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MAGO Transport Anchor Systems

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MAGO ANCHOR SOCKET

MAGO Lifting Socket

MAGO Lifting Sockets are widely used in the application of precast concrete construction, such as lifting beams, wall and floor slabs etc.

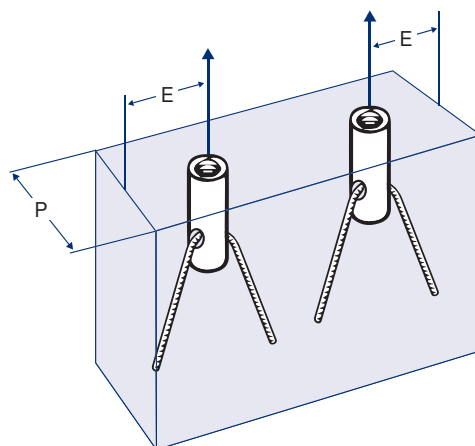
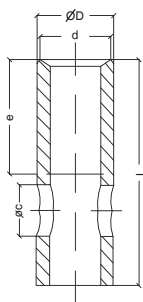
A reinforcement bar is to be inserted through the cross hole to transfer the load into the concrete. In order to distribute the forces into the concrete, a bent reinforcement bar of BSt 500 S must be inserted through the cross hole of MAGO Sockets. The reinforcement bar can be spread or have parallel sides.

To guarantee the local force transmittance in the concrete, certain edge distance must be observed, for safety reason the thickness of the panel must not fall short of a certain minimum.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)				Edge Distance E	Panel Thickness P
					D	c	e	L		
RD 12 x 40	11112040	22112040	500	M 12 x 1.75	15	8	22	40	150	60
RD 14 x 47	11114047	22114047	800	M 14 x 2.0	18	10.5	25	47	200	70
RD 16 x 55	11116055	22116055	1.200	M 16 x 2.0	21	13	27	55	200	80
RD 18 x 65	11118065	22118065	1.600	M 18 x 2.5	24	13.5	34	65	250	95
RD 20 x 67	11120067	22120067	2.000	M 20 x 2.5	27	15.5	35	67	275	110
RD 24 x 77	11124077	22124077	2.500	M 24 x 3.0	31	18	43	77	300	125
RD 30 x 105	11130105	22130105	4.000	M 30 x 3.5	39.5	22.5	56	105	350	140
RD 36 x 125	11136125	22136125	6.300	M 36 x 4.0	47	27	68	125	400	200
RD 42 x 145	11142145	22142145	8.000	M 42 x 4.5	54	32	80	145	500	240
RD 52 x 195	11152195	22152195	12.500	M 52 x 5.0	67	40	97	195	600	280

Material: Seamless precision tube, galvanized. Stainless steel.



Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Flat Plate Socket

MAGO Flat Plate Sockets are ideal for large, thin precast concrete components such as slabs and shells, on which it is hard to place normal lifting sockets because of the thinness of the component, additional reinforcement must be used to transmit the load into the concrete.

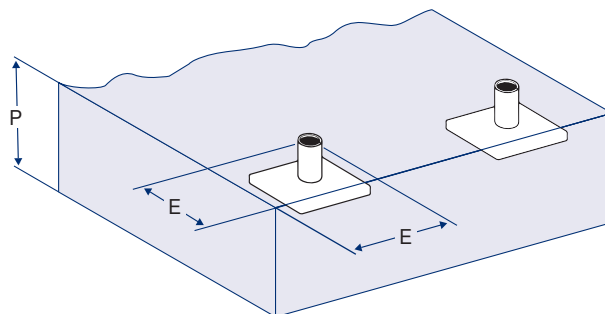
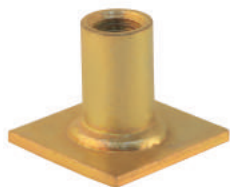
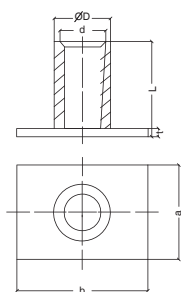
Its necessary to install special reinforcement to transmit the force, as well as a surface area reinforcement mesh.

To guarantee the transmittance into the concrete, certain edge distance must be observed, also, the panel thickness must not fall short of a certain minimum size because of possible corrosion.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	a	b	t	L		
RD 12	11312030	11312030	500	M 12 x 1.75	15	25	35	4	30	150	75
RD 14	11314033	11314033	800	M 14 x 2.0	18	35	35	4	33	200	85
RD 16	11316035	11316035	1.200	M 16 x 2.0	21	35	50	4	35	280	85
RD 18	11318044	11318044	1.600	M 18 x 2.5	24	45	60	5	44	290	100
RD 20	11320047	11320047	2.000	M 20 x 2.5	27	60	60	5	47	340	100
RD 24	113324054	113324054	2.500	M 24 x 3.0	31	60	80	5	54	340	120
RD 30	11330072	11330072	4.000	M 30 x 3.5	39.5	80	100	6	72	440	140
RD 36	11336084	11336084	6.300	M 36 x 4.0	47	100	130	6	84	590	160
RD 42	11342098	11342098	8.000	M 42 x 4.5	54	130	130	8	98	650	170
RD 52	113521417	113521417	12.500	M 52 x 5.0	67	130	150	10	117	790	200

Material: Seamless precision tube with high strength steel plate.



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MAGO Solid Rod Socket

MAGO Solid Rod Sockets are heavy duty lifting or fixing sockets for high tensile and shear loads.

They are widely used in the application of precast concrete construction, such as lifting beams, wall and floor slabs etc.

A reinforcement bar is to be inserted through the cross hole transfer the load into the concrete.

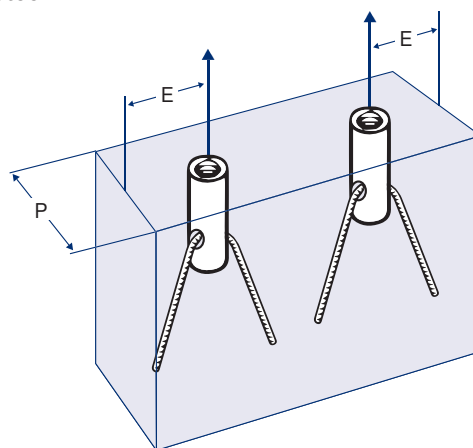
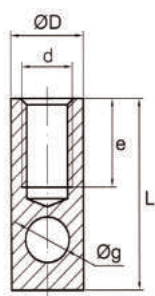
MAGO solid rod socket are economic and have advantages in this component, where the long reinforcement tail provides excellent anchorage, reinforcement tail should normally be U bar.

