

EATHU

PRECAST
LIFTING SYSTEM

EATHU

PRECAST
LIFTING SYSTEM

QINGDAO EATHU CASTING AND FORGING CO.,LTD.
QINGDAO EATHU IMPORT AND EXPORT CO.,LTD.

Export Office: 21F, No.5 Nanhai Zhi Road, Qingdao, China
Tel: 0086-532-88256387 88256388 88256389 88256397 88256398
Fax: 0086-532-88256399
Post Code: 266071
E-mail: info@eathu.com.cn eathu@hotmail.com eathu@public.qd.sd.cn
<http://www.eathu.com.cn>



EATHU CASTING AND FORGING

■ BRIEF INTRODUCTION

Eathu Group is one of the biggest manufacturers and exporters of precast lifting system products in China. We are specialized in producing variety of lifting anchor, lifting eyes, lifting insert, lifting socket and lifting loops, etc in all size.

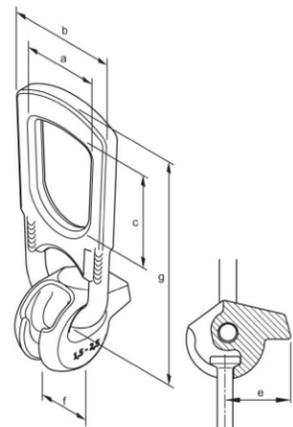
All our factories are certified to the international ISO-9001 quality system standard and all products are carefully tested to meet the strict quality requirements and industry standards prior to each shipment. We add kinds of testing ways in our storage to make sure all the final products are in good quality.

To supply competitive and reasonable at price, acceptable and stable in quality; to full meet and strive to exceed the expectations of our customers, is our business philosophy.

■ CONTENTS

■ PRECAST LIFTING SYSTEM—SPHERICAL HEAD ANCHOR	
Lifting clutch.....	01
T-anchor Black.....	01-03
T-anchor Hot dipped galvanised.....	04-06
P-anchor Black.....	07
P-anchor Hot dipped galvanised.....	07
O-anchor Black.....	08
O-anchor Hot dipped galvanised.....	08
Using instruction of lifting clutch.....	09
Recess former.....	10
■ PRECAST LIFTING SYSTEM—THREADED	
Fixing insert BSR.....	11
Lifting socket HSR.....	11-12
Lifting socket HSB.....	12
Lifting insert TGK.....	13
Lifting loops THL.....	14
■ PRECAST LIFTING SYSTEM—CAST IN LOOP	
Lifting cast in loop TIL.....	15
■ PRECAST LIFTING SYSTEM—RING ANCHOR	
Description of system.....	16
Spread anchor TPA-FS.....	17
Load capacity for TPA-FS.....	18
Two hole anchor TPA-FZ.....	19
Load capacity for TPA-FZ.....	20
Double ended column anchor TPA-FD.....	21
Load capacity for TPA-FD.....	22
Universal anchor TPA-FU.....	23
Sandwich panel anchor TPA-FX.....	24
Erection anchor TPA-FA.....	25
Unilateral erection anchor TPA-FE.....	25
Ring clutch TPA-R1 and recess former.....	26
■ PRECAST LIFTING SYSTEM—SOCKET ANCHOR	
SA-Short anchor.....	27
SA-Long anchor.....	28

Type : TH



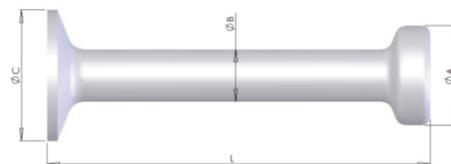
TH- Lifting eyes (clutch) , El. galvanised

Delivered with individual test certificate x 3 working load !

Type :TH galvanised	Axial Capacities load Kg	Dimensions mm						Weight Kg / pc
		a	b	c	e	f	g	
TH-1.3	1,300	47.5	75	71	45	33	165	1.0
TH-1.5-2.5	2,500	64	98	85	55	42	205	1.6
TH-3.0-5.0	5,000	70	118	88	66	57	240	3.3
TH-6.0-10.0	10,000	95	160	121	117.5	73	348.5	9.6
TH-15-20	20,000	118	186	150	155	110	441	24.5

The capacity loads are axial with breakage factor of safety equal to 5 for all the types of lifting eyes(1,3 tonne till 32 tonne). Lifting clutch in 6 different load groups 1.3 -32 ton to suit the load carrying range of ALL TYPE OF LIFTING ANCHORS of the spherical-head anchor system!

Type : T

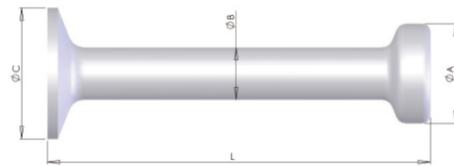


T- Anchors, BLACK

The capacity loads are axial with breakage factor of safety equal to 3.

Type: T Black	Axial Capacities load Kg	Lengths L = mm	Weight Kg / pc	Quantity per BAG
T-13-35	1,300	35	0.045	400
T-13-40	1,300	40	0.050	350
T-13-50	1,300	50	0.055	300
T-13-55	1,300	55	0.058	300
T-13-65	1,300	65	0.062	250
T-13-85	1,300	85	0.074	250
T-13-120	1,300	120	0.095	200
T-13-240	1,300	240	0.170	125
T-25-45	2,500	45	0.119	175

T-25-55	2,500	55	0.120	175
T-25-65	2,500	65	0.131	175
T-25-70	2,500	70	0.136	150
T-25-85	2,500	85	0.155	125
T-25-100	2,500	100	0.175	100
T-25-120	2,500	120	0.195	100
T-25-140	2,500	140	0.220	90
T-25-170	2,500	170	0.255	75
T-25-210	2,500	210	0.280	75
T-25-280	2,500	280	0.389	50
T-40-55	4,000	55	0.290	85
T-40-65	4,000	65	0.300	80
T-40-70	4,000	70	0.310	80
T-40-75	4,000	75	0.320	75
T-40-80	4,000	80	0.340	75
T-40-110	4,000	110	0.390	65
T-40-140	4,000	140	0.460	55
T-40-160	4,000	160	0.470	50
T-40-170	4,000	170	0.480	50
T-40-180	4,000	180	0.500	50
T-40-210	4,000	210	0.550	30
T-40-240	4,000	240	0.605	30
T-40-340	4,000	340	0.815	20
T-50-65	5,000	65	0.302	60
T-50-75	5,000	75	0.331	60
T-50-80	5,000	80	0.337	60
T-50-95	5,000	95	0.377	50
T-50-110	5,000	110	0.415	50
T-50-120	5,000	120	0.442	50
T-50-140	5,000	140	0.490	50
T-50-150	5,000	150	0.500	50
T-50-160	5,000	160	0.545	50
T-50-170	5,000	170	0.565	50
T-50-180	5,000	180	0.585	50
T-50-210	5,000	210	0.656	45
T-50-240	5,000	240	0.725	45
T-50-340	5,000	340	0.980	30
T-50-480	5,000	480	1.400	20
T-75-85	7,500	85	0.570	50
T-75-95	7,500	95	0.600	50
T-75-120	7,500	120	0.705	50
T-75-140	7,500	120	0.730	40
T-75-150	7,500	150	0.801	40
T-75-160	7,500	160	0.835	40
T-75-165	7,500	165	0.850	40
T-75-200	7,500	200	0.980	25
T-75-300	7,500	300	1.330	20
T-75-540	7,500	540	2.180	
T-75-680	8	680	2.700	



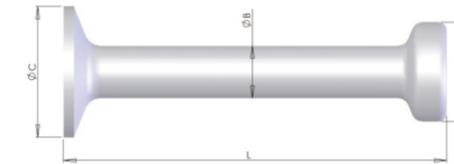
T- Anchors, Black

The capacity loads are axial with breakage factor of safety equal to 3.

Type: T Black	Axial Capacities load Kg	Lengths L = mm	Weight Kg / pc	Quantity per BAG
T-100-85	10,000	85	0.772	
T-100-100	10,000	100	0.820	
T-100-110	10,000	110	0.900	
T-100-115	10,000	115	0.910	
T-100-120	10,000	120	0.920	
T-100-135	10,000	135	1.000	
T-100-150	10,000	150	1.088	
T-100-170	10,000	170	1.170	
T-100-200	10,000	200	1.300	
T-100-220	10,000	220	1.390	
T-100-250	10,000	250	1.559	
T-100-340	10,000	340	2.000	
T-100-650	10,000	650	3.500	
T-100-680	10,000	680	3.630	
T-150-140	15,000	140	1.800	
T-150-150	15,000	150	2.000	
T-150-165	15,000	165	2.200	
T-150-200	15,000	200	2.530	
T-150-210	15,000	210	2.610	
T-150-300	15,000	300	3.440	
T-150-400	15,000	400	4.270	
T-150-840	15,000	840	8.200	
T-200-165	20,000	165	2.600	
T-200-200	20,000	200	2.960	
T-200-250	20,000	250	3.495	
T-200-340	20,000	340	4.370	
T-200-500	20,000	500	5.970	
T-200-1000	20,000	1000	11.050	
T-320-175	32,000	175	5.490	
T-320-280	32,000	280	7.100	
T-320-500	32,000	500	11.200	
T-320-700	32,000	700	13.540	
T-320-1200	32,000	1200	21.000	
T-450-500	45,000	500	11.200	
T-450-1200	45,000	1200	21.000	

It is absolute not allow to weld at the body or the head of the anchor.

Type : T-HD

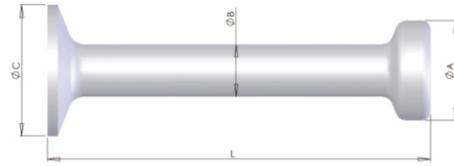


T- Anchors, Hot dipped galvanised

The capacity loads are axial with breakage factor of safety equal to 3.

Type: T-HD Hot dipped galvanised	Axial Capacities load Kg	Lengths L = mm	Weight Kg / pc	Quantity per BAG
T-13-35-HD	1,300	35	0.045	400
T-13-40-HD	1,300	40	0.050	350
T-13-50-HD	1,300	50	0.055	300
T-13-55-HD	1,300	55	0.058	300
T-13-65-HD	1,300	65	0.062	250
T-13-85-HD	1,300	85	0.074	250
T-13-120-HD	1,300	120	0.095	200
T-13-240-HD	1,300	240	0.170	125
T-25-45-HD	2,500	45	0.119	175
T-25-55-HD	2,500	55	0.120	175
T-25-65-HD	2,500	65	0.131	175
T-25-70-HD	2,500	70	0.136	150
T-25-85-HD	2,500	85	0.155	125
T-25-100-HD	2,500	100	0.175	100
T-25-120-HD	2,500	120	0.195	100
T-25-140-HD	2,500	120	0.220	90
T-25-170-HD	2,500	170	0.255	75
T-25-280-HD	2,500	280	0.389	50
T-40-55-HD	4,000	55	0.290	85
T-40-65-HD	4,000	65	0.300	80
T-40-70-HD	4,000	70	0.310	75
T-40-75-HD	4,000	75	0.320	75
T-40-80-HD	4,000	80	0.340	70
T-40-110-HD	4,000	110	0.390	60
T-40-140-HD	4,000	140	0.460	50
T-40-160-HD	4,000	160	0.500	50
T-40-170-HD	4,000	170	0.510	50
T-40-180-HD	4,000	180	0.520	45
T-40-210-HD	4,000	210	0.550	40
T-40-240-HD	4,000	240	0.605	35
T-40-340-HD	4,000	340	0.815	25

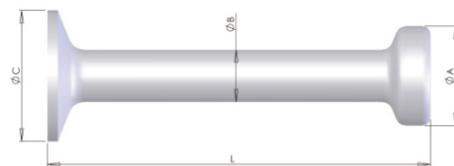
Type : T-HD



T- Anchors, Hot dipped galvanised

The capacity loads are axial with breakage factor of safety equal to 3.

