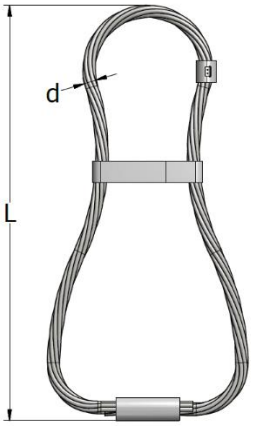
CAST-IN LIFTING LOOPS – TIL

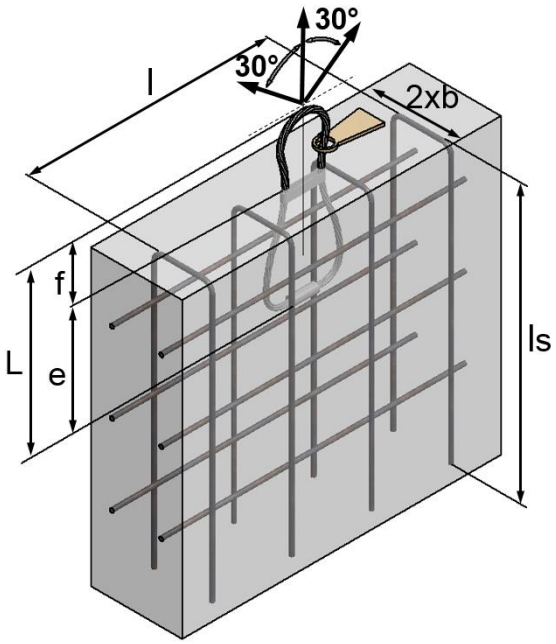
Cast-in lifting loops are the most economical lifting system. They require relatively large edge distances. Take the exposure of steel wire loops after the installation of the concrete unit into consideration. Once the unit is set in the final position, protruding loops can be cut off, if necessary, but the cut ends must be protected against corrosion to prevent staining from rust. The steel wire rope is more suitable for forming a cast-in loop because it is flexible, and the lifting loop made from reinforcing bar is liable to fatigue, especially if bent during angled lift. The minimum dimensions for installation in reinforced concrete are indicated in the table below. Additional lateral reinforcement may be required for acute angled lifts. Cast-in lifting loops are made of a high-grade steel wire rope according to EN 12385-4, swaged in a ferrule made of AlMg1.8, with a fixing strip in the middle with an identification label, which must not slide down the hoop during casting and should remain visible. Each lifting loop has a label attached, marked with the admissible load and the code number of the testing. Cast-in lifting loops are zinc-plated for protection against corrosion. These lifting systems are suitable for use through a single cycle from production to final installation. They are not suitable for multiple use applications. To choose the correct size for any lift, it is important to consider the angle of lift, the crane factor and the adhesion to the formwork.
Cast-in lifting loops must be installed in the direction of the expected load. They should be suspended from supports attached to the formwork so that 2/3 of the loop will be cast in and 1/3 will remain exposed. The loops must be fastened to the reinforcement cage to avoid movement during concreting. Avoid bending the steel wire rope while the precast unit is in storage. Exposed loops can be attached to standard crane hooks, but the curvature radius of the crane hook should at least be equal to the diameter of the wire rope. It is essential to check that the wire rope is in good condition, with no broken, crushed or unravelled wire. Also, do not use if there are kinks in the loop or the wire rope is badly corroded - discard in accordance with EN 13414-1! Cast-in lifting loops with any signs of damage should not be used.