MAGO solid rod socket is calculated to ensure the total anchor load is transferred through the reinforcement into the concrete.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)				Edge Distance E	Panel Thickness P
					D	g	e	L		
RD 10 x 42	11410042	22410042	600	M 10	16	9	22	42	150	60
RD 12 x 50	11412050	22412050	900	M 12	18	11	20	50	150	75
RD 12 x 75	11412075	22412075	900	M 12	18	11	40	75	150	75
RD 16 x 75	11416075	22416075	1700	M 16	23	14	40	75	200	80
RD 20 x 75	11420075	22420075	2300	M 20	28	16	45	75	275	100
RD 24 x 100	11424100	22424100	3000	M 24	32	18	55	100	300	120
RD 30 x 125	11430125	22430125	6000	M 30	40	22	60	125	325	140
RD 36 x 140	11430175	22430175	7000	M 36	50	27	65	140	400	200
RD 42 x 150	11430250	22430250	8500	M 42	55	32	80	150	500	240
RD 52 x 180	11431100	22431100	13000	M 52	70	40	97	180	600	275

Material: High Strength Solid bar, galvanized. Stainless steel.



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MAGO Solid Rod Socket with Cross bar

MAGO Solid Rod Socket with Cross bar are heavy duty lifting or fixing sockets for high tensile and shear loads.

They are widely used in the application of precast concrete construction, such as lifting beams, wall and floor slabs etc. The Cross Bar is factory fitted.

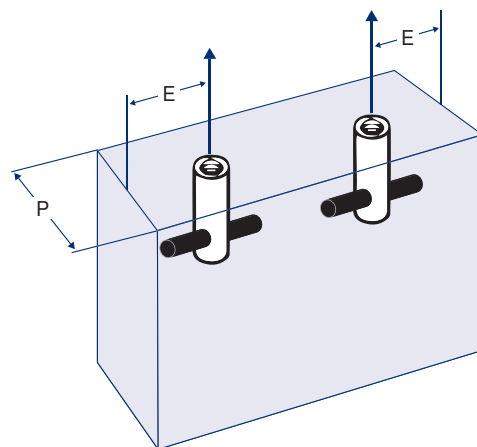
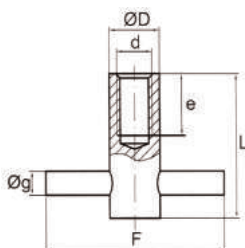
To guarantee the local force transmittance in the concrete, certain edge distance must be observed, for safety reason the thickness of the panel must not fall short of a certain minimum.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	g	e	L	F		
RD 10 x 42	11510042	22510042	600	M 10	16	6/8	22	42	50	80	160
RD 12 x 50	11512050	22512050	900	M 12	18	10	20	50	75	90	180
RD 12 x 75	11512075	22512075	900	M 12	18	10	40	75	75	125	250
RD 16 x 75	11516075	22516075	1700	M 16	23	10/12	40	75	75	120	240
RD 20 x 75	11520075	22520075	2300	M 20	28	12/14	35	75	90	120	240
RD 24 x 100	11524100	22524100	3000	M 24	32	16	55	100	100	160	320
RD 30 x 125	11524150	22524150	6000	M 30	40	18	60	125	110	180	360
RD 36 x 140	11524275	22524275	7000	M 36	50	20	65	140	125	200	400
RD 42 x 150	11524350	22524350	8500	M 42	55	25	80	150	145	220	440
RD 52 x 180	11524400	22524400	13000	M 52	70	28	97	180	165	260	520

Material: High Strength Solid bar, galvanized. Stainless steel.

The Dimension g (a / b): a Stainless steel pin, b st 37.2 pin.



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MAGO Crown Foot Anchor

MAGO Crown Foot Anchors are suitable for lifting light weight flat units, Large surface, reinforced precast elements, floor slab and similar.

Their advantage is that in most cases no additional reinforcement is needed as the load is transferred through the crown foot to the concrete.

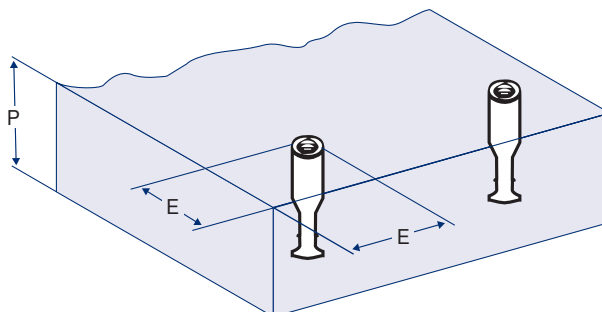
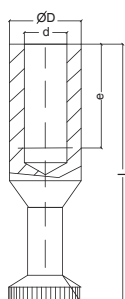
Precondition is that the slab is verified for load case (lifting) and the necessary bending reinforcement for the anchors is installed.

MAGO crown foot anchor bottom allow reinforcement rebar directly on it to fix the anchor.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)			Edge Distance E	Panel Thickness P
					D	L	e		
RD 12 x 50	12112050	22112050	500	M 12 x 1.75	17	50	24	100	75
RD 12 x 60	12112060	22112060	500	M 12 x 1.75	17	60	24	120	85
RD 14 x 70	12114070	22114070	800	M 14 x 2.0	19	70	28	140	95
RD 16 x 80	12116080	22116080	1200	M 16 x 2.0	21	80	32	160	105
RD 18 x 90	12118090	22118090	1600	M 18 x 2.5	24	90	36	180	115
RD 20 x 100	12120100	22120100	2000	M 20 x 2.5	27	100	40	200	125
RD 24 x 115	12124115	22124115	2500	M 24 x 3.0	31	115	48	230	140
RD 30 x 120	12130120	22130120	4000	M 30 x 3.5	40	120	60	280	165
RD 30 x 150	12130150	22130150	4000	M 30 x 3.5	40	150	60	300	175

Material: High Strength Steel, galvanized. Stainless steel.



