{n}}$

2. **Load Case during transport lifting of the element.** $\boldsymbol{F_A = \frac{F_z * F_s * \varphi_{dyn}}{n}}$

Where,

- F_Z: Weight of the concrete element in tonne
- S: Surface area of the mould in contact with the fresh concrete (m^2)
- Pa: Adhesion factor between the form and concrete (See Table 5)
- F_S: Sling angle factor (See Table 4)
- n: Number of load-bearing anchors in the element.
- φ_{dyn}: Dynamic factor of the element under transport

9.3.2 Sling angle factor (F_S)

The illustration in Figure 8 provides a visual explanation of how to measure the sling angle. Referencing Table 4, you can find the sling factor corresponding to the measured angle.

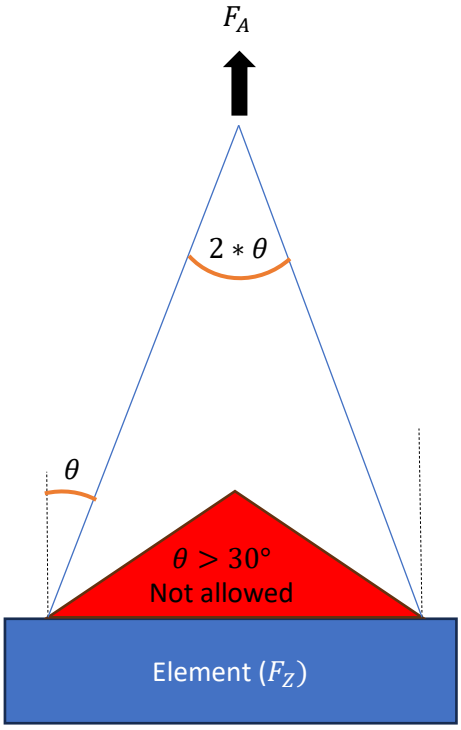


Figure 8 Sling angle factor illustration.

Sling angle degree (θ)	Sling factor (F_S)
0°	1
10°	1,02
20°	1,07
30°	1,16

Table 4 Sling angle factor

9.3.3 Adhesion to formwork factors (Pa)

Adhesion factor between the pouring box and concrete is shown in Table 5.

Mould type	Adhesion($\frac{tonnes}{m^2}$)
Lubricated steel form work	$Pa = 0{,}1$
Varnished timber formwork	$Pa = 0{,}2$
Rough formwork	$Pa = 0{,}3$

Table 5 Adhesion factor to formwork

9.3.4 Dynamic factors (φ_{dyn})

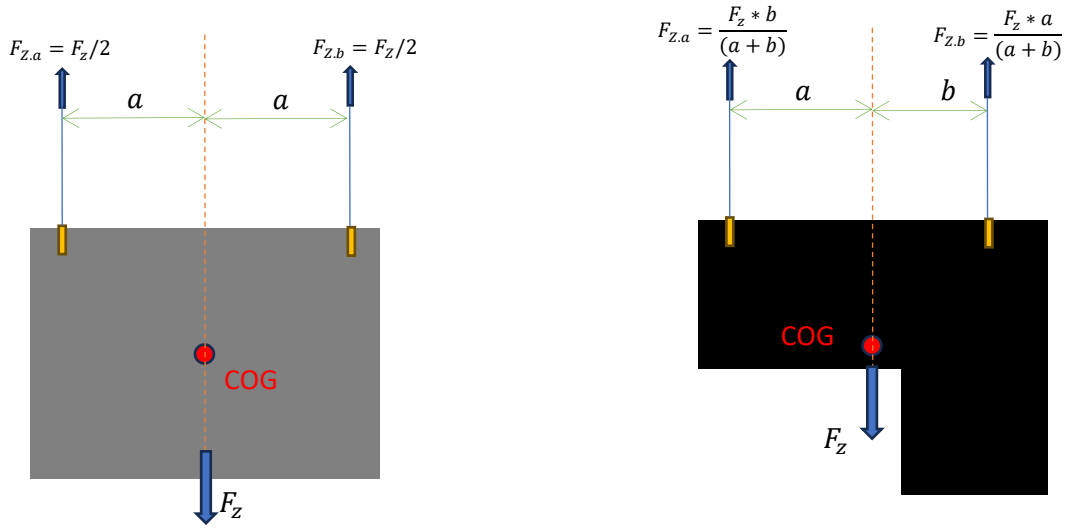
If the concrete unit is handled or transported by mechanical equipment, it is exposed to shock/impact from gripping and transport over uneven ground. This factor can increase the anchor load several times its own weight. The correct load can be determined by adding the dynamic factor φ_{dyn} shown in Table 6