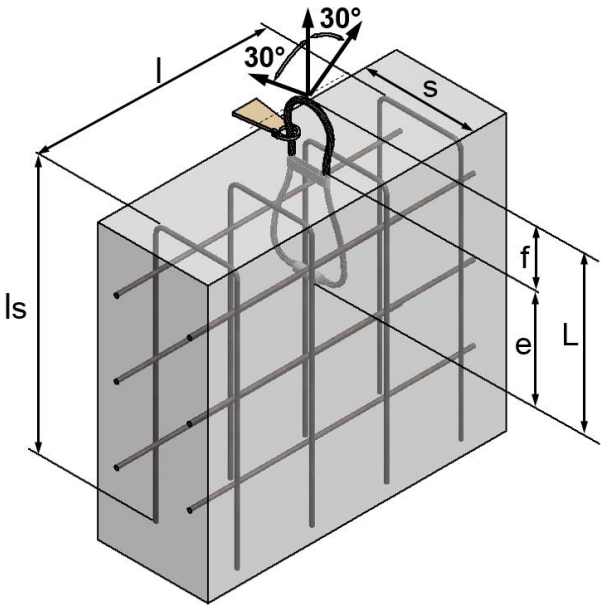
TIL	Product no.	Overall length	Wire rope dimensions		Load group
		L	d	L	f_{cu}> 30 MPa
		[mm]	[mm]	[mm]	[t]
TIL-008-210	44812	210	6	540	0.8
TIL-012-225	44813	225	7	570	1.2
TIL-016-235	44814	235	8	615	1.6
TIL-020-275	44815	275	9	690	2.0
TIL-025-315	44816	315	10	780	2.5
TIL-040-340	44817	340	12	860	4.0
TIL-052-360	43599	360	14	1010	5.2
TIL-063-390	43600	390	16	1100	6.3
TIL-080-440	43601	440	18	1250	8.0
TIL-100-525	44818	525	20	1350	10.0
TIL-125-570	43602	570	22	1500	12.5
TIL-160-615	44819	615	26	1650	16.0
TIL-200-730	44820	730	28	1900	20.0
TIL-250-800	44821	800	32	2000	25.0
TIL-320-770	46961	770	36	2225	32.0
TIL-370-950	46962	950	36	2500	37.0
TIL-470-1100	46963	1100	44	3000	47.0
TIL-520-1200	47324	1200	44	3350	52.0

GENERAL GUIDANCE FOR CAST-IN WIRE LOOP SYSTEMS

Cast-in lifting loops TIL are used for lifting the precast concrete elements, especially beams. The lifting loop can easily be placed in the reinforcement cage of a precast unit. Part of the lifting system remains outside of the precast element for mounting the crane hook and lift.