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MAGO Wavy Tail Anchor

MAGO Wavy Tail Anchors are suitable for transporting very thin-walled precast components such as thin walls, flat panels etc, even precast masonry wall components can be transported with the **MAGO** Wavy Tail Anchor.

MAGO wavy tail anchor can be installed in concrete with compressive strength $\geq 15 \text{ N/mm}^2$ without additional reinforcement, provided that there is a minimum surface reinforcement, inserted waved rebar only takes over the local transmittance of force in the concrete.

To guarantee the local transfer of force into the concrete, certain edge distance must be observed. Also, the panel thickness must not fall short of a certain minimum.

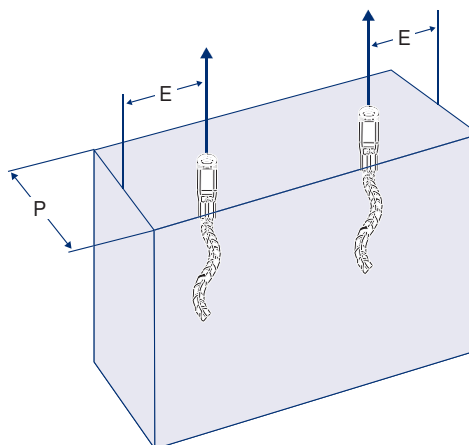
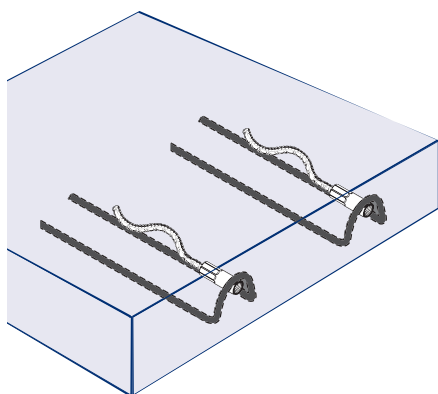
MAGO wavy tail anchor is made so that they can fit into the face of very thin concrete panels, they can be used when lifting concrete panels from horizontal in order to lift these in a vertical position.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm^2

Dimensions d x L	Ref. No.	A4 Ref. No.	SWL (kg)	Dimensions (mm)			Edge Distance E	Panel Thickness P
				L	d ¹	e		
RD 12 x 137	13112137	22112137	500	137	8	22	150	60
RD 14 x 170	13114170	22114170	800	170	10	25	200	70
RD 16 x 216	13116216	22116216	1200	216	12	27	200	80
RD 18 x 235	13118235	22118235	1600	235	14	34	250	95
RD 20 x 257	13120257	22120257	2000	257	16	35	275	110
RD 24 x 360	13124360	22124360	2500	360	16	43	300	125
RD 30 x 450	13130450	22130450	4000	450	20	56	350	140
RD 36 x 570	13136570	22136570	6300	470	25	68	400	200
RD 42 x 620	13142620	22142620	8000	620	28	80	500	240
RD 52 x 880	13142720	22142720	12500	880	32	100	600	280



Material: Seamless precision tubes with high strength rebar. Stainless steel tubes c/w rebar hot Zinc - sprayed.



Due to our consistent technical development and improvement, the technical data might be changed without notice.



MAGO Bolt Anchor

MAGO Bolt Anchors are suitable for transporting precast concrete components of varying dimensions, thin flat slabs, facing panels, beams of columns can all be easily transported by **MAGO Bolt Anchors**.

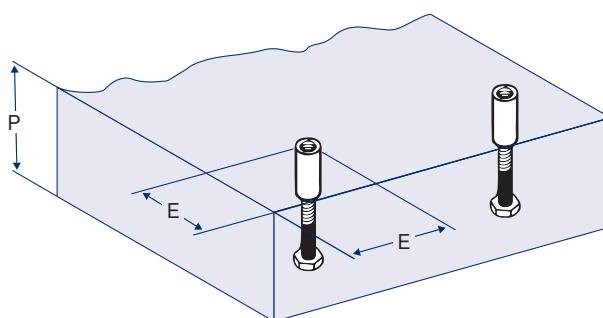
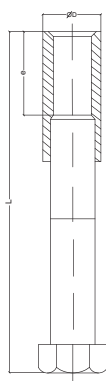
The load is transferred into the concrete through the bolt so generally no additional reinforcement is necessary.

In order to guarantee the local transmission of force into the concrete, certain edge distance must be observed, also, the panel thickness must not fall short of a certain minimum because of the danger of corrosion.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm^2

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)			Edge Distance E	Panel Thickness P
					D	L	e		
RD 12 x 100	14112100	22112100	500	M 12 x 1.75	16	100	23	105	90
RD 16 x 140	14116140	22116140	1200	M 12 x 1.75	22	140	29	120	100
RD 16 x 220	14116220	22116220	1200	M 12 x 1.75	22	220	29	120	100
RD 20 x 135	14120135	22120135	2000	M 20 x 2.5	26	135	35	190	150
RD 20 x 150	14120150	22120150	2000	M 20 x 2.5	26	150	35	190	150
RD 20 x 180	14120180	22120180	2000	M 20 x 2.5	26	180	35	190	150
RD 20 x 270	14120270	22120270	2000	M 20 x 2.5	26	270	35	190	150
RD 24 x 135	14124135	22124135	2500	M 24 x 3.0	32	135	46	210	160
RD 24 x 170	14124170	22124170	2500	M 24 x 3.0	32	170	46	210	160
RD 24 x 200	14124200	22124200	2500	M 24 x 3.0	32	200	46	210	160
RD 30 x 240	14130240	22130240	4000	M 30 x 3.5	40	240	60	250	190
RD 36 x 300	14136300	22136300	6300	M 36 x 4.0	47.5	300	74	290	230
RD 42 x 300	14142300	22142300	8000	M 42 x 4.5	54	300	68	320	270

Material: Seamless precision tube with high strength bolt.



Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Bolt Anchor with Plate

MAGO Bolt Anchors with plate are suitable for transporting precast concrete components of varying dimensions.