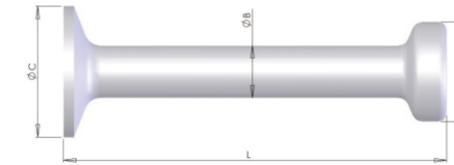
Type: T-HD Hot dipped galvanised	Axial Capacities load Kg	Lengths L = mm	Weight Kg / pc	Quantity per BAG
T-50-65-HD	5,000	65	0.302	60
T-50-75-HD	5,000	75	0.331	60
T-50-80-HD	5,000	80	0.337	60
T-50-85-HD	5,000	85	0.360	50
T-50-95-HD	5,000	95	0.377	50
T-50-110-HD	5,000	110	0.415	50
T-50-120-HD	5,000	120	0.442	50
T-50-140-HD	5,000	140	0.490	50
T-50-150-HD	5,000	150	0.500	50
T-50-160-HD	5,000	160	0.545	50
T-50-180-HD	5,000	180	0.585	50
T-50-210-HD	5,000	210	0.656	45
T-50-240-HD	5,000	240	0.725	45
T-50-340-HD	5,000	340	0.980	30
T-50-480-HD	5,000	480	1.400	20
T-75-85-HD	7,500	85	0.570	50
T-75-95-HD	7,500	95	0.600	50
T-75-120-HD	7,500	120	0.705	50
T-75-150-HD	7,500	150	0.820	40
T-75-160-HD	7,500	160	0.835	40
T-75-200-HD	7,500	200	0.980	25
T-75-300-HD	7,500	300	1.330	20
T-75-540-HD	7,500	540	2.180	



T- Anchors, Hot dipped galvanised

The capacity loads are axial with breakage factor of safety equal to 3.

Type:T-HD Hot dipped galvanised	Axial Capacities load Kg	Lengths L = mm	KG / pc	Quantity per BAG
T-100-100-HD	10,000	100	0.820	
T-100-110-HD	10,000	110	0.900	
T-100-115-HD	10,000	115	0.910	
T-100-120-HD	10,000	120	0.920	
T-100-135-HD	10,000	135	1.000	
T-100-150-HD	10,000	150	1.088	
T-100-170-HD	10,000	170	1.170	
T-100-220-HD	10,000	220	1.390	
T-100-250-HD	10,000	250	1.559	
T-100-340-HD	10,000	340	2.000	
T-100-650-HD	10,000	650	3.500	
T-100-680-HD	10,000	680	3.630	
T-150-140-HD	15,000	140	1.800	
T-150-150-HD	15,000	150	2.000	
T-150-165-HD	15,000	165	2.200	
T-150-200-HD	15,000	200	2.530	
T-150-210-HD	15,000	210	2.610	
T-150-300-HD	15,000	300	3.440	



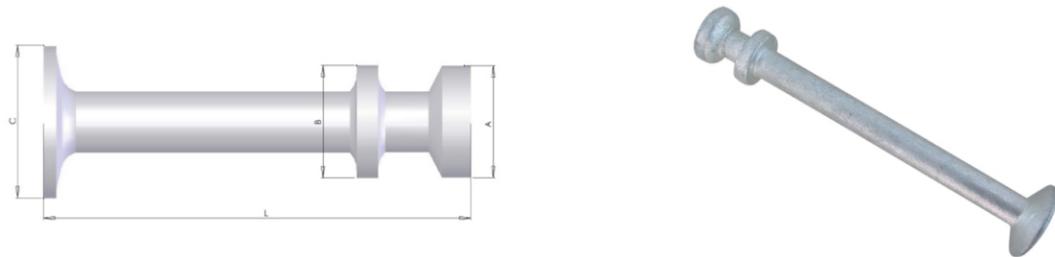
T- Anchors, Hot dipped galvanised

The capacity loads are axial with breakage factor of safety equal to 3.

Type:T-HD Hot dipped galvanised	Axial Capacities load Kg	Lengths L = mm	KG / pc	Quantity per BAG
T-150-400-HD	15,000	400	4.270	
T-150-840-HD	15,000	840	8.200	
T-200-165-HD	20,000	165	2.600	
T-200-250-HD	20,000	250	3.495	
T-200-340-HD	20,000	340	4.370	
T-200-500-HD	20,000	500	5.970	
T-200-1000-HD	20,000	1000	11.050	
T-320-280-HD	32,000	280	7.100	
T-320-500-HD	32,000	500	11.200	
T-320-700-HD	32,000	700	13.540	
T-320-1200-HD	32,000	1200	21.000	
T-450-500-HD	45,000	500	11.200	
T-450-1200-HD	45,000	1200	21.000	

It is absolute not allow to weld at the body or the head of the anchor.

Type : P



P- Anchors, Black

Type : P Black	Axial Capacities load KG	Lengths L = mm	Dimensions			Weight Kg / pc
			diam. C	diam. B	diam. A	
P- 13- 55	1300	55	25	19	19	0.087
P- 13- 85	1300	85	25	19	19	0.087
P- 13-120	1300	120	25	19	19	0.109
P- 25- 85	2500	85	35	26	26	0.175
P- 25-120	2500	120	35	26	26	0.215
P- 25-170	2500	170	35	26	26	0.280
P- 50-75	5000	75	50	36	36	0.430
P- 50-120	5000	120	50	36	36	0.590
P- 50-240	5000	240	50	36	36	0.925

The capacity loads are axial with breakage factor of safety equal to 3.

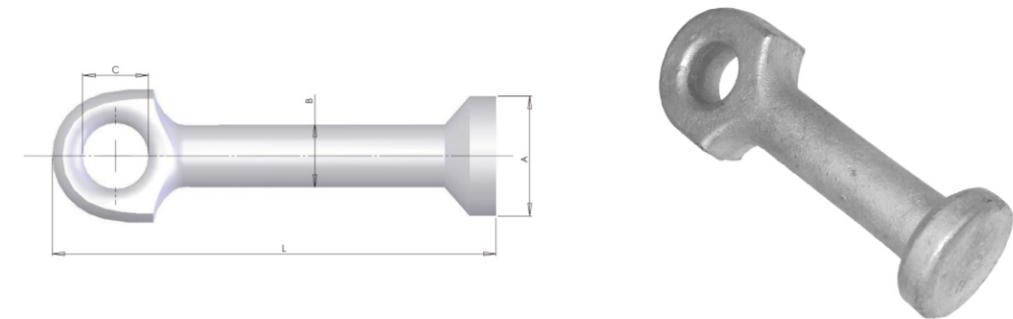
Type : P- HD

P- Anchors, Hot dipped galvanized

Type : P-HD Hot dipped galvanized	Axial Capacities load KG	Lengths L = mm	Dimensions			Weight Kg / pc
			diam. C	diam. B	diam. A	
P- 13- 85-HD	1300	85	25	19	19	0.088
P- 13-120-HD	1300	120	25	19	19	0.110
P- 25- 55-HD	2500	55	35	26	26	0.165
P- 25- 85-HD	2500	85	35	26	26	0.185
P- 25-120-HD	2500	120	35	26	26	0.220
P- 25-170-HD	2500	170	35	26	26	0.297
P- 50-075-HD	5000	75	50	36	36	0.430
P- 50-120-HD	5000	120	50	36	36	0.590
P- 50-240-HD	5000	240	50	36	36	0.925

The capacity loads are axial with breakage factor of safety equal to 3.

Type : O



O- Anchors, Black

Type: O Black	Axial Capacities load KG	Lengths L = mm	Dimensions			Weight Kg / pc	Quantity per bag
			diam. C	diam. B	diam. A		
O-13- 65	1300	65	9	10	19	0.065	350
O-25- 90	2500	90	13	14	26	0.175	125
O-25- 120	2500	120	13	14	26	0.233	125
O-50- 90	5000	90	18	20	36	0.350	60
O-50-120	5000	120	18	20	36	0.435	50
O-100-115	10,000	115	25	28	47	0.810	-
O-100-180	10,000	180	25	28	47	1.130	-
O-200-250	20,000	250	37	39	70	3.280	-
O-320-300	32,000	300	47	50	88	6.310	-

The capacity loads are axial with breakage factor of safety equal to 3.

O- Anchors, Hot dipped galvanized

Type:O-HD Hot dipped galvanized	Axial Capacities load KG	Lengths L = mm	Dimensions			Weight Kg / pc	Quantity per bag
			diam. C	diam. B	diam. A		
O-13- 65- HD	1300	65	9	10	19	0.065	350
O-25- 90- HD	2500	90	13	14	26	0.175	125
O-50- 90- HD	5000	90	18	20	36	0.350	60
O-50-120-HD	5000	120	18	20	36	0.435	50
O-100-115-HD	10,000	115	25	28	47	0.810	-
O-100-180-HD	10,000	180	25	28	47	1.130	-
O-200-250-HD	20,000	250	37	39	70	3.280	-
O-320-300-HD	32,000	300	47	50	88	6.310	-

The capacity loads are axial with breakage factor of safety equal to 3.

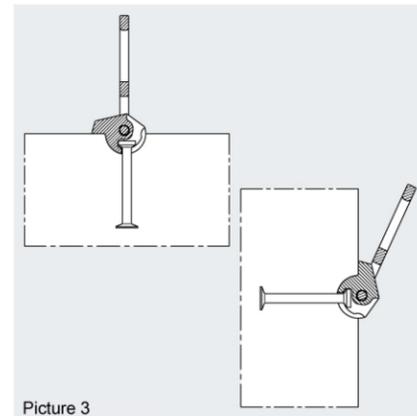
USING INSTRUCTION OF EATHU SPHERICAL HEAD LIFTING CLUTCH

Lifting and Turning

The EATHU Spherical Head Lifting Clutch is constructed in a way that an unintended coupling off (even without tension by a lifting device) is impossible. On lifting, attention must be paid that the lip shows into direction of tension.

The EATHU Spherical Head Lifting Clutch is suitable for all directions (axial, diagonal and lateral tension).

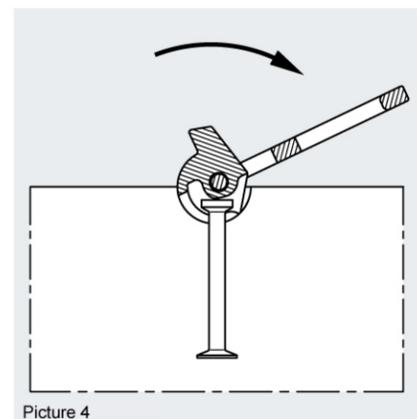
On turning of units, special attention must be paid on the lip position of the EATHU Spherical Head Lifting Clutch. It must always show into direction of tension (Picture 3).



Picture 3

Coupling Off

Coupling off the EATHU Spherical Head Lifting Clutch it must be unloaded. Thereafter the EATHU Spherical Head Lifting Clutch can be coupled off by turning back the lip (Picture 4).



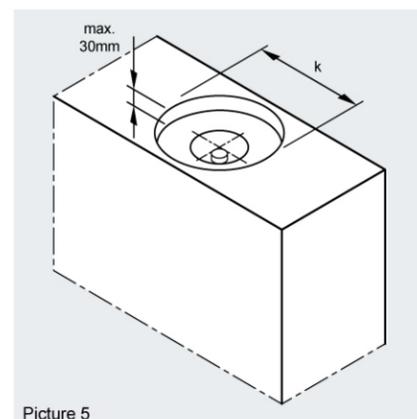
Picture 4

3. Corrosion Protection

The corrosion protection can be increased by installing the EATHU Spherical Head Anchor in a sunk position. The additional recess former must ensure the functionality of the anchor according to this installation instruction and must have the minimum dimensions of Table 2.