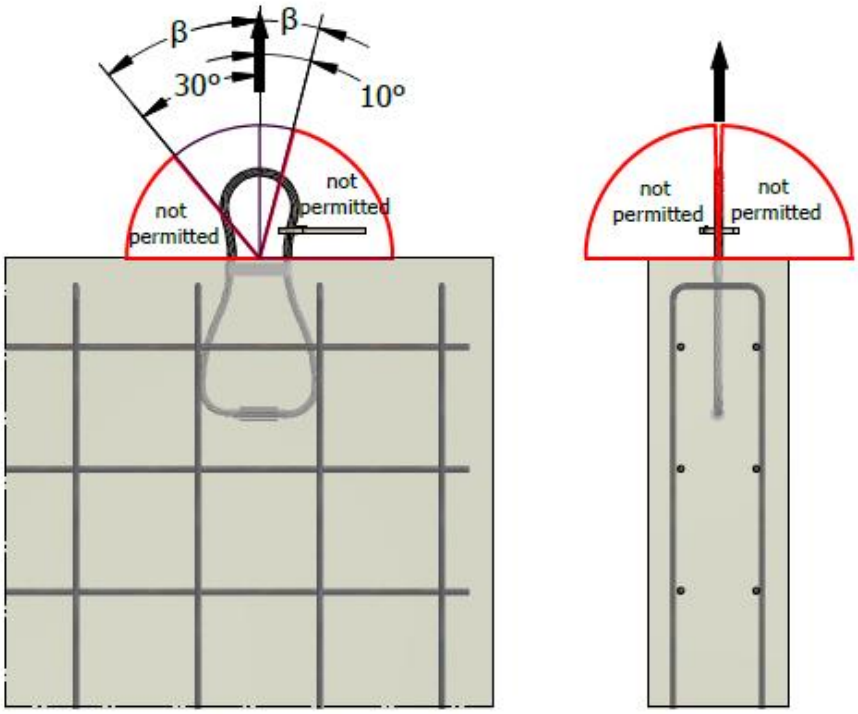
Longitudinal installation



Transversal installation

Installation details and reinforcement required for TIL – cast-in lifting system

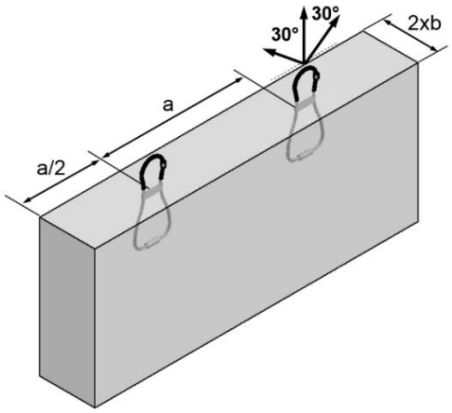
TIL	Dimensions cast-in		Reinforcement dimension		Axial pull ß ≤10° Load capacity f_{cu}> 15 MPa	Diagonal pull ß ≤30° Load capacity f_{cu}> 15 MPa	Axial pull ß ≤10° Load group f_{cu}> 30 MPa	Diagonal pull ß ≤30° Load capacity f_{cu}> 30 MPa
	f	e	Min ls	Min l				
	[mm]	[mm]	[mm]	[mm]	[t]	[t]	[t]	[t]
TIL-008-210	60	150	250	400	0.7	0.5	0.8	0.6
TIL-012-225	65	160	300	450	1.1	0.9	1.2	1.0
TIL-016-235	70	165	350	500	1.5	1.2	1.6	1.3
TIL-020-275	75	200	350	550	1.8	1.4	2.0	1.6
TIL-025-315	85	230	450	650	2.3	1.8	2.5	2.0
TIL-040-340	100	240	500	700	3.6	2.9	4.0	3.2
TIL-052-360	100	260	550	800	4.7	3.8	5.2	4.2
TIL-063-390	110	280	600	950	5.7	4.6	6.3	5.0
TIL-080-440	120	320	700	1050	7.2	5.8	8.0	6.5
TIL-100-525	135	390	800	1200	9.0	7.2	10.0	8.0
TIL-125-570	150	420	900	1300	11.3	9.0	12.5	10.0
TIL-160-615	165	450	1000	1500	12.8	10.0	16.0	12.8
TIL-200-730	180	550	1150	1700	18.0	14.5	20.0	16.0
TIL-250-800	200	600	1300	1950	20.0	16.0	25.0	20.0
TIL-320-770	220	550	Reinforcement must be designed by the lifting design engineer and placed in accordance with the approved lifting design.		25.6	20.5	32.0	25.5
TIL-370-950	275	675			29.6	23.7	37.0	29.5
TIL-470-1100	320	780			37.6	30.0	47.0	37.5
TIL-520-1200	350	850			41.6	33.3	52.0	41.6

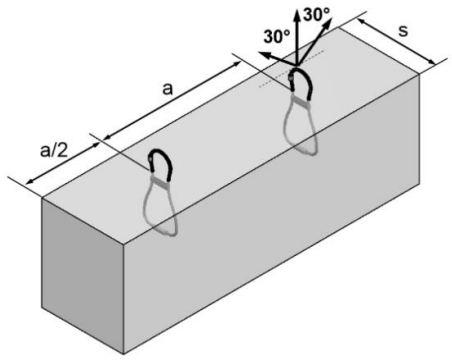


Load direction for cast in wire loop - TIL

Note:

Diagonal pull up to 30° is admissible.
No lateral pull resulting from tilting is permissible.





TIL	Installation dimensions		Minimum width of precast element	
	a/2	a	s	2xb
	[mm]	[mm]	[mm]	[mm]
TIL-008-210	270	540	140	80
TIL-012-225	310	620	150	100
TIL-016-235	345	690	170	120
TIL-020-275	415	830	180	140
TIL-025-315	445	890	190	160
TIL-040-340	500	1000	220	200
TIL-052-360	515	1030	300	240
TIL-063-390	575	1150	320	280
TIL-080-440	645	1290	410	300
TIL-100-525	730	1460	440	320
TIL-125-570	810	1620	570	360
TIL-160-615	930	1860	630	420
TIL-200-730	1060	2120	680	450
TIL-250-800	1205	2410	760	500
TIL-320-770	1350	2700	800	540
TIL-370-950	1480	2960	830	580
TIL-470-1100	1645	3290	940	630
TIL-520-1200	1870	3740	1050	690