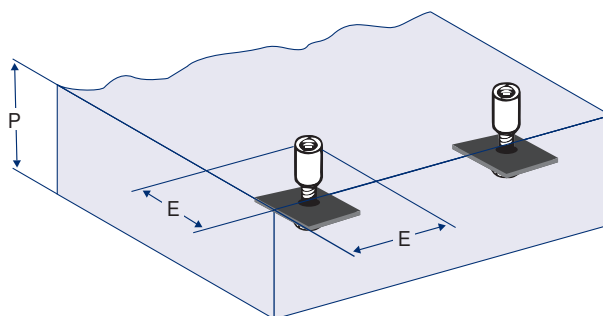
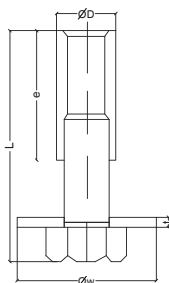
Thin flat slabs, facing panels, beams or columns can all be easily transported by **MAGO** Bolt Anchors with Plate.

The load is transferred into the concrete through the bolt, so generally no additional reinforcement is necessary.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	L	e	w	t		
RD 12 x 55	14212055	22212055	500	M 12 x 1.75	16	55	23	40x40	4	150	75
RD 16 x 75	14216075	22216075	1200	M 12 x 1.75	22	75	29	50x50	5	280	85
RD 20 x 90	14220090	22220090	2000	M 20 x 2.5	26	90	35	60x60	5	340	100
RD 24 x 110	14224110	22224110	2500	M 24 x 3.0	32	110	46	80x80	6	340	120
RD 30 x 140	14230140	22230140	4000	M 30 x 3.5	40	140	60	95x95	6	440	140

Material: Seamless Precision tube with high strength bolt.



Due to our consistent technical development and improvement, the technical data might be changed without notice.



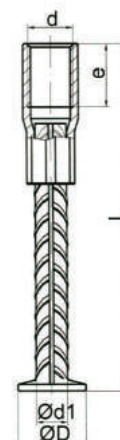
MAGO Combi Anchor

MAGO Combi Anchors are suitable for transporting precast concrete components of varying dimensions. Thin flat slabs, facing panels, beams or columns can all be easily transported by the **MAGO** Combi Anchor.

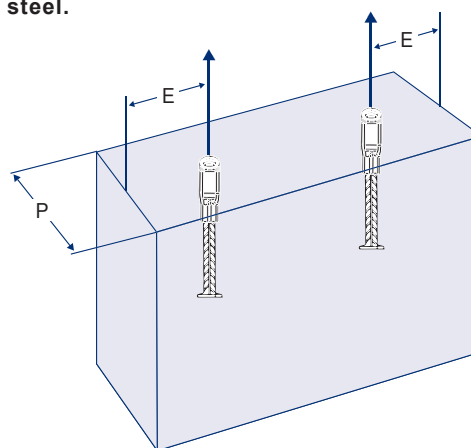
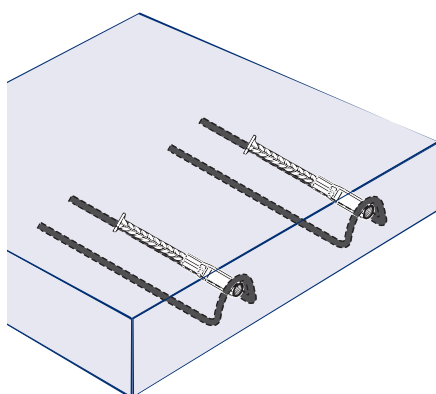
The load is transferred into the concrete through the round foot so generally no additional reinforcement is necessary.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Dimensions (mm)				Edge Distance E	Panel Thickness P
				L	d1	e	D		
RD 12 x 100	15112100	22112100	500	100	8	22	22	150	60
RD 12 x 174	15112174	22112174	500	174	8	22	22	150	60
RD 14 x 135	15114135	22114135	800	135	10	25	25	150	70
RD 14 x 167	15114167	22114167	800	167	10	25	25	150	70
RD 16 x 150	15116150	22116150	1200	150	10	27	27	200	80
RD 16 x 195	15116195	22116195	1200	195	10	27	27	200	80
RD 18 x 170	15118170	22118170	1600	170	14	34	35	225	80
RD 18 x 275	15118275	22118275	1600	275	14	34	35	225	80
RD 20 x 190	15120190	22120190	2000	190	16	35	40	250	100
RD 20 x 235	15120235	22120235	2000	235	16	35	40	250	100
RD 24 x 210	15124210	22124210	2500	210	18	43	40	300	100
RD 24 x 260	15124260	22124260	2500	260	18	43	40	300	100
RD 30 x 270	15130270	22130270	4000	270	20	56	50	350	120
RD 30 x 390	15130390	22130390	4000	390	20	56	50	350	120
RD 36 x 330	15136330	22136330	6300	330	25	68	60	400	140
RD 36 x 440	15136440	22136440	6300	440	25	68	60	400	140
RD 42 x 450	15142450	22142450	8000	450	28	80	70	450	180
RD 42 x 540	15142540	22142540	8000	540	28	80	70	450	180



Material: Seamless precision tube, galvanized. Stainless steel.



Due to our consistent technical development and improvement, the technical data might be changed without notice.

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MAGO Bar Anchor

MAGO Bar Anchors are suitable for transporting very thin-walled precast components such as thin walls, flat panels etc., even precast masonry wall components can be transported with this bar anchor.

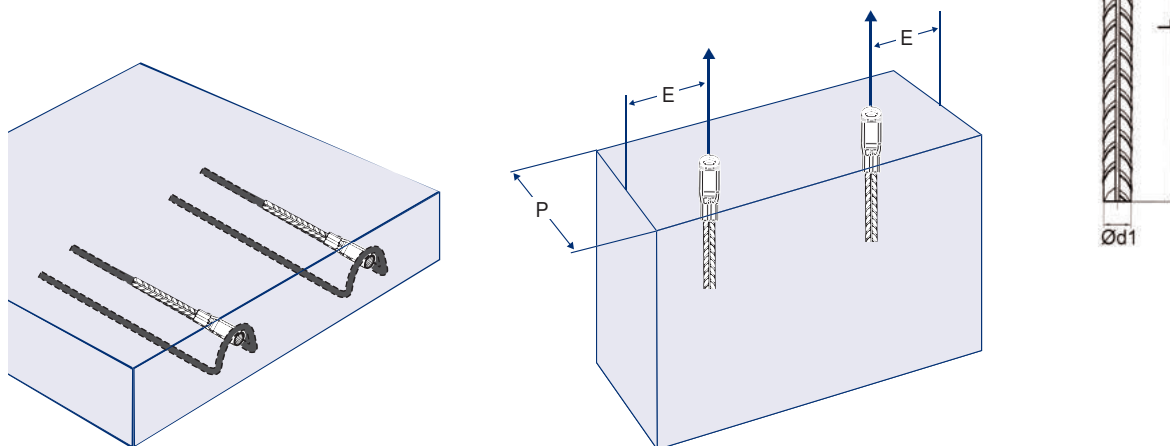
MAGO Bar anchor can be installed in concrete with compressive strength $\geq 15 \text{ N/mm}^2$ with a minimum necessary surface reinforcement.