Lifting condition	**Dynamic load factor**
Static crane, rope speed <90 m/min	1
Static crane, rope speed >90 m/min	1,3
Lift and transport with mobile crane on smooth ground	1,75
Lift and transport with mobile crane on uneven ground	2
Transport with forklift or excavator over uneven ground	3

Table 6 Dynamic factor

9.3.5 The number and position of lifting points

The effective load carried by each anchor is typically calculated by dividing the total weight by the number of load-bearing anchors. However, this calculation assumes equal load distribution among all anchors. If the load distribution is unequal, the load to be carried by each anchor should be determined using static calculations as shown in Figure 9.



Symmetric

Non-symmetric

Figure 9 Calculation symmetric and non-symmetric loading element.

10 Recommend support for Cast-in Lifting Loop in concrete walls

Figure 10 shows how to correctly position the reinforcement mesh inside the element. It highlights the importance of placing edge reinforcement closely around the anchorage points for optimal strength. Additionally, the Cast-in Lifting Loops are installed with the proper embedment depth to ensure safe and effective lifting operations.

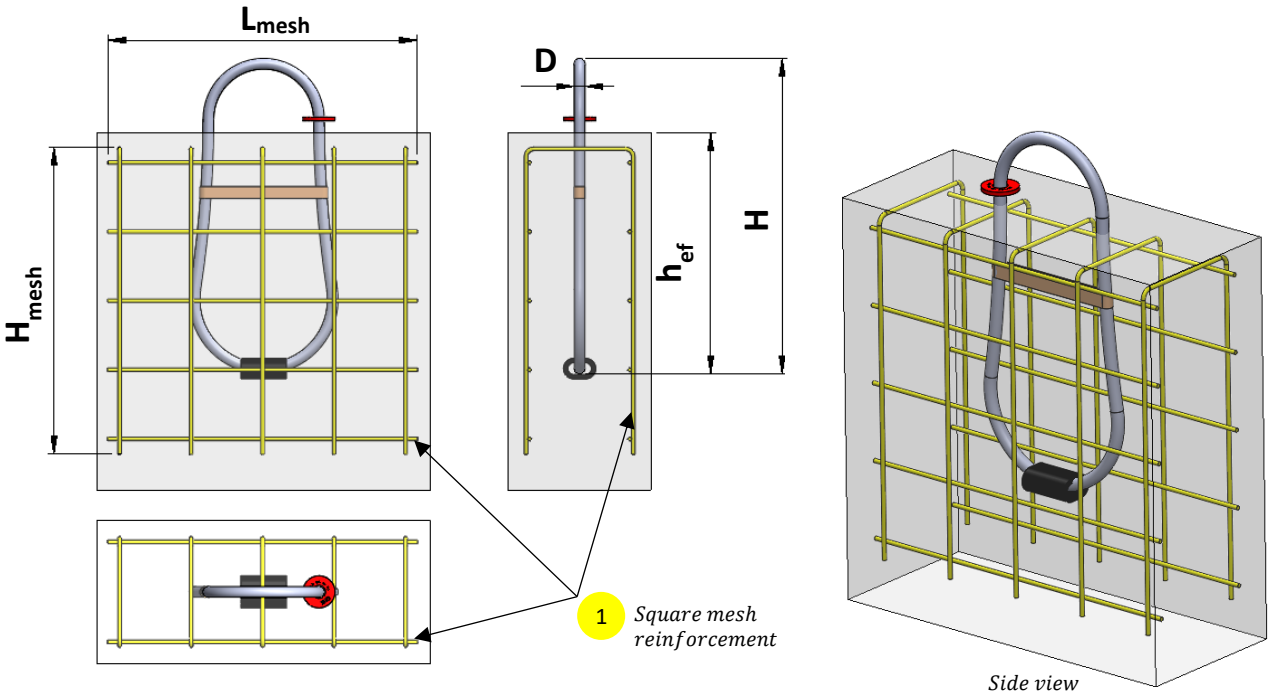


Figure 10 Reinforcement in the concrete wall.