Table 2: Dimensions for Deepened Assembly

Load Group	dia.k [mm]
1.0 - 1.3	110.0
1.5 - 2.5	130.0
3.0 - 5.0	142.0
6.0 - 10.0	255.0
15.0 - 20.0	330.0



Picture 5

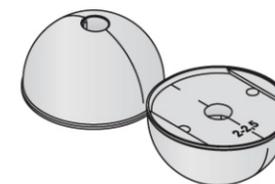
The EATHU Spherical Head Lifting Clutch counts as lifting device and is therefore subject of an annual inspection (BGR 500 Section 2.8). This inspection must be executed by an expert and is the responsibility of the user.

The particular accident prevention regulations must be taken into account in order to extend a higher durability. The right hook size and form should be considered.

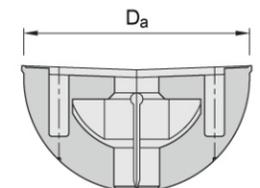
Recess Formers

To fix the Spherical Head Anchors to the formwork a EATHU Recess former must be used. This ensures simple and secure locating of the anchor and leaves the anchor ready for the correct universal head lifting link.

Rubber recess former, round shape



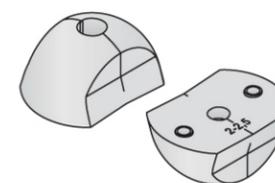
The rubber recess former is constant in shape even when heated up to 120°C or in contact with oil. It can be used several times. In order to ease the identification of the load group the formers are produced in different colours. Recess formers are used with threaded plates which may be either rod or socket.



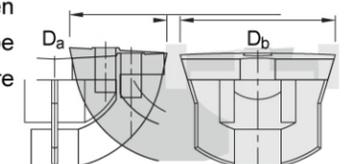
Rubber recess former, round shape

Load group	including plate with threaded rod		including plate with socket		without threaded parts		Colour	D _a [mm]
	Designation	Order no. 0736.020-	Designation	Order no. 0736.030-	Designation	Order no. 0736.010-		
1.3	6132-1.3	00001	6133-1.3	00001	6131-1.3	00001	blue	60
2.5	6132-2.5	00002	6133-2.5	00002	6131-2.5	00002	yellow	74
4.0	6132-4.0	00003	6133-4.0	00003	6131-4.0	00003	black	94
5.0	6132-5.0	00004	6133-5.0	00004	6131-5.0	00004	blue	94
7.5	6132-7.5	00005	6133-7.5	00005	6131-7.5	00005	red	118
10.0	6132-10	00006	6133-10	00006	6131-10	00006	yellow	118
15.0	6132-15	00007	6133-15	00007	6131-15	00007	gray	160
20.0	6132-20	00008	6133-20	00008	6131-20	00008	black	160
32.0/45.0	6132-32	00009	6133-32	00009	6131-32	00009	black	214

Rubber recess former, round shape



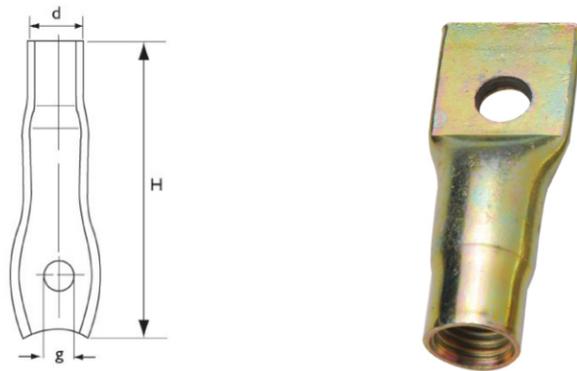
The narrow rubber recess former is used when the load is only in one direction. It is constant in shape even when heated up to 120°C or in contact with oil. It can be used several times. All of the narrow recess formers are coloured black.



Rubber recess former, round shape

Load group	including plate with threaded rod		including plate with socket		without threaded parts		Colour	D _a [mm]	D _b [mm]
	Designation	Order no. 0736.020-	Designation	Order no. 0736.030-	Designation	Order no. 0736.010-			
1.3	6138-1.3	00001	6145-1.3	00001	6137-1.3	00001	black	62	42
2.0/2.5	6138-2.0/2.5	00002	6145-2.0/2.5	00002	6137-2.0/2.5	00002		77	52
4.0	6138-4.0	00003	6145-4.0	00003	6137-4.0	00003		97	69
5.0	6138-5.0	00004	6145-5.0	00004	6137-5.0	00004		97	69
7.5	6138-7.5	00005	6145-7.5	00005	6137-7.5	00005		122	85
10.0	6138-10	00006	6145-10	00006	6137-10	00006		122	85
15.0	6138-15	00007	6145-15	00007	6137-15	00007		164	124
20.0	6138-20	00008	6145-20	00008	6137-20	00008		164	124

Type : BSR



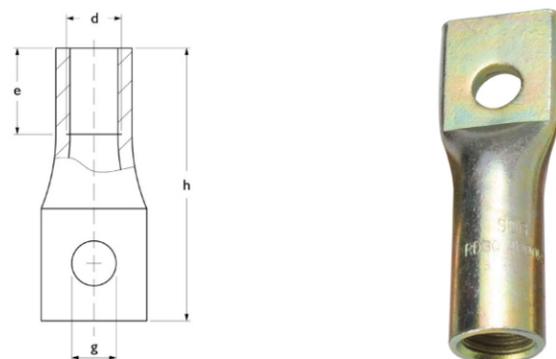
Fixing
Insert BSR, with Flat end and cross drilled hole.

Steel, zinc plated
Stainless steel, A2 (304 / 1.4301)

Type BSR	Type BSR- SS	Thread	Overall length	Diam.	Diam.	Load Kg					Weight	Quantity	
						H	d	g	axial (1)				
zinc plated	stainless steel	M	mm	mm	mm	0o	FeB 500	0°	30°	45°	90°	Kg / 100	per BOX
BSR- 0850	BSR- 0850-SS	M 8	50	10.5	6	-	-	250	-	-	-	1.50	1000
BSR- 1050	BSR- 1050-SS	M 10	50	13.5	10	-	-	350	200	140	80	1.79	1000
BSR- 1260	BSR- 1260-SS	M 12	60	16	12	1000	8 x U x300	500	300	220	140	3.27	750
BSR- 1680	BSR- 1680-SS	M 16	80	22	12	1600	10 x U x350	850	700	600	430	11.43	250
BSR- 16100	BSR- 16100-SS	M 16	100	22	12	1600	10 x U x350	1000	800	700	500	13.73	200
BSR- 16120	BSR- 16120-SS	M 16	120	22	12	1600	10 x U x350	1200	850	750	500	16.33	150
BSR- 20100	BSR- 20100-SS	M 20	100	27	14	2500	12 x U x400	1300	1000	950	650	18.44	150
BSR- 20120	BSR- 20120-SS	M 20	120	27	14	2500	12 x U x400	1400	1100	1000	700	21.54	125
BSR- 24120	BSR- 24120-SS	M 24	120	34	15	2500	12 x U x400	1800	-	-	-	32.40	150

(1) working load only valid if the reinforcing tail is used! This tail is NO part of the product BSR.
(2) The capacity loads are with a breakage factor of safety equal to 4.

Type : HSR



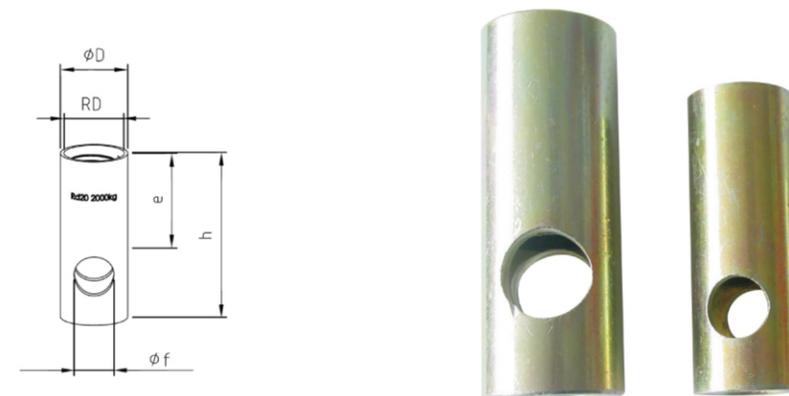
Lifting
Socket HSR, with Flat end and cross drilled hole

zinc plated

Type HSR-M	Thread	Type HSR-Rd	Thread	Load Rate	Overall length	Diam.			Load Kg (1)				Weight	Quantity
						d	e	h	concrete > 15 N/mm2		concrete > 25 N/mm2			
						mm	mm	mm	axial	lifting 45°(*)	axial	lifting 45°(*)		
HSR- M1260	M 12	HSR- Rd1260	Rd 12	0.5	60	12	20	13	900	850	1150	1100	5.30	500
HSR- M1680	M 16	HSR- Rd1680	Rd 16	1.2	80	16	22	21	1500	1350	2000	1700	12.30	200
HSR- M2095	M 20	HSR- Rd2095	Rd 20	2.0	95	20	25	24	2500	2300	2900	2400	25.40	100
HSR- M24100	M 24	HSR- Rd24100	Rd 24	2.5	100	24	30	24	3000	2600	3900	3000	31.60	100
HSR- M30135	M 30	HSR- Rd30135	Rd 30	4.0	135	30	35	36	4000	4400	6600	5500	80.00	35

(*) by using the lifting loop type THS or the lifting swivel THH and with use of reinforcing tail and reinforcing steel
The admissible load is only valid if the mentioned reinforcing tail (Feb 500) is used.

Type : HSB



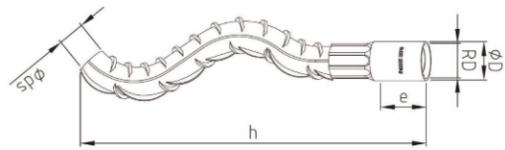
Lifting
Socket HSB, with Round end and cross drilled hole

zinc plated

Type HSR-M	Thread	Type HSR-Rd	Thread	Load Rate	Overall length	Diam.				Load Kg				Weight	Quantity
						D	e	h	f	concrete > 15 N/mm2		concrete > 25 N/mm2			
						mm	mm	mm	mm	axial	lifting 45°(*)	axial	lifting 45°(*)		
HSB-M12	M 12	HSB-Rd12	12	0.5	48	16.5	22	40	8	900	850	1150	1100	0.11	350
HSB-M16	M 16	HSB-Rd16	16	1.2	56	22	27	54	13	1500	1350	2000	1700	0.24	150
HSB-M20	M 20	HSB-Rd20	20	2.0	68	28	35	67	15	2500	2300	2900	2400	0.38	100
HSB-M24	M 24	HSB-Rd24	24	2.5	77	31	43	77	18	3000	2600	3900	3000	0.55	75
HSB-M30	M 30	HSB-Rd30	30	4.0	96	41	56	105	22	4000	4400	6600	5500	1.06	30

(*) by using the lifting loop type THS or the lifting swivel THH and with use of reinforcing tail and reinforcing steel
The admissible load is only valid if the mentioned reinforcing tail (Feb 500) is used.