Without special additional reinforcement, the swaged on rebar themselves transfer the force into the concrete. In order to guarantee the local force transmittance into the concrete, certain edge distance have to be observed. Also, the panel thickness may not be less than a certain minimum owing to reason of safety.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm^2

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Dimensions (mm)			Edge Distance E	Panel Thickness P
				L	d1	e		
RD 12 x 190	15212190	22212190	500	190	8	22	150	60
RD 12 x 340	15212340	22212340	500	340	8	22	150	60
RD 16 x 270	15216270	22216270	1200	270	10	27	200	80
RD 16 x 500	15216500	22216500	1200	500	10	27	200	80
RD 20 x 350	15220350	22220350	2000	350	16	35	275	110
RD 20 x 600	15220600	22220600	2000	600	16	35	275	110
RD 24 x 400	15224400	22224400	2500	400	18	43	300	125
RD 24 x 720	15224720	22224720	2500	720	18	43	300	125
RD 30 x 540	15230540	22230540	4000	540	20	56	350	140
RD 30 x 840	15230840	22230840	4000	840	20	56	350	140
RD 36 x 670	15236670	22236670	6300	670	25	68	400	200
RD 36 x 980	15236980	22236980	6300	980	25	68	400	200

Material: Seamless precision tube and high strength rebar.



Due to our consistent technical development and improvement, the technical data might be changed without notice.



MAGO Lifting Loop And Eyebolt

MAGO Lifting Loops and Eyebolts are used for lifting precast concrete elements with precast anchors inside. The eyebolt can work under both straight pull and diagonal pull loads, while the lifting loops are supposed to work under straight pull situations only.

Dimensions and Recommended Safe working Loads

Dimensions	Lifting Loop Ref. No.	Lifting Eyebolt Ref. No.	SWL (kg)	Thread d
RD 12	18212018	18112018	500	RD 12 x 1.75
RD 14	18214021	18114021	800	RD 14 x 2.0
RD 16	18216024	18116024	1.200	RD 16 x 2.0
RD 18	18218027	18118027	1.600	RD 18 x 2.5
RD 20	18220030	18120030	2.000	RD 20 x 2.5
RD 24	18224036	18124036	2.500	RD 24 x 3.0
RD 30	18230045	18130045	4.000	RD 30 x 3.5
RD 36	18236054	18136054	6.300	RD 36 x 4.0
RD 42	18242063	18142063	8.000	RD 42 x 4.5
RD 52	18252078	18152078	12.500	RD 52 x 5.0

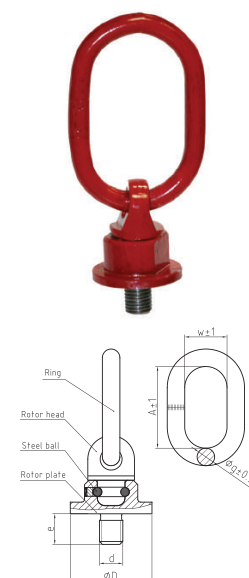


Material: High strength wire rope with cold-rolled sleeve or forged bolt.

MAGO Swivel Hook

With the **MAGO** Hook precast can be easily and safely lifted also with transversal shear. The panel can be lifted easily and safely from the horizontal to the vertical and vice versa. The pressure plate with its large support surface guarantees hold on the concrete unit. The swivel eye automatically adapts in all directions of the inclined forces.

d	D	e	A	w	g
M / Rd 12	47	16	55	35	13
M / Rd 16	56	21	55	35	13
M / Rd 20	70	26	70	60	16
M / Rd 24	74	31	85	75	18
M / Rd 30	90	39	85	90	20
M / Rd 36	101	47	115	100	22
M / Rd 42	110	55	115	100	25
M / Rd 52	130	68	130	140	28



Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO FIXING SOCKET & Cast-in Loop

1.2.1 MAGO Fixing Insert

MAGO Fixing Inserts are used for the fixing of light weight precast concrete units.

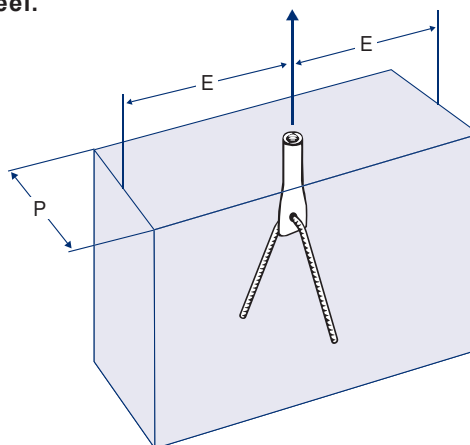
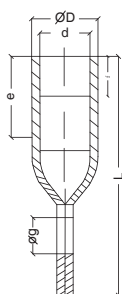
A reinforcement tail must be used for the transmission of the load into the concrete.

The fixing inserts are not supposed to be used for lifting in any case.

Dimensions and Recommended Safe Working Loads

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	L	f	e	g		
M 8 x 40	19108040	22108040	200	8	11	40	15	8	8.2	60	65
M 8 x 50	19108050	22108050	250	8	11	50	20	8	8.2	75	75
M 10 x 50	19110050	22110050	350	10	13	50	20	10	9.2	75	75
M 10 x 60	19110060	22110060	450	10	13	60	25	10	9.2	80	80
M 12 x 60	19112060	22112060	500	12	16	60	25	12	10.2	90	85
M 12 x 70	19112070	22112070	600	12	16	70	30	12	10.2	105	95
M 14 x 70	19114070	22114070	700	14	19	70	25	14	12.2	105	95
M 14 x 80	19114080	22114080	700	14	19	80	30	14	12.2	105	95
M 16 x 70	19116070	22116070	700	16	22	70	25	16	12.2	105	95
M 16 x 80	19116080	22116080	800	16	22	80	25	16	12.2	120	105
M 16 x 100	19116100	22116100	1000	16	22	100	30	16	12.2	150	125
M 20 x 100	19120100	22120100	1250	20	27	100	40	20	14.2	150	125
M 20 x 120	19120120	22120120	1250	20	27	120	40	20	14.2	180	145
M 24 x 120	19124120	22124120	1700	24	32	120	50	24	14.2	180	145
M 27 x 135	19127135	22127135	2200	27	36	135	60	27	17.2	200	160
M 30 x 150	19130150	22130150	2600	30	42	150	70	30	17.2	225	175

Material: Seamless Precision tube, galvanized. Stainless steel.