Table 7 provides a detailed description of the correct placement of mesh and reinforcement within the concrete for each anchor type.

Load group	① Square mesh reinforcement ①			Dia. of Cast-in Lifting Loop D ②	Length of Cast-in Lifting Loop H ③	Embedment depth h_{ef} ③
	$B500A$ mm^2/m	L_{mesh} mm	H_{mesh} mm	mm	mm	mm
$0.8S$	$Q188\ A$	450	300	Ø6	200	140
$1.2S$		500	350	Ø7	225	160
$1.6S$		550	350	Ø8	245	170
$2S$		650	450	Ø9	265	190
$2.5S$		700	500	Ø10	285	220
$4S$		800	550	Ø12	345	250
$5.2S$		850	550	Ø14	390	270
$6.3S$		950	600	Ø16	415	290
$8S$	$Q257\ A$	1050	700	Ø18	460	330
$10S$		1200	800	Ø20	510	370
$12.5S$		1300	900	Ø22	570	420
$16S$		1500	1000	Ø26	640	480
$20S$	$Q335\ A$	1700	1150	Ø28	715	550
$25S$		1950	1300	Ø32	800	630

① To achieve maximum working load on minimum beam thickness with a safety factor of 2.5 times, the mesh or some form of reinforcement must be bent into a U-shape with at least equal cross-section.
② Cast-in Lifting Loop diameter D is a standard value and may vary depending on the construction of the Cast-in Lifting Loop.
③ Dimensions H and h_{ef} are standard values and may vary depending on the location of the fixing strap

Disclaimer: The table serves solely as a guide. For accurate guidance and calculations, please contact www.Certex.dk.