Type: TGK

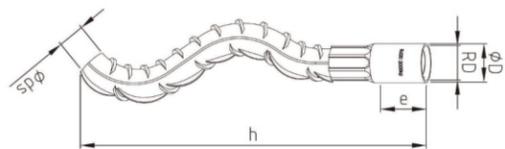


Lifting Insert TGK, Short Waved end reinforcing steel

Type TGK-M	Thread M	Type TGK-Rd	Thread Rd	Load Rate t	Overall length h mm	Bar diam. ds mm	D diam. mm	e mm	Load Kg				Weight Kg/100	Quantity per BOX
									concrete > 15 N/mm ²		concrete > 25 N/mm ²			
									axial	lifting 45°(*)	axial	lifting 45°(*)		
TGK- M12-105	12	TGK -Rd12-105	12	0.5	105	8	15	22	450	700	580	900	10.00	250
TGK- M16-165	16	TGK -Rd16-165	16	1.2	165	12	21	27	1350	900	1700	1250	31.00	100
TGK- M20-195	20	TGK -Rd20-195	20	2.0	195	14	27	35	1700	1300	2200	1700	51.00	50
TGK- M24-240	24	TGK -Rd24-240	24	2.5	240	16	31	43	2000	1850	2600	2400	73.00	50
TGK- M30-300	30	TGK -Rd30-300	30	4.0	300	20	40	56	3000	3650	3900	4700	162.00	-
TGK- M36-380	36	TGK -Rd36-380	36	6.3	380	25	47	68	5000	4000**	6450	5100**	220.00	-
TGK- M42-450	42	TGK -Rd42-450	42	8.0	450	28	54	80	5400	5600**	7000	7200**	345.00	-

(*) by using the lifting loop type THS or the lifting swivel THH and with use of reinforcing tail and reinforcing steel

Type : TGL



Lifting Insert TGL, Long Waved end reinforcing steel

Type TGL-M	Thread M	Type TGL-Rd	Thread Rd	Load Rate t	Overall length h mm	Bar diam. D mm	D diam. mm	e mm	Load Kg				Weight Kg/100	Quantity per BOX
									concrete > 15 N/mm ²		concrete > 25 N/mm ²			
									axial	lifting 45°(*)	axial	lifting 45°(*)		
TGL- M12-137	12	TGL- Rd12-137	12	0.5	137	8	15	22	800	1100	1000	1400	17.00	250
TGL- M16-216	16	TGL- Rd16-216	16	1.2	216	12	21	27	1350	1250	1700	1600	38.00	100
TGL- M20-257	20	TGL- Rd20-257	20	2.0	257	14	27	35	2500	1600	2900	2100	67.00	50
TGL- M24-360	24	TGL- Rd24-360	24	2.5	360	16	31	43	3300	2000	4100	2600	96.00	50
TGL- M30-450	30	TGL- Rd30-450	30	4.0	450	20	40	56	4750	4350	6100	5600	204.00	-
TGL- M36-570	36	TGL- Rd36-570	36	6.3	570	25	47	68	7500	4500**	9700	5800**	310.00	-
TGL- M42-620	42	TGL- Rd42-620	42	8.0	620	28	54	80	10200	5600**	13150	7200**	519.00	-

(*) by using the lifting loop type THS or the lifting swivel THH and with use of reinforcing tail and reinforcing steel

Type : THL

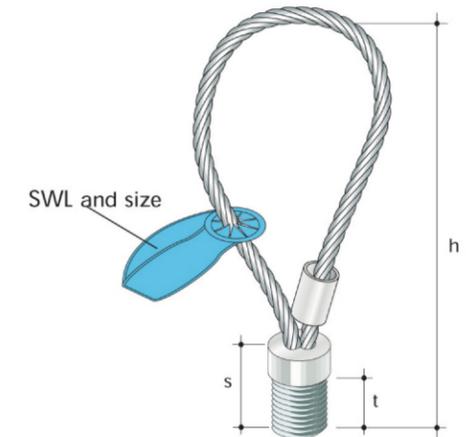
Lifting loop THL

Introduction

Threaded Lifting loops can be used with all sizes of threaded inserts. They are the most economic lifting loop and are suitable for most applications, particularly site operations. They are not suitable for turning/pitching. They may be reused subject to the inspection procedure, detailed below, but they are not recommended for severe re-use conditions. Threaded Lifting loops should only be attached to the unit after the concrete strength has reached 15 N/mm. In some cases it may be economic and practical to leave the loops with the unit until final installation.

Description

Threaded Lifting loops are manufactured from high grade steel wire, swaged in a steel ferrule and finished with zinc plating. They are clearly marked with their SWL. The thread type is Rd/M, which is compatible with both metric and Rd inserts. Threaded Lifting loops are suitable for use with inserts cast in flush with the face of the unit, or recessed using the recess formers shown opposite.

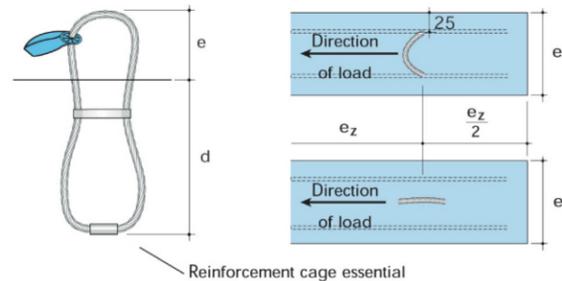


Type THL-M	Thread M	Type THL-Rd	Thread Rd	Load Rate t	Full SWL Kg	Dimensions			Weight Kg/1	Quantity per BOX
						t mm	h(ca) mm	wire rope diam. mm		
THL-M12	12	THL-Rd12	12	0.5	500	22	155	6	0.10	50
THL-M16	16	THL-Rd16	16	1.2	1200	27	155	8	0.14	25
THL-M20	20	THL-Rd20	20	2.0	2000	35	215	10	0.28	25
THL-M24	24	THL-Rd24	24	2.5	2500	43	255	12	0.50	20
THL-M30	30	THL-Rd30	30	4.0	4000	56	300	16	1.00	10
THL-M36	36	THL-Rd36	36	6.3	6300	68	340	18	1.45	-
THL-M42	42	THL-Rd42	42	8.0	8000	80	425	20	2.00	-
THL-M52	52	THL-Rd52	52	12.5	12500	97	550	26	3.50	-

Lifting under an angle > 45° is not allowed

Possibility to deliver the loop with certificate and a metal ring mentioning an individual number, price (*).

Type : TIL



Introduction

Cast-in wire rope lifting hoops are the most economic way of providing a crane hook attachment in precast units. However, they require relatively large edge distances. Consideration must also be given to the exposure of steel rope hoops after panel assembly. Once finally in position, protruding hoops can be cut off, if required, but consideration must still be given to the provision of corrosion protection to the cut ends to avoid rust staining.

The flexibility of steel rope makes it the safest method for forming a cast-in hoop. Lifting loops formed from reinforcement bars are liable to fatigue, particularly if bent during angled lifts.

Provided that hoops are installed in reinforced concrete and to the minimum dimensions in the table, no anchorage reinforcement is generally required. However, for acute angled lifts, additional lateral reinforcement may be required.

Description

Cast-in lifting hoops are manufactured from bright or galvanised mild steel rope. They have a swaged connecting ferrule and a tag that clearly identifies the SWL of the hoop. The tag is designed not to slide down the hoop during casting and should therefore remain visible.

Cast-in hoops are suitable for use through a single cycle from production to final installation but are not suitable for multi-use applications.

Lifting Cast - in Lifting Loops, TIL

For differentiation of the various sizes, the TIL cast in lifting loops have tags which show admissible load capacities in Kg. The cable (loop) is galvanised.

Type TIL	Overall	Diam.	Load Kg concrete > 15 N/mm ³	Dimensions		Test results of the loop KN (*)	Weight Kg/100	Quantity per BOX
	length mm	Wire mm		e mm	d mm			
TIL- 008	210	6	800	60	150	37.5	9	300
TIL- 012	225	7	1200	65	160	37.1	12	200
TIL- 016	235	8	1600	70	165	31.9	15	175
TIL- 020	275	9	2000	75	200	31.9	20	125
TIL- 025	315	10	2500	85	230	88.8	30	100
TIL- 040	340	12	4000	100	240	128.1	50	50
TIL- 052	360	14	5200	100	260	-	80	30
TIL- 063	390	16	6300	110	280	-	110	25
TIL- 080	440	18	8000	120	320	-	160	-
TIL- 100	525	20	10000	135	390	251	210	-
TIL- 125	570	22	12500	150	420	-	340	-
TIL- 160	615	26	16000	165	450	381.4	470	-
TIL- 200	730	28	20000	180	550	466.2	655	-
TIL- 250	800	32	25000	200	600	487.5	840	-

(*) The cast-in loop was placed in the tensile test machine and tested till fracture .

Description of the system

The EATHU lifting anchor system consists of a steel component inset into the concrete (the anchor) and a lifting component (the ring clutch). The prefabricated concrete component is lifted and transported by means of a ring clutch, which is locked to the anchor casted into concrete. The design and shape of the ring clutch and anchor enable the lifting of the load in almost any load direction. The ring clutch can be unlocked either manually, direct at the clutch head, or by remote release.

The anchors

The anchors are made of special-quality flat steel. The shape of the anchor foot is described under the corresponding anchor types. The anchor head is provided with a hole, into which is fitted the locking bolt of the ring clutch. Each anchor carries a clearly visible, stamped manufacturers designation, which designates the product brand EATHU (ET) and the system designation (E), the anchor type (e.g. S), the anchor length (e.g. 13) and the anchor load (e.g. 2.0).

The ring clutches

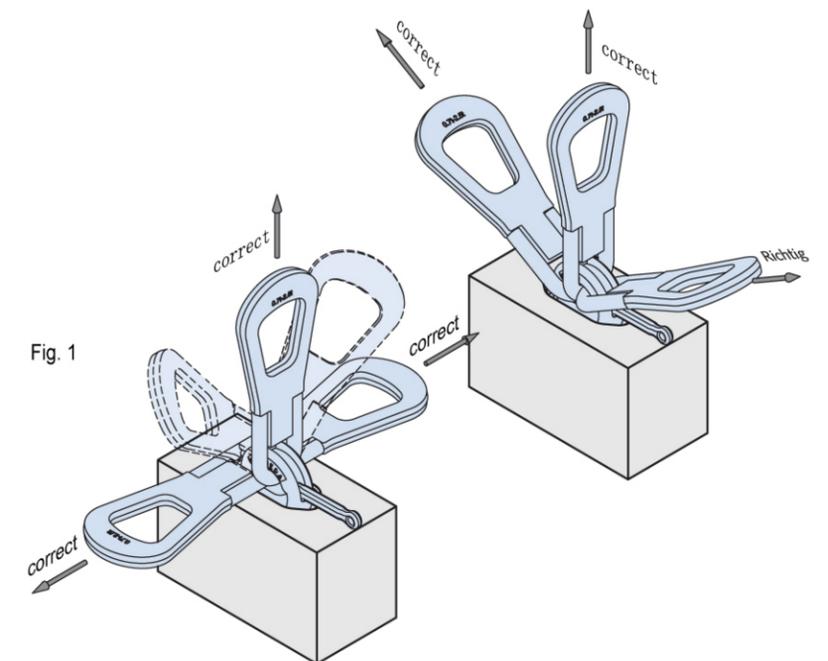
The ring clutch is inserted into the recess of the cast-in anchor and the locking bolt is closed by hand. The ring clutch is thus secured to the anchor in a matter of seconds. The ring clutch can now be subjected to loads in any direction: turning, rotating and tilting can all be carried out. There is no preferred direction of pull (Fig. 1). To disengage, the locking bolt is simply opened to free the ring clutch. If the access is more difficult (see German safety code Unfallverh, tungsvor schriften° (UVV)) ring clutches with pneumatic or manual remote-control release can be used easily (TPA-F1, TPA-F2).

The load group system

The components of the EATHU lifting anchor system are classified in terms of load groups. Every load group corresponds to the permissible load of a ring clutches to which anchors of the different load rates of a load group can be connected. The anchor loads available in each load are shown in the table below.