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MAGO Fixing Insert with Nailing Plate

MAGO Fixing Inserts with Nailing Plate are used for fixing of light weight precast concrete units.

They can be nailed to wooden formwork through the nailing plate.

To be able to transfer force into the concrete a reinforcement bar inserted through the cross hole.

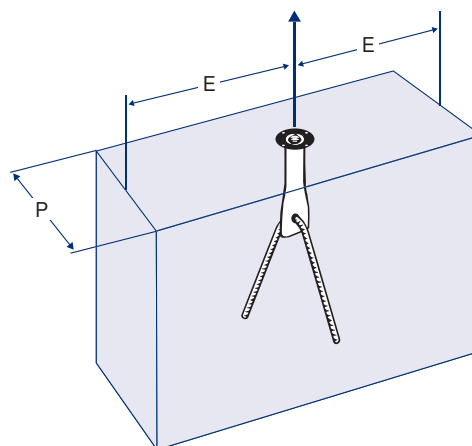
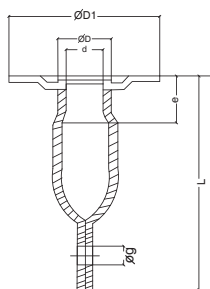
Fixation of the fixing insert can be done by nailing the nailing plate to the wooden formwork, also by means of hex bolt and a drilled hole through the formwork the fixing insert can be fixed.

To avoid failure of the fixing insert caused by blow out of the concrete under straight pull the fixing insert has to be a minimum edge distance from the corners of any precast panel.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	D ¹	e	g	L		
M 10 x 60	19210060	22210060	450	M 10	13	48	10	10.3	60	75	75
M 12 x 70	19212070	22212070	600	M 12	16	48	12	12	70	105	95
M 16 x 100	19216100	22216100	1000	M 16	22	48	15	12	100	150	125
M 20 x 100	19220100	22220100	1300	M 20	27	48	18	14	100	150	125
M 24 x 105	19224105	22224105	1600	M 24	32	48	21	14	105	180	150

Material: Seamless Precision tube, galvanized. Stainless steel.



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MAGO Fixing Insert with Cross Bar

MAGO Fixing Inserts with Cross Bar transfer the forces into the concrete directly through the cross pin instead of additional reinforced bar.

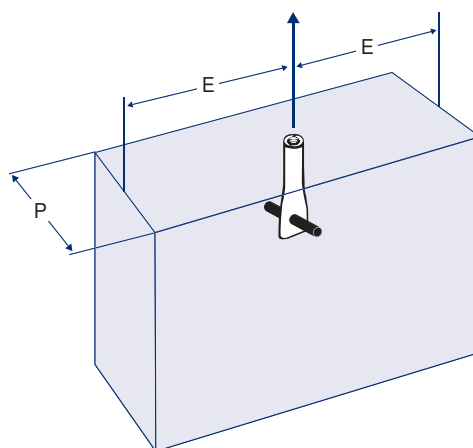
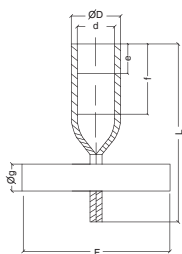
And provide thread fixing in finished concrete unit, **MAGO** Fixing insert with cross bar are the most economic socket and are commonly used in precast fixing application.

The socket may be attached to timber formwork using **MAGO** plastic nailing plate or with standard hex head bolts.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)						Edge Distance E	Panel Thickness P
					D	L	f	e	g	F		
M 8 x 55	19308055	22308055	250	M 8	11	55	20	8	8	50	75	70
M 10 x 60	19310060	22310060	450	M 10	13	60	23	10	10	70	80	75
M 12 x 60	19312060	22312060	500	M 12	16	60	23	12	12	70	90	85
M 16 x 80	19316080	22316080	1000	M 16	22	80	30	15	12	100	120	105
M 16 x 100	19316100	22316100	1000	M 16	22	100	50	15	12	100	150	125
M 16 x 120	19316120	22316120	1000	M 16	22	120	70	15	12	100	150	125
M 20 x 95	19320095	22320095	1250	M 20	27	95	35	18	14	120	150	125
M 20 x 115	19320115	22320115	1250	M 20	27	115	55	18	14	120	180	145
M 24 x 120	19324120	22324120	1700	M 24	32	120	40	21	14	150	180	145

Material: Seamless Precision tube, galvanized. Stainless steel.



Due to our consistent technical development and improvement, the technical data might be changed without notice.



MAGO Fixing Insert with Bended End

MAGO Fixing Inserts with Bended End are used for the fixing of light weight precast concrete units. They are easy to use, because no reinforcement bar is required.

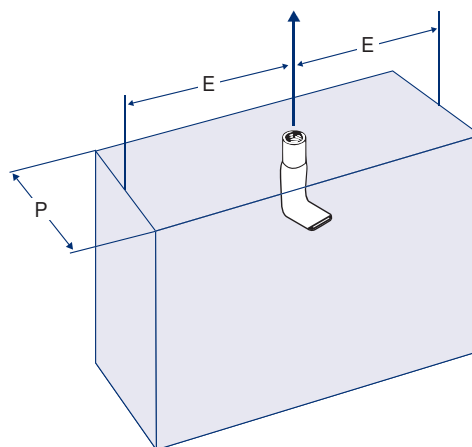
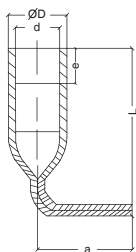
MAGO fixing insert with bended end socket can be nailed with **MAGO** nailing plate or it can be screwed through the formwork with hex head bolt.