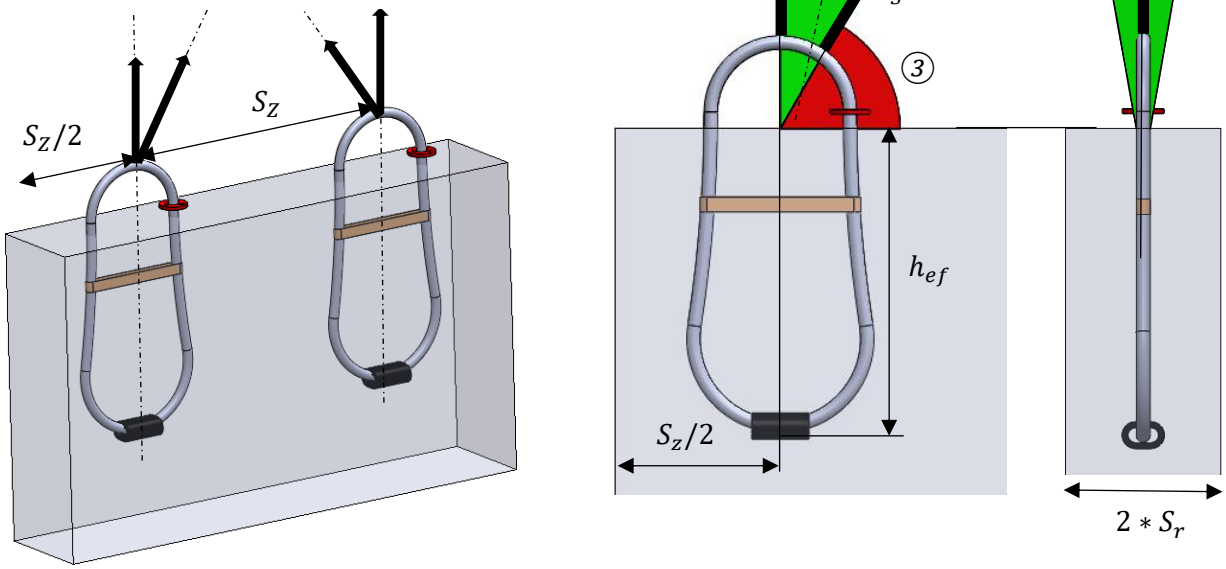
Table 7 Reinforcement data for elements

11 Starcon Cast-in Lifting Loops for beams and walls – requires only standard reinforcement.

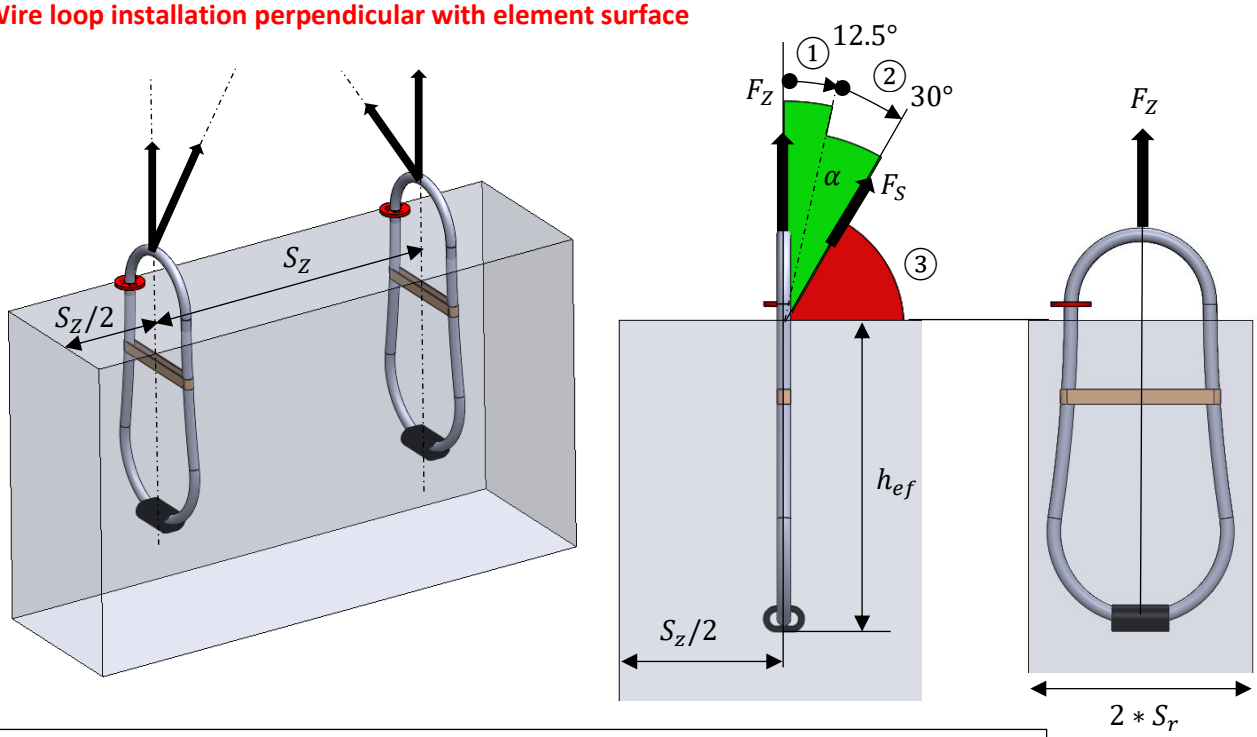
This section explains how much weight Cast-in Lifting Loops in beams and walls can support, using standard reinforcement requirements shown on Figure 11. It's designed to help understand how much weight they can handle.

Reinforcement requirements see Table 7
① Reinforcement mesh
③ *Length and embedment depth of wire loops, if* $\alpha < 30°$

Wire loop installation parallel with element surface



Wire loop installation perpendicular with element surface



(1) Diagonal tension at 0° ≤ α ≤ 30° without reinforcement is only allowed if:
- Concrete compressive strength (σ_{ele}) is ≥ 15 N/mm² and 3 times the minimum wall thickness,
- Concrete compressive strength (σ_{ele}) is ≥ 25 N/mm² and 2.5 times the minimum wall thickness,

(2) For concrete strength with σ_{ele} ≥ 23 N/mm², the Safety Factor (F_S) equals the Load Factor (F_Z).
(3) Diagonal tension with cable/chain spreading α > 30° is not permitted.

Figure 11 Standard reinforcement requirements.

Lifting a Wall Element

Table 8 provides information to assist in determining the appropriate anchors for lifting concrete elements under various loading conditions. The table considers both diagonal tensions up to 30°(α) and transverse tension up to 10° (γ).

The following boundary conditions are utilized for the calculation:

- **1 anchor** symmetrically positioned to the center of gravity.
- **Dynamic factor** (site handling) $\Gamma_{dyn} = 1.3$
- **Formwork adhesion** is not considered.