Incorrect connection is safely prevented, since the ring clutches cannot be connected to anchors of the wrong load group.

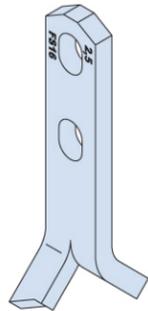
Load group system	
Load group Ring clutches [t]	Anchor loads [t]
2,5	0,7
	1,4
	2,0
	2,5
5,0	3,0
	4,0
	5,0
10,0	7,5
	10,0
26,0	12,5
	14,0
	17,0
	22,0



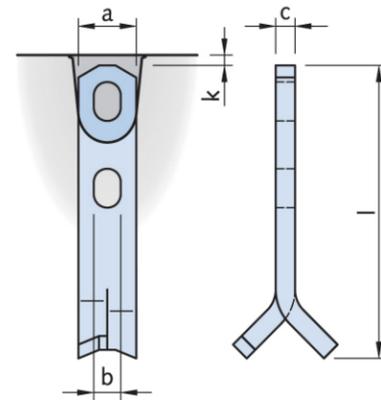
The load range shows the maximum load bearing of the anchor at the point of steel failure.

The installation conditions in concrete (concrete grade, edge distances, etc.) can reduce load capacity.

Spread Anchor



The spread anchor is very versatile. It provides an efficient anchorage in both thin panels and slabs. For special applications additional reinforcement can be combined with the spread anchor by utilising the extra hole.



Dimensions, Spread anchor TPA-FS

Designation mill finish	Order No. 0070.010-	Designation hot-dip galvanised	Order No. 0070.110-	Load group [t]	a [mm]	b [mm]	c [mm]	l [mm]	k [mm]
TPA-FS 0,7-11	00001	TPA-FS 0,7-11	FV 00032	2, 5	30	14	6	110	10
TPA-FS 1,4-11	00002	TPA-FS 1,4-11	FV 00033		30	14	6	110	
TPA-FS 1,4-16	00003	TPA-FS 1,4-16	FV 00034		30	14	6	160	
TPA-FS 2,0-13	00004	TPA-FS 2,0-13	FV 00035		30	14	8	130	
TPA-FS 2,0-16	00005	TPA-FS 2,0-16	FV 00036		30	14	8	160	
TPA-FS 2,0-21	00006	TPA-FS 2,0-21	FV 00037		30	14	8	210	
TPA-FS 2,5-15	00007	TPA-FS 2,5-15	FV 00038		30	14	10	150	
TPA-FS 2,5-20	00008	TPA-FS 2,5-20	FV 00039		30	14	10	200	
TPA-FS 2,5-25	00009	TPA-FS 2,5-25	FV 00040		30	14	10	250	
TPA-FS 3,0-16	00010	TPA-FS 3,0-16	FV 00041	5, 0	40	18	10	160	10
TPA-FS 3,0-20	00011	TPA-FS 3,0-20	FV 00042		40	18	10	200	
TPA-FS 3,0-28	00012	TPA-FS 3,0-28	FV 00043		40	18	10	280	
TPA-FS 4,0-18	00013	TPA-FS 4,0-18	FV 00044		40	18	12	180	
TPA-FS 4,0-24	00014	TPA-FS 4,0-24	FV 00045		40	18	12	240	
TPA-FS 4,0-32	00015	TPA-FS 4,0-32	FV 00046		40	18	12	320	
TPA-FS 5,0-18	00016	TPA-FS 5,0-18	FV 00047		40	18	16	180	
TPA-FS 5,0-24	00017	TPA-FS 5,0-24	FV 00048		40	18	16	240	
TPA-FS 5,0-40	00018	TPA-FS 5,0-40	FV 00049		40	18	16	400	
TPA-FS 7,5-26	00022	TPA-FS 7,5-26	FV 00053	10, 0	60	26	16	260	15
TPA-FS 7,5-30	00023	TPA-FS 7,5-30	FV 00054		60	26	16	300	
TPA-FS 7,5-42	00024	TPA-FS 7,5-42	FV 00055		60	26	16	420	
TPA-FS 10,0-30	00025	TPA-FS 10,0-30	FV 00056		60	26	20	300	
TPA-FS 10,0-37	00026	TPA-FS 10,0-37	FV 00057		60	26	20	370	
TPA-FS 10,0-52	00027	TPA-FS 10,0-52	FV 00058		60	26	20	520	
TPA-FS 10,0-37	00028	TPA-FS 10,0-37	FV 00059		80	35	20	370	
TPA-FS 14,0-46	00029	TPA-FS 14,0-46	FV 00060		80	35	20	460	
TPA-FS 22,0-50	00030	TPA-FS 22,0-50	FV 00062		90	35	28	500	
TPA-FS 22,0-62	00031	TPA-FS 22,0-62	FV 00063	90	35	28	620		

Load capacity, installation dimensions for large-area or thick-walled precast elements

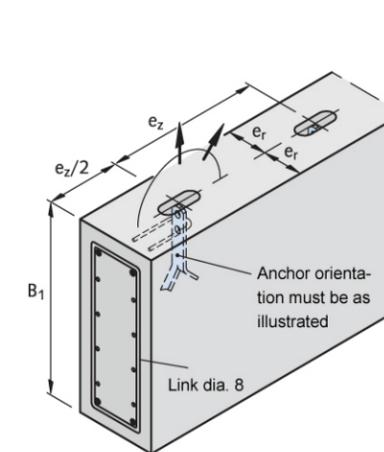
Designation	Load-group [t]	Anchor length [mm]	Permitted load F _{perm} [kN]	Minimum height of beams B ₁ ④ [mm]	Minimum edge distances beams e _r			Minimum thickness of slabs B ₂ ⑤ [mm]	Minimum edge distances slabs e _{z/2}			Minimum spacing-between e _z [mm]
					for βW ≥15N/mm ²	for βW ≥25N/mm ²	for βW ≥35N/mm ²		for βW ≥15N/mm ²	for βW ≥25N/mm ²	for βW ≥35N/mm ²	
					[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	
TPA-FS 0,7 - 11	2,5	110	7	200	35	35	35	145	35	35	35	280
TPA-FS 1,4 - 11		110	14	190	55	40	35	145	70	50	40	380
TPA-FS 1,4 - 16		160	14	290	35	35	35	195	50	35	35	530
TPA-FS 2,0 - 13		130	20	225	75	55	45	165	100	70	55	450
TPA-FS 2,0 - 16		160	20	285	60	40	35	195	80	60	45	570
TPA-FS 2,0 - 21		210	20	385	45	35	35	245	65	45	35	770
TPA-FS 2,5 - 15		150	25	260	90	65	50	185	120	85	70	520
TPA-FS 2,5 - 20		200	25	360	65	45	35	235	90	65	50	720
TPA-FS 2,5 - 25		250	25	460	50	35	35	285	75	50	40	920
TPA-FS 3,0 - 16	5,0	160	30	275	105	75	60	195	145	100	80	550
TPA-FS 3,0 - 20		200	30	350	80	60	45	235	115	85	65	710
TPA-FS 3,0 - 28		280	30	510	55	40	40	315	85	60	50	1025
TPA-FS 4,0 - 18		180	40	310	140	100	80	215	190	135	105	610
TPA-FS 4,0 - 24		240	40	425	100	70	55	275	145	100	80	850
TPA-FS 4,0 - 32		320	40	590	70	50	40	355	110	75	60	1175
TPA-FS 5,0 - 18	10,0	180	50	300	190	135	110	215	260	180	145	600
TPA-FS 5,0 - 24		240	50	420	135	95	75	275	195	140	110	840
TPA-FS 5,0 - 40		400	50	740	75	55	45	435	115	85	65	1480
TPA-FS 7,5 - 26	26,0	260	75	450	210	150	120	300	300	215	175	900
TPA-FS 7,5 - 30		300	75	530	180	125	100	340	265	190	150	1060
TPA-FS 7,5 - 42		420	75	770	120	85	70	460	190	135	110	1540
TPA-FS 10,0 - 30		300	100	515	270	190	150	340	390	275	220	1030
TPA-FS 10,0 - 37		370	100	655	210	150	120	410	315	225	180	1310
TPA-FS 10,0 - 52		520	100	955	140	100	80	560	225	160	130	1910
TPA-FS 14,0 - 37		370	140	615	350	250	200	410	500	355	285	1230
TPA-FS 14,0 - 46		460	140	795	265	190	150	500	400	285	230	1590
TPA-FS 22,0 - 50		500	220	850	450	320	260	540	675	480	385	1700
TPA-FS 22,0 - 62		620	220	1090	350	250	200	660	540	385	310	2180

-Required reinforcement: minimum standard reinforcement

-④ Straight-line interpolation may be made between minimum beam height B₁ and minimum plate thickness B₂.

-⑤ The concrete cover at the foot is 25mm. Smaller plate thicknesses B₂ are only possible with suitable corrosion protection.

-The upper reinforcement must be dimensioned for transport purposes.



① Angled pull at 30° < β ≤ 60° without angled pull reinforcement only permissible when:

βW ≥ 15 N/mm²+3-fold min. thickness of unit

βW ≥ 25 N/mm²+2,5-fold min. thickness of unit

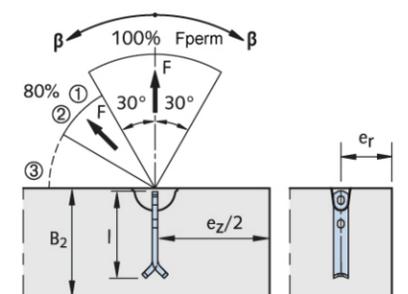
βW ≥ 35 N/mm²+2-fold min. thickness of unit

(minimum thickness of unit: e=2×e_r)

② Where concrete strength

βW ≥ 23 N/mm² F_{perm} can be taken as 100%.

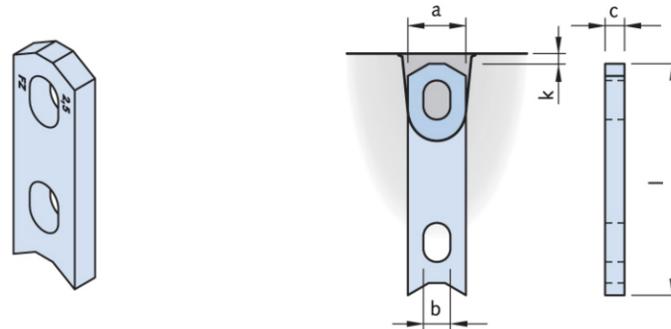
③ Angle of β > 60° due to cable spread are impermissible!



Two hole anchor TPA-FZ

Anchor dimensions

The head of the two hole anchor is identical to the head of the spread anchor. The anchorage in concrete is achieved by means of a reinforcement tail. Longer anchors with additional holes can be produced on request.