Forces are transferred via the bended end, In order to avoid failure of the socket, a certain minimum edge distance has to be adhered to.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)				Edge Distance E	Panel Thickness P
					D	L	e	a		
M 8 x 50 / 20	19408050	22408050	300	M 8	11	50	8	20	75	75
M 10 x 60 / 25	19410060	22410060	600	M 10	13	60	10	25	90	85
M 12 x 45 / 25	19412045	22412045	400	M 12	16	45	12	25	75	70
M 12 x 70 / 30	19412070	22412070	800	M 12	16	70	12	30	110	95
M 16 x 60 / 30	19416060	22416060	800	M 16	22	60	16	30	90	85
M 16 x 100 / 35	19416100	22416100	1300	M 16	22	100	16	35	150	125
M 20 x 70 / 30	19420070	22420070	1200	M 20	27	70	20	30	105	95
M 20 x 100 / 35	19420100	22420100	1600	M 20	27	100	20	35	150	125
M 24 x 80 / 35	19420100	22420100	1600	M 24	32	80	24	35	120	105

Material: Seamless precision tube, galvanized. Stainless steel.



Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Fixing Insert with Bended End and Nailing Plate

MAGO Fixing Inserts with Bended End and Nailing Plate are used for the fixing of lightweight precast concrete units.

They can be nailed to wooden formwork through the nailing plate. also by means of hex bolt and a drilled hole through the formwork the fixing insert can be fixed.

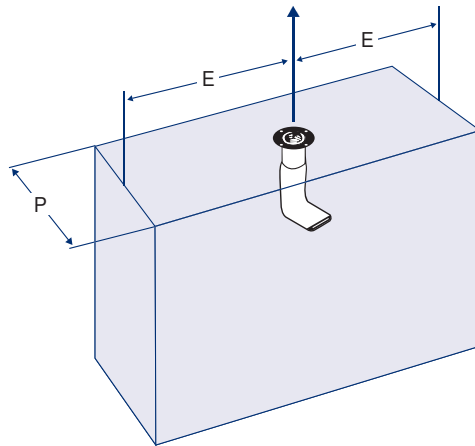
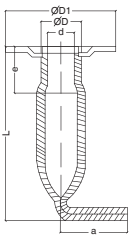
They are easy to use because no reinforcement bar is required.

Forces are transferred via the bended end, In order to avoid failure of the socket, a certain minimum edge distance has to be adhered to.

Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Dimensions	Ref. No.	A4 Ref. No.	SWL (kg)	Thread d	Dimensions (mm)					Edge Distance E	Panel Thickness P
					D	D ¹	e	a	L		
M 10 x 60 / 25	19510060	22510060	600	M 10	13	48	10	25	60	75	75
M 12 x 70 / 30	19512070	22512070	800	M 12	16	48	12	30	70	105	95
M 16 x 100 / 35	19516100	22516100	1300	M 16	22	48	16	35	100	150	125
M 20 x 100 / 35	19520100	22520100	1600	M 20	27	48	20	35	100	150	125
M 24 x 80 / 35	19524080	22524080	1600	M 24	32	48	24	35	80	180	150

Material: Seamless precision tube with steel plate.



Due to our consistent technical development and improvement, the technical data might be changed without notice.



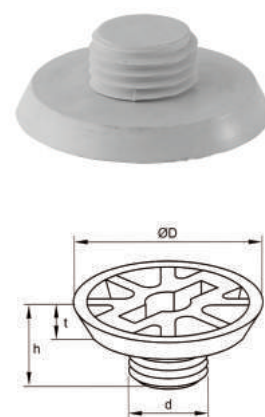
MAGO Plastic Nailing Plate

The plastic nail plate is used to fix the anchor sockets to the formwork.

Thread sizes M/Rd 12 to M/Rd 52 are available. The nail plate is made of plastic and is color coded according to the thread size.

It allows the head of the lifter to bear on the concrete during diagonal and transverse lifting.

Dimensions d	Ref. No.	Dimensions (mm)			Color
		L	h	t	
M / Rd 10	40201	25	20	10	Blue
M / Rd 12	40205	25	20	10	Orange
M / Rd 14	40209	25	20	10	White
M / Rd 16	40213	25	20	10	Red
M / Rd 18	40217	55	25	10	Pink
M / Rd 20	40221	55	25	10	Light - grey
M / Rd 24	40225	55	25	10	Black
M / Rd 30	40229	70	30	10	Black - green
M / Rd 36	40233	70	30	10	Blue
M / Rd 42	40237	95	34	12	Light - grey
M / Rd 52	40241	95	34	12	Yellow

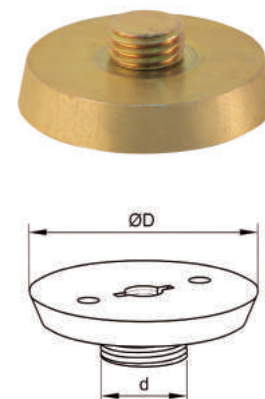


MAGO Magnetic Steel Plate

The steel nail plate is used to fix the socket anchors to the formwork.

Thread sizes M/Rd 18 to M/Rd 52 are available. The nail plate is made of steel, it allows the head of the lifter to bear on the concrete during diagonal and transverse lifting.

Dimensions d	Ref. No.	Dimensions (mm) D
M / Rd 18	40301	58
M / Rd 20	40305	70
M / Rd 24	40309	70
M / Rd 30	40313	70
M / Rd 36	40317	95
M / Rd 42	40321	95
M / Rd 52	40325	95



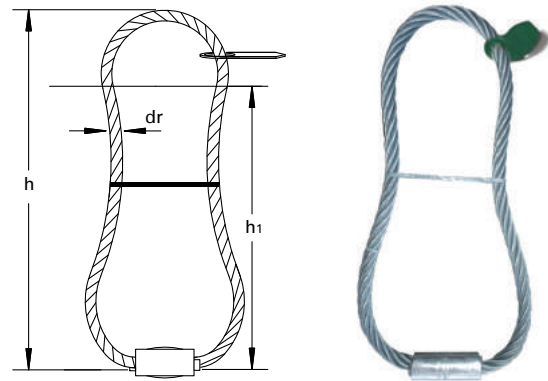
Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Cast - in Loop

Cast in Loops are mainly used for huge volume of concrete such as beams or foundations.