Load group	Min. wall thickness $2 * S_r$ mm				Load capacity [Ton] with concrete strength σ_{ele}				Min. distance between anchors. S_z mm
	Installation parallel		Installation perpendicular		Axial Load $\alpha < 12.5°$	Diagonal Load $\alpha < 30°$	Axial Load $\alpha < 12.5°$	Diagonal Load $\alpha < 30°$	
	$15\ N/mm^2$	$25\ N/mm^2$	$15\ N/mm^2$	$25\ N/mm^2$	$15\ N/mm^2$	$15\ N/mm^2$	$25\ N/mm^2$	$25\ N/mm^2$	
$0.8S$	70	50	135	135	0,63	0,63	0,63	0,63	550
$1.2S$	90	60	140	140	0,94	0,93	0,94	0,94	620
$1.6S$	120	80	170	170	1,04	0,93	1,26	1,08	700
$2S$	150	100	180	180	1,25	1,01	1,57	1,3	850
$2.5S$	160	110	180	180	1,66	1,46	1,96	1,89	900
$4S$	220	150	220	220	2,58	2,09	3,14	2,7	1000
$5.2S$	290	200	300	220	3,41	2,76	4,08	3,57	1050
$6.3S$	320	220	350	280	4,87	4	4,95	4,95	1150
$8S$	400	280	400	280	5,92	4,8	6,28	6,19	1300
$10S$	440	310	440	310	7,85	6,41	7,85	7,85	1450
$12.5S$	560	390	550	400	9,81	9,81	9,81	9,81	1600
$16S$	620	430	620	430	11,73	9,81	12,56	12,26	1850
$20S$	680	480	680	480	13,97	11,32	15,7	14,62	2100
$25S$	750	530	750	530	18,35	17,9	19,62	19,62	2400
σ_{ele} Stands for concrete element strength at time of lifting.									
Disclaimer: The table serves solely as a guideline. For accurate guidance and calculations, please contact www.Certex.dk.									

Table 8 Standard reinforcement requirements.

12 General safety information when using the Starcon system.

General safety information when using the Starcon system.



- Ensure that the marking on the Starcon lifting unit always points in the direction of pull during lifting.
- The lifting machine must be approved to lift at least the maximum applied load + the weight of the Starcon lifting and handling system + any hoisting accessories.
- Lifting movements must be smooth; no sudden or abrupt changes in direction with the lifting machine should be made during a lifting operation, as this can lead to pendulum movements of the load, causing crushing hazards or dropping of the load.
- Where there is a risk of crushing between the load and objects, building parts, machinery, etc., the operator must not be in the danger zone.
- The operator's work area must be flat and free of obstacles that could pose a tripping hazard.
- When depositing the load, the operator must ensure this accepts on a flat and stable surface.
- Only when the load has been deposited and secured the Starcon lifting unit is completely unloaded may it be released and lifted free.
- Before each lift, ensure that both the Starcon lifting unit and the Starcon lifting anchor embedded in the concrete product are free from dirt that could reduce grip.
- Never insert arms or feet under a concrete product.
- Concrete products must never be dragged, only lifted.
- No modifications to the Starcon lifting and handling system may be made without written permission from the manufacturer.
- The operator must always ensure that the connection between the lifting machine and/or any hoisting accessories and the Starcon lifting unit is correct and secured against unintentional detachment.
- The operator must always ensure that the connection between the Starcon lifting unit and the Starcon lifting anchor is correct and secured against unintentional detachment.
- Keep a safe distance and never walk under a suspended load.
- Use gloves, safety shoes and other PPE when handling.
- Never use a Starcon lifting and handling system that has visible defects such as wear, deformations, rust damage, etc.
- Most anchors are designed to be easily handled during installation without the need for lifting equipment. However, some anchors may weigh more and should be handled using lifting equipment. Please refer to the order list for the accurate weight of each product.

12.1 Personal Protection

Always use gloves, a safety helmet, and safety shoes as a minimum requirement when operating the equipment. Keep hands and other body parts away from the lifting stand, lifting accessories, and the load during use.



12.2 Preparation of the product before use

12.2.1 Transport and Storage

Anchors should be transported and stored safely to prevent risks to personnel and nearby objects.

12.2.2 Unpacking

Remove the pallet and packaging protecting the anchors.
Cut the safety straps. The person unpacking should wear gloves, safety shoes, and safety glasses when cutting the straps.