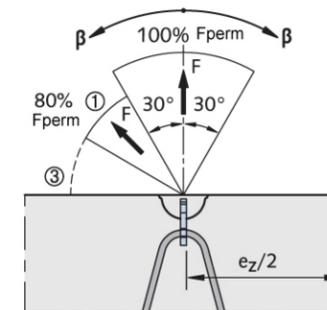
Dimensions, Two hole anchor TPA-FZ

Designation mill finish	Order No. 0070.020-	Load group [t]	a [mm]	b [mm]	c [mm]	l [mm]	k [mm]
TPA-FZ 1,4- 9	00002	2,5	30	14	6	90	10
TPA-FZ 2,0- 9	00003		30	14	8	90	
TPA-FZ 2,5- 9	00004		30	14	10	90	
TPA-FZ 3,0-12	00005	5,0	40	18	10	120	10
TPA-FZ 4,0-12	00006		40	18	12	120	
TPA-FZ 5,0-12	00007		40	18	15	120	
TPA-FZ 7,5-16	00009	10,0	60	26	16	160	15
TPA-FZ 10,0-17	00010		60	30	20	165	
TPA-FZ 14,0-24	00011	26,0	80	35	20	240	15
TPA-FZ 22,0-30	00013		90	35	28	300	
TPA-FZ 26,0-30	00012		120	65	30	300	

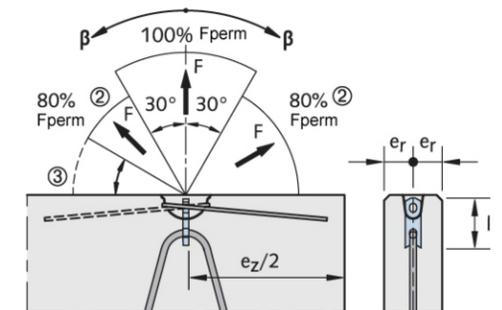
Designation hot-dip galvanised	Order No. 0070.110-	Load group [t]	a [mm]	b [mm]	c [mm]	l [mm]	k [mm]
TPA-FZ 1,4- 9 FV	00064	2,5	30	14	6	90	10
TPA-FZ 2,0- 9 FV	00065		30	14	8	90	
TPA-FZ 2,5- 9 FV	00066		30	14	10	90	
TPA-FZ 3,0-12 FV	00067	5,0	40	18	10	120	10
TPA-FZ 4,0-12 FV	00068		40	18	12	120	
TPA-FZ 5,0-12 FV	00069		40	18	15	120	
TPA-FZ 7,5-16 FV	00071	10,0	60	26	16	160	15
TPA-FZ 10,0-17 FV	00072		60	30	20	165	
TPA-FZ 14,0-24 FV	00073	26,0	80	35	20	240	15
TPA-FZ 22,0-30 FV	00075		90	35	28	300	
TPA-FZ 26,0-30 FV	00074		120	65	30	300	

Load capacity, installation dimensions

Without angled pull reinforcement



With angled pull reinforcement



Position the angled pull reinforcement as closely to the recess former as possible

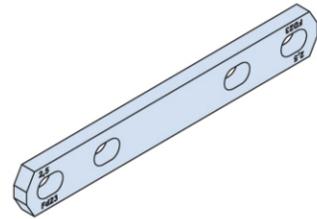
- ① Angled pull at $30^\circ < \beta \leq 60^\circ$ without angled pull reinforcement only permissible when:
 - $\beta W \geq 15 \text{ N/mm}^2 + 3\text{-fold min. thickness of unit}$
 - $\beta W \geq 25 \text{ N/mm}^2 + 2,5\text{-fold min. thickness of unit}$
 - $\beta W \geq 35 \text{ N/mm}^2 + 2\text{-fold min. thickness of unit}$
 - (minimum thickness of unit: $e = 2 \times e_r$)
- ② Where concrete strength $\beta W \geq 23 \text{ N/mm}^2$ F_{perm} can be taken as 100%.
- ③ Angle of $\beta > 60^\circ$ due to cable spread are impermissible!

Load capacity, installation dimensions TPA-FZ

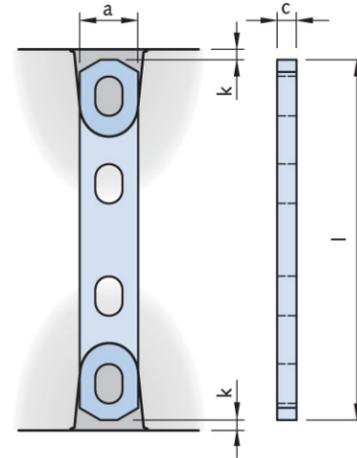
Concrete strength $\beta w \geq 15 \text{ N/mm}^2$

Designation	Load group [t]	Anchor length l [mm]	Spacing between anchor centre e_z [mm]	Minimum thickness of precast unit $2 \times e_r$ [mm]	100% F_{perm} Pull ($\beta \leq 30^\circ$) [kN]	80% F_{perm} Angled pull ($\beta > 30^\circ$) [kN]
TPA-FZ 1,4- 9	2,5	90	500	80	14	11.2
TPA-FZ 2,0- 9		90	600	90	20	16
TPA-FZ 2,5- 9		90	600	100	25	20
TPA-FZ 3,0-12	5,0	120	650	100	30	24
TPA-FZ 4,0-12		120	700	110	40	32
TPA-FZ 5,0-12		120	750	120	50	40
TPA-FZ 7,5-16	10,0	160	1200	130	75	60
TPA-FZ 10,0-17		165	1200	140	100	80
TPA-FZ 14,0-24	26,0	240	1500	160	140	112
TPA-FZ 22,0-30		300	1500	180	220	176
TPA-FZ 26,0-30		300	1500	200	260	208

Dimensions TPA-FD



This anchor is identical to the head of the two hole anchor. It was specially developed for the tilting of columns or similar construction elements



Dimensions, Double ended column anchor TPA-FD

Designation mill finish	Order No. 0070.080-	Designation hot-dip galvanised	Order No. 0070.110-	Load group [t]	Column width [mm]	a [mm]	c [mm]	l [mm]	k [mm]
TPA-FD 2,5-23	00001	TPA-FD 2,5-23 FV	00080	2,5	250	30	10	228	10
TPA-FD 2,5-28	00002	TPA-FD 2,5-28 FV	00081		300	30	10	278	
TPA-FD 2,5-33	00003	TPA-FD 2,5-33 FV	00082		350	30	10	328	
TPA-FD 5,0-23	00004	TPA-FD 5,0-23 FV	00083	5,0	250	40	15	226	10
TPA-FD 5,0-28	00005	TPA-FD 5,0-28 FV	00084		300	40	15	276	
TPA-FD 5,0-33	00006	TPA-FD 5,0-33 FV	00085		350	40	15	326	
TPA-FD 5,0-38	00007	TPA-FD 5,0-38 FV	00086		400	40	15	376	
TPA-FD 5,0-43	00008	TPA-FD 5,0-43 FV	00087		450	40	15	426	
TPA-FD 5,0-48	00009	TPA-FD 5,0-48 FV	00088		500	40	15	476	
TPA-FD 7,5-26	00010	TPA-FD 7,5-26 FV	00089	10,0	300	60	16	262	15
TPA-FD 7,5-31	00011	TPA-FD 7,5-31 FV	00090		350	60	16	312	
TPA-FD 7,5-36	00012	TPA-FD 7,5-36 FV	00091		400	60	16	362	
TPA-FD 7,5-41	00013	TPA-FD 7,5-41 FV	00092		450	60	16	412	
TPA-FD 7,5-46	00014	TPA-FD 7,5-46 FV	00093		500	60	16	462	
TPA-FD 10,0-26	00015	TPA-FD 10,0-26 FV	00094		300	60	20	262	
TPA-FD 10,0-31	00016	TPA-FD 10,0-31 FV	00095		350	60	20	312	
TPA-FD 10,0-36	00017	TPA-FD 10,0-36 FV	00096		400	60	20	362	
TPA-FD 10,0-41	00018	TPA-FD 10,0-41 FV	00097	450	60	20	412		
TPA-FD 10,0-46	00019	TPA-FD 10,0-46 FV	00098	500	60	20	462		
TPA-FD 12,5-36	00020	TPA-FD 12,5-36 FV	00099	26,0	400	80	16	362	15
TPA-FD 12,5-41	00021	TPA-FD 12,5-41 FV	00100		450	80	16	412	
TPA-FD 12,5-46	00022	TPA-FD 12,5-46 FV	00101		500	80	16	462	
TPA-FD 17,0-36	00023	TPA-FD 17,0-36 FV	00102		400	80	20	362	
TPA-FD 17,0-41	00024	TPA-FD 17,0-41 FV	00103		450	80	20	412	
TPA-FD 17,0-46	00025	TPA-FD 17,0-46 FV	00104		500	80	20	462	
TPA-FD 22,0-41	00026	TPA-FD 22,0-41 FV	00105		450	90	28	412	
TPA-FD 22,0-46	00027	TPA-FD 22,0-46 FV	00106		500	90	28	462	
TPA-FD 22,0-56	00028	TPA-FD 22,0-56 FV	00107	600	90	28	562		

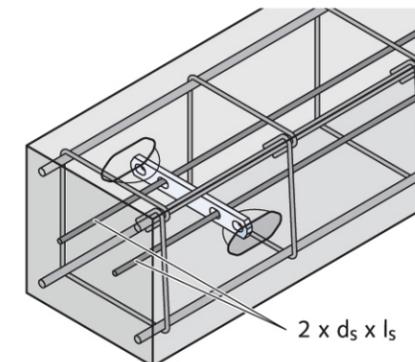
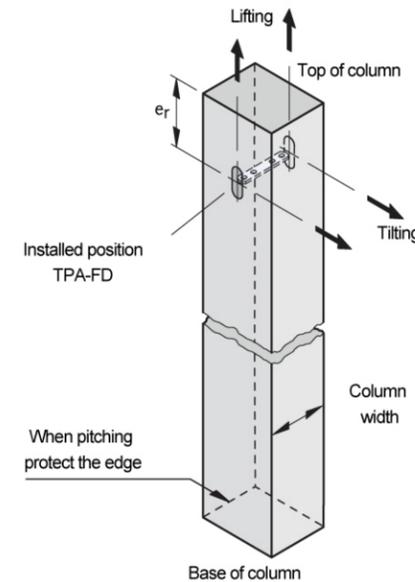
Other anchor lengths on request

Double ended column anchor TPA-FD

Load capacity, reinforcement

The anchor is capped with the appropriate recess former at both ends. The assembly of anchor and recess formers is then pushed between the reinforcement bars and fastened to the formwork at both ends. The additional reinforcement bars are then pushed through the holes of the anchor and wired into place.

The diameter of the reinforcement tails is the same as for the two hole anchor.



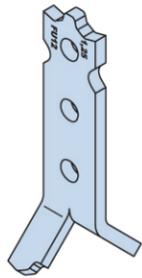
Load capacity double ended column anchor TPA-FD

Designation	Load group [t]	Reinforcement		Load capacity	
		ds [mm]	ls [mm]	for βW ≥ 15 N/mm ² [kN]	for βW ≥ 25 N/mm ² [kN]
TPA-FD 2,5-23	2,5	12	750	40	50
TPA-FD 2,5-28		12	750	40	50
TPA-FD 2,5-33		12	750	40	50
TPA-FD 5,0-23	5,0	16	1000	80	100
TPA-FD 5,0-28		16	1000	80	100
TPA-FD 5,0-33		16	1000	80	100
TPA-FD 5,0-38		16	1000	80	100
TPA-FD 5,0-43		16	1000	80	100
TPA-FD 5,0-48		16	1000	80	100
TPA-FD 7,5-26	10,0	20	1200	120	150
TPA-FD 7,5-31		20	1200	120	150
TPA-FD 7,5-36		20	1200	120	150
TPA-FD 7,5-41		20	1200	120	150
TPA-FD 7,5-46		20	1200	120	150
TPA-FD 10,0-26		25	1500	160	200
TPA-FD 10,0-31		25	1500	160	200
TPA-FD 10,0-36		25	1500	160	200
TPA-FD 10,0-41	25	1500	160	200	
TPA-FD 10,0-46	25	1500	160	200	
TPA-FD 12,5-36	26,0	25	1500	200	250
TPA-FD 12,5-41		25	1500	200	250
TPA-FD 12,5-46		25	1500	200	250
TPA-FD 17,0-36		28	1600	272	340
TPA-FD 17,0-41		28	1600	272	340
TPA-FD 17,0-46		28	1600	272	340
TPA-FD 22,0-41		28	2000	352	440
TPA-FD 22,0-46		28	2000	352	440
TPA-FD 22,0-56		28	2000	352	440

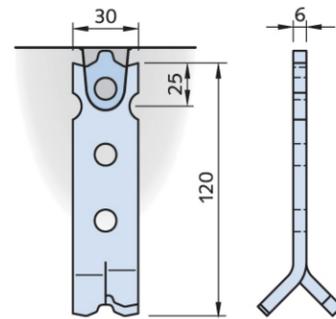
Note:

The larger the dimension e_r , the greater the load on the anchor when tilting, but the lower the load on the edge at the base of the column.

Load capacity, anchor and installation dimensions, reinforcement

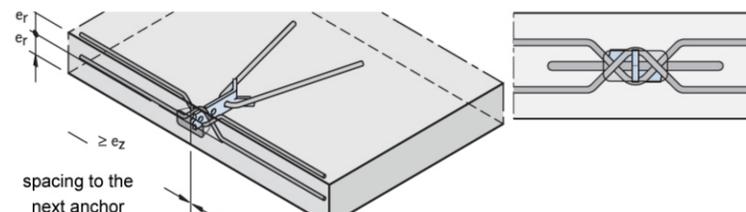


This anchor combines the opportunities of spread-, two hole- and erection anchor with a very small recess in the precast element. This is a special load group and not part of the normal load group system.

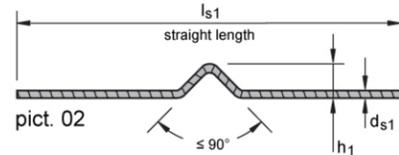


Dimension, Universal anchor TPA-FU

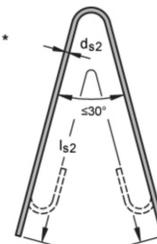
Designation	Order No.	Designation	Order No.	Load group
mill finish	0070.100-	hot-dip galvanised	0070.100-	[t]
TPA-FU 1,25-12	00001	TPA-FX 1,25-12 FV	00003	1,25



- Erection reinforcement**
- Reinforcement steel *
 - d_{s1} dia.8mm, cut length 600 mm
 - h_1 = depending on thickness of element
 - Bending radius acc. to DIN 1045-1



- Additional reinforcement for pull**
- Reinforcement steel *
 - d_{s2} dia.8mm, cut length l_{s2} 700mm



For the handling of very thin precast concrete units (e.g. balcony parapet panels), erection and transport anchors are required, which are especially adapted to those requirements. The FRIMEDA universal anchor TPA-FU 1.25-12 has been designed for this specific application, and is ideal for tilting, turning and lifting units in the above situation.

Recommended reinforcement

An additional reinforcement tail as in pict. 01 is essential for distributing the loads in very thin panels or on ones with only a single-layer reinforcement.

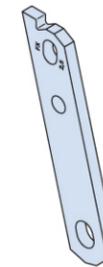
For turning and tilting, a turning reinforcement as shown pict. 02 must be incorporated.

* Yield strength: 500 N/mm², tensile strength: 550 N/mm²

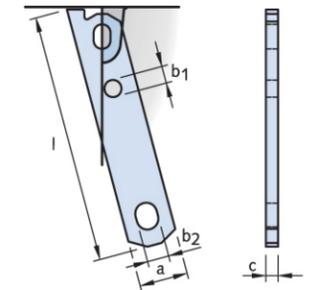
Permitted loads of universal anchor TPA-FU

Designation	Minimum spacing between centres	thickness of element	Central pull up to 30°			Angled pull up to 45°			Tilting and turning		
			Permitted load at concrete strength			Permitted load at concrete strength			Permitted load at concrete strength		
			$\beta W = 15 \text{ N/mm}^2$	$\beta W = 25 \text{ N/mm}^2$	$\beta W = 35 \text{ N/mm}^2$	$\beta W = 15 \text{ N/mm}^2$	$\beta W = 25 \text{ N/mm}^2$	$\beta W = 35 \text{ N/mm}^2$	$\beta W = 15 \text{ N/mm}^2$	$\beta W = 25 \text{ N/mm}^2$	$\beta W = 35 \text{ N/mm}^2$
TPA-FU 1,25-12	240	60	10.0 ①	12.5 ①	12.5 ①	10.0 ①	12.5 ①	12.5 ①	-	-	-
		80	12.5 ①	12.5 ①	12.5 ①	10.0 ①	12.5 ①	12.5 ①	4.1	4.6	5.0
		100	12.5 ①	12.5	12.5	10.0 ①	12.5	12.5	4.5	5.2	5.6
		120	12.5	12.5	12.5	12.5	12.5	12.5	4.8	5.6	6.0
		140	12.5	12.5	12.5	12.5	12.5	12.5	6.0	6.25	6.25
		160	12.5	12.5	12.5	12.5	12.5	12.5	6.25	6.25	6.25

Dimensions TPA-FX

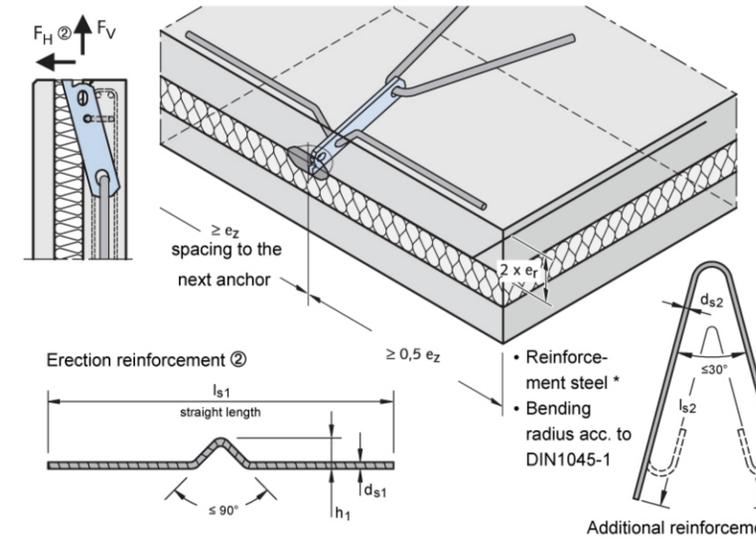


This anchor is specially designed for use with precast sandwich panels. Its suspension point is close to the gravity axis thus allowing the element to be transported and erected in an upright position.



Dimensions, Sandwich panel anchor TPA-FX

Designation	Order No.	Designation	Order No.	Load group	a	b1	b2	c	l
mill finish	0070.090-	hot-dip galvanised	0070.090-	[t]	[mm]	[mm]	[mm]	[mm]	[mm]
TPA-FX 2,5-25	00001	TPA-FX 2,5-25 FV	00006	2,5	40	14	18	10	250
TPA-FX 5,0-30	00002	TPA-FX 5,0-30 FV	00007	5,0	60	17.5	26	16	300
TPA-FX 7,5-35	00003	TPA-FX 7,5-35 FV	00008	10,0	80	25	35	16	350
TPA-FX 10,0-35	00004	TPA-FX 10,0-35 FV	00009		80	25	35	20	350
TPA-FX 17,0-40	00005	TPA-FX 17,0-40 FV	00010	26,0	100	30	35	20	400



The specially designed sloping head of the sandwich panel anchor type TPA-FX can be inserted close to the gravity axis in large precast concrete sandwich-panels. The panel hangs nearly upright during transportation and installation. The head shape is compatible with the EATHU range of TPA accessories.

- ① h_1 = acc. to thickness of element, but at least as per table below
- ② Only required if F_H exists, e.g. when positive production

* Yield strength: 500 N/mm², tensile strength: 550 N/mm²

Reinforcement

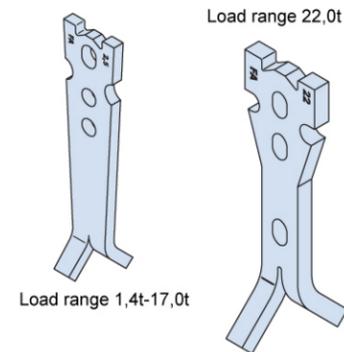
Concrete strength $\beta W \geq 15 \text{ N/mm}^2$

Designation	Load group	Minimum spacing between centres e_z	thick-ness of element $2 \times e_r$	Slot-in links for pull * $d_s \times l_s$	Erection reinforcement (not included in delivery)			Additional reinf. for pull (not included in delivery)		Load capacity		recommended recess former
					d_{s1}	l_{s1}	h_1 ③	d_{s2}	l_{s2}	[kN]	[kN]	
TPA-FX 2,5-25	2,5	600	100	2 dia. 8 x 600	10	600	≥ 60	14	800	25	8	TPA-A1 2,5
TPA-FX 5,0-30	5,0	750	120	2 dia. 8 x 800	14	700	≥ 80	16	1200	50	18	TPA-A1 5,0
TPA-FX 7,5-35	10,0	1200	130	2 dia. 10 x 800	16	800	≥ 100	25	1400	75	26	TPA-A1 10,0
TPA-FX 10,0-35		1200	140	4 dia. 10 x 800	20	900	≥ 120	25	1800	100	35	TPA-A1 10,0
TPA-FX 17,0-40	26,0	1500	180	4 dia. 12 x 1200	20	1100	≥ 140	28	2500	170	50	TPA-A1 26,0

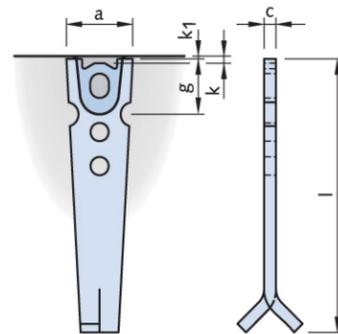
③ In order to ensure adequate corrosion protection, we recommend hot-dip galvanised additional reinforcement.

④ The loads at diagonal pull for concrete strengths < 23 N/mm² must be reduced to 80%.

Erection Anchor/Unilateral Anchor

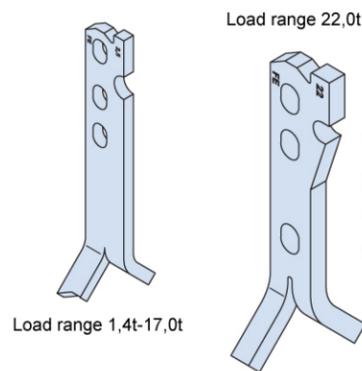


This anchor is specially designed for use with precast sandwich panels. Its suspension point is close to the gravity axis thus allowing the element to be transported and erected in an upright position.

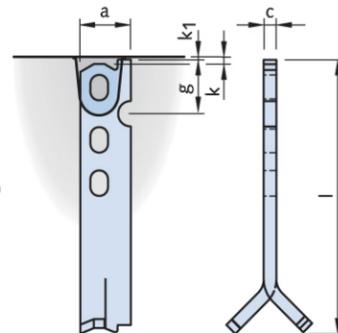


Dimensions, Erection anchor TPA-FA

Designation mill finish	Order No. 0070.030-	Designation hot-dip galvanised	Order No. 0070.110-	Load group [t]	a [mm]	c [mm]	l [mm]	g [mm]	k [mm]	k1 [mm]
TPA-FA 1,4- 20	00001	TPA-FA 1,4- 20 FV	00001	2,5	55	6	200	45	10	5
TPA-FA 2,5- 23	00002	TPA-FA 2,5- 23 FV	00002		55	10	230	45		
TPA-FA 4,0-27	00003	TPA-FA 4,0-27 FV	00003	5,0	70	12	270	70	10	5
TPA-FA 5,0-29	00004	TPA-FA 5,0-29 FV	00004		70	15	290	70		
TPA-FA 7,5-32	00005	TPA-FA 7,5-32 FV	00005	10,0	95	15	320	90	15	6
TPA-FA 10,0-39	00006	TPA-FA 10,0-39 FV	00006		95	20	390	90		
TPA-FA 12,5-50	00007	TPA-FA 12,5-50 FV	00007	26,0	148	20	500	90	15	9
TPA-FA 17,0-50	00008	TPA-FA 17,0-50 FV	00008		148	25	500	90		
TPA-FA 22,0-50	00009	TPA-FA 22,0-50 FV	00009		148	30	500	90		



This anchor is specially designed for use with precast sandwich panels. Its suspension point is close to the gravity axis thus allowing the element to be transported and erected in an upright position.