12.2.3 Safe Disposal of Packaging Materials

All packaging used by Certex Denmark can be reused. Pallets and all wooden packaging can be reused or recycled.
All plastic, cardboard, and paper materials should be sent to the local recycling center.
If there are no local recycling facilities, the packaging should be returned to Certex Denmark for disposal at the customer's expense.

12.2.4 Preparatory Work Before Installation

After unpacking, visually inspect the anchors for any damage.

12.2.5 Installation and Assembly

The anchors are delivered ready for use.

12.2.6 Storage and Protection Between Periods of Normal Use

Inspect the anchors before each use and lift. Never use anchors or lifting accessories with visible defects such as wear, deformations, corrosion damage, etc.
Always store the lifting bar indoors, in a dry and ventilated area.

12.2.7 Provision of Information (Users, Operators, Service Experts)

All operators or individuals within the danger zone must receive information on operating the anchors and must be trained by the supervisor, familiarizing themselves with the product and its use before lifting operations commence.
Operators must be trained in the use of the Starcon lifting equipment and all its functions and positioned to have a clear view of the entire lifting operation.

12.2.8 Placement of Instruction

All user manuals should always be stored together with the Starcon lifting equipment.

13 Maintenance and inspection

- All maintenance must be performed when the Starcon lifting unit is unloaded.
- The Starcon lifting unit should be inspected and maintained to ensure parts remains in proper condition during use.
- After each use, the Starcon lifting unit should be cleaned and inspected for any faults or deficiencies.
- If any faults are found, they must be rectified, or the Starcon lifting parts should be discarded.
- The Starcon lifting parts should always be stored in a dry and well-ventilated area.
- Any damaged, corroded, or worn-out Starcon lifting parts must be immediately taken out of service and marked not be used again.
- Equipment from Starcon should undergo at least one annual inspection by a qualified skilled person to inspect lifting equipment and cranes.

13.1 Maintenance Schedule

• Only original spare parts may be used, and they must be replaced by a trained individual.
• The annual inspection must be carried out by a skilled person who has received the necessary training and certification for lifting equipment.
• All services must be documented, and the data must be stored.
• If there are any visual defects or if the labeling is not present on the lifting stand, the lifting stand must be marked as "out of service".

B Before use

A After use

M Monthly, or a maximum of 200 hours of usage.

Y Annually, or after a maximum of 2400 hours of use.

Inspection	B	A	M	Y
Perform a visual inspection to check for signs of overload, deformation, damage, wear, and corrosion.	X	X	X	X
The equipment must undergo inspection.			X	
Ensure that the equipment is clear and legibly labeled.	X			X
Inspection should be carried out by a qualified individual with a report prepared.				X

Table 9 Maintenance schedule

14 Disposal / Recycling

This section describes the end of use for the product.

- End of use / Disposal The lifting points shall be sorted / scrapped as general steel scrap.
- The Starcon lifting and handling system should be sorted and disposed of according to appropriate material categories, including metal, plastic, etc.
- Certex can assist you with disposal if required.

15 Product data of Cast-in Lifting Loop

Figure 12 shows a measurement sketch for the Cast-in Lifting Loop with labels for the respective dimensions.