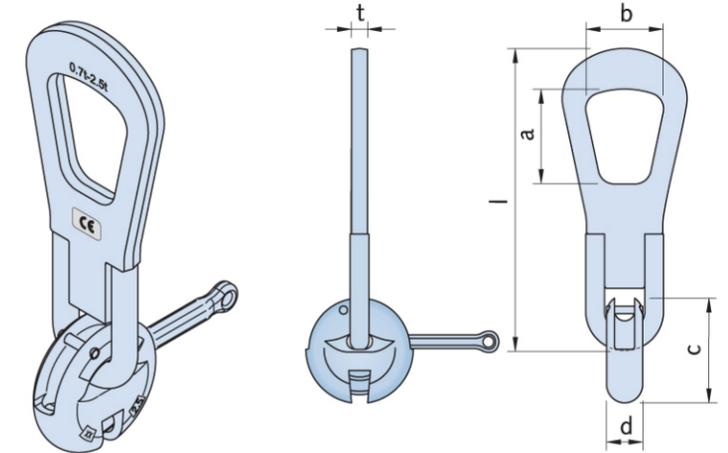
Dimensions, Unilateral erection anchor TPA-FE

Designation mill finish	Order No. 0070.040-	Designation hot-dip galvanised	Order No. 0070.110-	Load group [t]	a [mm]	c [mm]	l [mm]	g [mm]	k [mm]	k1 [mm]
TPA-FE 1,4- 20	00001	TPA-FE 1,4- 20 FV	00010	2,5	40	6	200	42.2	10	5
TPA-FE 2,5- 23	00002	TPA-FE 2,5- 23 FV	00011		40	10	230	42.5		
TPA-FE 4,0-27	00003	TPA-FE 4,0-27 FV	00012	5,0	55	12	270	50.5	10	5
TPA-FE 5,0-29	00004	TPA-FE 5,0-29 FV	00013		55	15	290	50.5		
TPA-FE 7,5-32	00005	TPA-FE 7,5-32 FV	00014	10,0	80	15	320	78,0	15	6
TPA-FE 10,0-39	00006	TPA-FE 10,0-39 FV	00015		80	20	390	78,0		
TPA-FE 12,5-50	00007	TPA-FE 12,5-50 FV	00016	26,0	115	20	500	88.5	15	9
TPA-FE 17,0-50	00008	TPA-FE 17,0-50 FV	00017		115	25	500	88.5		
TPA-FE 22,0-50	00009	TPA-FE 22,0-50 FV	00018		115	30	500	88.5		

Ring clutch TPA-R1 with shackle for manual release

The ring clutch consists of a shackle and a clutch head. The shackle is free to move in any direction. The clutch head incorporates a locking bolt which fastens to the anchor. Anchors must be cast in with the correct recess former

Ring clutches are available in four load groups. There are three or four anchors in each load group.



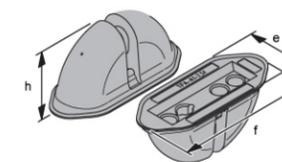
TPA-R1

Designation	Order No. 0071.010-	Load group [t]	l [mm]	a [mm]	b [mm]	c [mm]	d [mm]	t [mm]
TPA R1 2,5	00001	2,5	265	70	58	80	27	12
TPA R1 5,0	00002	5,0	330	86	65	105	36	16
TPA R1 10,0	00003	10,0	425	112	90	150	50	25
TPA R1 26,0	00004	26,0	605	160	120	206	72	30

Recess former

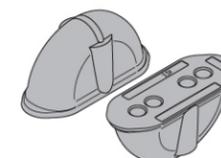
Plastic recess former TPA-A1

Plastic recess former TPA-A9



Designation	Order No. 0072.010-	for all anchors, not FU, FG	Designation	Order No. 0072.090-	Load group [t]	e [mm]	f [mm]	h [mm]	Thread M	Colour	for all anchors, not FA, FE, FX, FU, FG
TPA-A1 2,5	00001		TPA-A9 2,5	00001	2,5	43	104	45	8	orange	
TPA-A1 5,0	00002		TPA-A9 5,0	00002	5,0	49	126	59	8	black	
TPA-A1 10,0	00003		TPA-A9 10,0	00003	10,0	67	188	85	12	green	
TPA-A1 26,0	00004		TPA-A9 26,0	00004	26,0	112	234	118	16	blue	

Rubber recess former TPA-A2

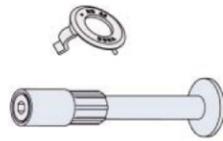


Designation	Order No. 0073.020-	Load group [t]	e [mm]	f [mm]	h [mm]	Colour	for all anchors, not FA, FE, FX, FU, FG
TPA-A2 2,5	00001	2,5	41	102	47	black	
TPA-A2 5,0	00002	5,0	51	126	59		
TPA-A2 10,0	00003	10,0	70	184	84		

SA-SOCKET LIFTING SYSTEM

SA-Short anchor

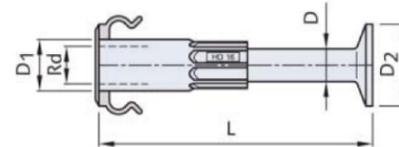
ALLOWABLE LOAD CAPACITY,
DIMENSIONS AND REINFORCEMENT FOR SA-SHORT ANCHORS



For lifting flat structural elements such as floor slabs etc.

Load groups 1.3 - 5.0

Also available with dacrometised or stainless steel socket.

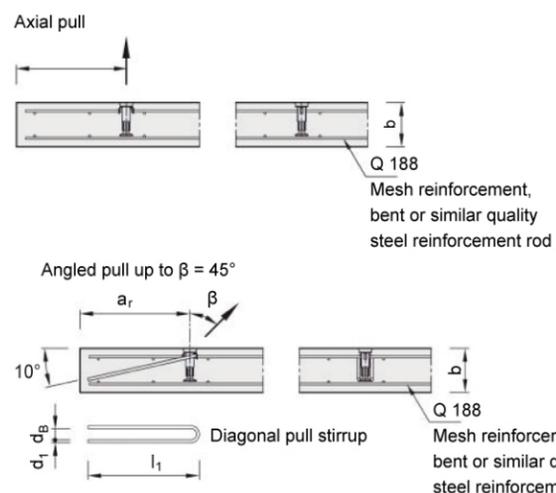


Allowable load capacities for SA Anchors in kN

Load group	Minimum structural element thickness b (mm)	Concrete compressive strength		Minimum structural element thickness b (mm)	Concrete compressive strength	
		15 N/mm ²	25 N/mm ²		15 N/mm ²	25 N/mm ²
		Axial and angled pull up to 45°	Axial and angled pull up to 45°		Axial and angled pull up to 45°	Axial and angled pull up to 45°
1.3	115	13.0	13.0	115	13.0	13.0
2.5	160	19.5	25.0	125	16.5	21.3
4.0	220	31.2	40.0	160	25.3	32.6
5.0	275	39.3	50.0	175	29.1	37.5

Dimensions and reinforcement for the SAS Anchors in mm

Load group	Dimensions of SAS Anchors					Anchor arrangement *		Additional reinforcement		
	Rd/M	D	D ₁	D ₂	L	a _r min	a _a min	Diagonal pull up to 45°		
								d ₁	l ₁	d _B
1.3	12	10	17	25	70	250	500	10	370	19
2.5	16	14	22	35	90	400	800	12	520	24
4.0	20	18	27	45	125	500	1000	14	610	29
5.0	24	20	32	50	140	650	1300	14	720	34



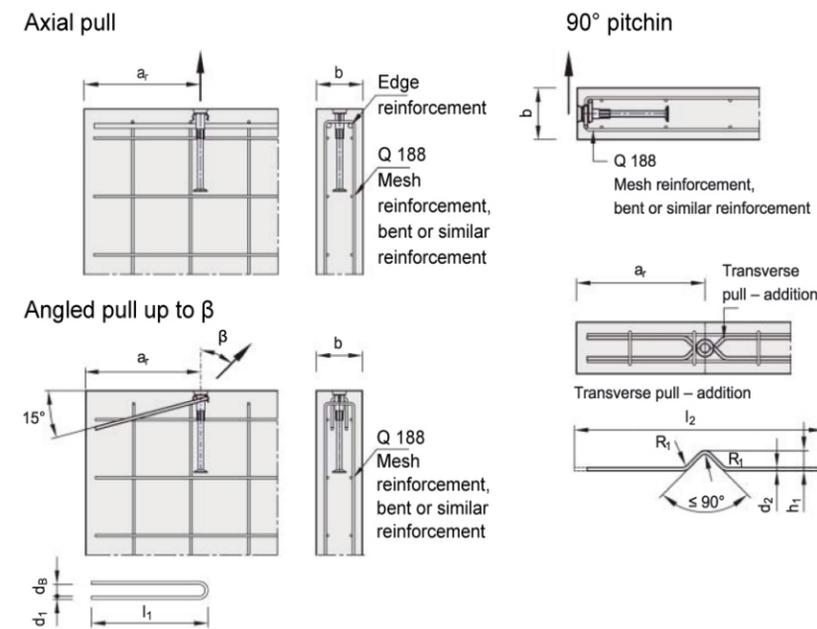
* a_r = Edge distance (a_r min applies to axial pull. For angled pull, see reinforcement)
* a_a = interaxial distance

The required additional reinforcement must be read from the reinforcement drawings and tables for the corresponding load groups. The value given for the concrete compressive strength relates to normal concrete according to DIN EN 206 or the new DIN 1045-1 on 150 mm test cubes.

SA-Long anchor

Dimensions and reinforcement for SAL-Anchors in mm

Load group	SAL-Anchor dimensions					Minimum element thickness b	Position of anchors *		Additional reinforcement							
	Rd/M	D	D ₁	D ₂	L		a _r min	a _a min	Edge reinforcement	Angled load up to 45°			Pitching load			
										d ₁	l ₁	d _B	d ₂	l ₂ **	h ₂ ***	R ₁
1.3	12	10	17	25	130	80	280	560	-	10	600	19	10	600	33	10
						100									43	
						120									53	
2.5	16	14	22	35	200	80	420	840	-	10	600	24	12	800	37	11
						100									47	
						120									57	
4.0	20	18	27	45	258	80	400	800	-	12	1000	29	14	950	42	13
						100									52	
						120									62	
						140									72	
						160									82	
5.0	24	20	32	50	325	100	500	1000	-	12	1000	34	16	1000	56	16
						120									66	
						140									76	
						160									86	
7.5	30	24	39	60	400	140	615	1230	2Ø12	20	1100	41	20	1200	84	20
						160									94	
						180									104	
						200									114	
						220									124	
10.0	36	28	47	70	475	160	730	1460	2Ø14	20	1100	49	20	1200	98	24
						180									108	
						200									118	
						220									128	



* a_r = Edge distance
* a_a = spacings
** Extended length
*** at c_{min} = 20 mm

The pitching reinforcement on both sides also serves as diagonal-pull reinforcement. Additional angled-pull reinforcement is not necessary. This additional reinforcement placed in with tight contact with the socket.

Note:
Element thickness, edge distance and spacings are for guidance only.

Note:
β < 45° a is preferred