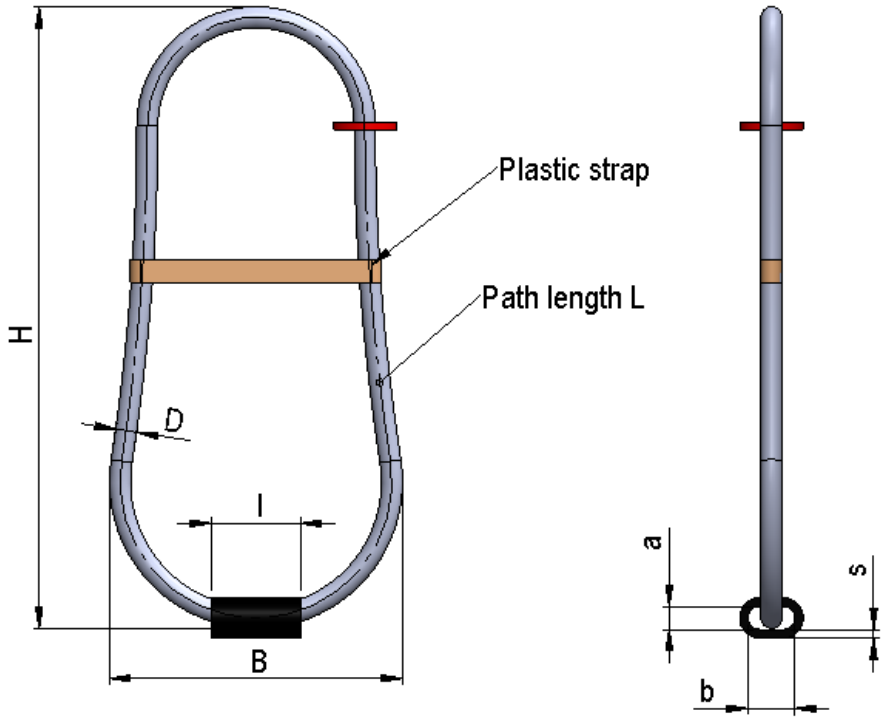


Figure 12 Cast-in Lifting Loop.

15.1 Technical data

Table 10 shows the dimensions of the various types of Cast-in Lifting Loop.

Load group	Wire dia. D mm	Path length L mm	Wire length H mm	Wire width B mm	Sleeve length l mm	Sleeve height a mm	Sleeve width b mm	Sleeve thickness s mm
$0.8S$	6	540	200	85	25.2	7.2	14.4	2.7
$1.2S$	7	600	225	90	30	7.8	15.6	2.9
$1.6S$	8	650	245	100	34	8.8	17.6	3.3
$2S$	9	720	265	125	38	9.9	19.8	3.7
$2.5S$	10	750	285	145	42	10.9	21.8	4.1
$4S$	12	900	345	170	50	13.2	26.4	4.9
$5.2S$	14	1040	390	195	59	15.3	30.6	5.8
$6.3S$	16	1100	415	210	67	17.5	35	6.7
$8S$	18	1220	460	225	76	19.6	39.2	7.8
$10S$	20	1360	510	255	84	21.7	43.4	8.4
$12.5S$	22	1510	570	295	92	24.3	48.6	9.2
$16S$	26	1700	640	320	109	28.5	57	10.9
$20S$	28	1900	715	355	118	31	62	11.7
$25S$	32	2120	800	400	118	31	62	11.7

Table 10 Cast-in Lifting Loop dimension.

16 EC – Declaration of Conformity of the Machinery

This certificate meets the requirements of the Directive 2006/42/EC Annex II.

Manufacturer and responsible for compiling the technical documentation:

Company: **CERTEX Danmark A/S**
Address: **Trekanten 6-8**
6500 Vojens
Denmark
Tel. No.: **+45 74 54 14 37**
E-mail: **info@certex.dk**

The undersigned hereby declares that the below specified tool comply with the current safety and health rules and legislation within the European Union. If any changes are made on the tool without approval from the manufacturer, this Declaration no longer applies.

Description:	**Cast-in Lifting Loop**
Drawing No.:	**XXXXXXXXXXXXX**
Serial No.:	**XXXXXX**
Lifting Capacity:	**WLL pr unit**
Own Weight:	**Kg pr unit**

Is made in accordance with the following EC-directive;
2006/42/EC

The following standards have been used:
EN 13155+A2 : 2009

Date:

For CERTEX Danmark A/S

Our industries, products & services

At CERTEX Denmark, we are a secure and reliable total supplier and partner within lifting equipment. Below is an overview of the industries we service, our product range, and the services we offer."

"

Based on many years of experience & know-how within lifting, load tests & engineering, CERTEX Denmark is your reliable partner & supplier of steel wire, lifting applications & related services."

CERTEX | Lifting Solutions Group
Axel Johnson International

Nyvang 16, 2. tv
DK-5500 Middelfart
Tlf.: +45 74 54 14 37

Virkelyst 17b
DK-9400 Nørresundby
Tlf.: +45 98 13 18 88

Jernholmen 43-47D
DK-2650 Hvidovre
Tlf.: +45 36 77 40 30

Olievej 4
DK-6700 Esbjerg
Tlf.: +45 75 13 08 44

CERTEX Danmark A/S
Trekanten 6-8
DK-6500 Vojens
Tlf.: +45 74 54 14 37
E-mail: info@certex.dk
www.certex.dk