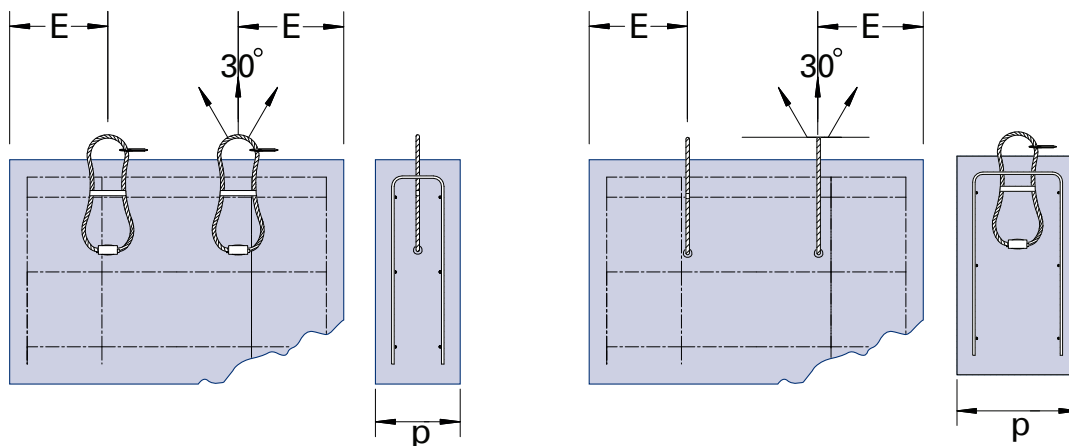
MAGO Cast-In loops are always installed in the open top surface of the precast element, a longitudinal or lateral orientation is possible.

The loop end with the ferrule is positioned in the formwork. Crane hooks can be connected directly to the protruding lifting loops.



Dimensions and Safe Working Loads at concrete strength of 15 N/mm²

Description	Ref. No.	SWL (kg)	Dimensions (mm)			Edge Distance E (mm)	Panel Thickness P (mm)	
			h	dr	h1		Installed parallel to surface	Installed perpendicular to surface
NC 08	50101	800	205	6	145	270	70	135
NC 12	50105	1200	230	7	170	310	90	140
NC 16	50109	1600	250	8	180	350	120	170
NC 20	50113	2000	300	9	220	430	150	180
NC 25	50117	2500	325	10	245	450	160	180
NC 40	50121	4000	370	12	270	500	220	220
NC 52	50125	5200	380	14	280	530	290	300
NC 63	50129	6300	425	16	315	570	320	320
NC 80	50133	8000	480	18	340	650	400	400
NC 100	50137	10000	535	20	385	730	440	440
NC 125	50141	12500	590	22	440	800	560	550
NC 160	50152	16000	660	26	490	930	620	620
NC 200	50159	20000	745	28	565	1050	680	680
NC 250	50163	25000	840	32	640	1200	750	750

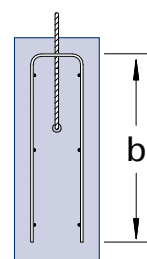
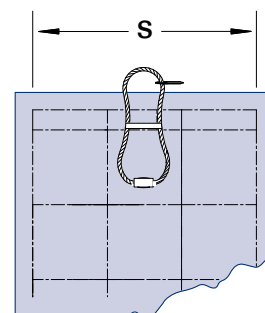


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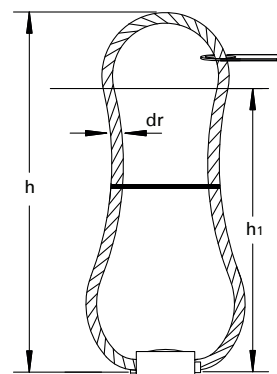
Additional Reinforcement

Description	Ref. No.	SWL (kg)	s (mm)	b (mm)	Reinforcement BSt 500 M mm ² / m
NC 08	50101	800	450	300	188
NC 12	50105	1200	500	350	188
NC 16	50109	1600	550	350	188
NC 20	50113	2000	650	450	188
NC 25	50117	2500	700	500	188
NC 40	50121	4000	800	550	188
NC 52	50125	5200	850	550	188
NC 63	50129	6300	950	600	188
NC 80	50133	8000	1050	700	257
NC 100	50137	10000	1200	800	257
NC 125	50141	12500	1300	900	257
NC 160	50152	16000	1500	1000	257
NC 200	50159	20000	1700	1150	377
NC 250	50163	25000	1950	1300	377



MAGO Cast-in Loop up to 99 ton capacity

Description	Ref. No.	SWL (kg)	Dimensions (mm)		
			h	dr	h ₁
NC 280	60111	28000	690	36	470
NC 320	60115	32000	780	36	530
NC 370	60119	37000	960	40	450
NC 420	60123	42000	1010	44	670
NC 470	60127	47000	1110	44	750
NC 520	60131	52000	1210	48	810
NC 570	60135	57000	1360	48	910
NC 650	60139	65000	1440	46	970
NC 750	60143	75000	1540	50	1030
NC 850	60147	85000	1690	52	1130
NC 990	60181	99000	1910	56	1210



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MAGO PRECAST ACCESORIES

MAGO Steel Chamfer

MAGO Reusable and durable Steel Chamfer is designed to create beveled edges on the corners and faces of concrete wall panels and small concrete items and available in different sizes

Standard and Magnetic Steel Chamfer

Standard Chamfer	Magnetic Chamfer	Size (mm)		
		A	B	C
SCF 10	SCFM 10	10	10	14
SCF 15	SCFM 15	15	15	21
SCF 20	SCFM 20	20	20	28
SCF 25	SCFM 25	25	25	35



MAGO Shear Stud

The **MAGO** Shear Stud can be used as a simple concrete anchor to provide a permanent bond between steel and concrete, such as in concrete encasement of steel beams, piling walls and coffer dams. Or it can be welded through metal decking to provide the required bond between the steel beams and the in site castconcrete floor.

Load Class (Ton)	Ref. No.	Dimensions (mm)					
		L	d	D	d ¹	t	h
SD06	1706100	50-100	6.35	12.7	9.7	4.7	3
SD10	1710175	50-175	9.52	19	12.5	7.1	4
SD13	1713175	50-175	12.7	25.4	17	8	5
SD16	1716175	50-175	15.8	31.7	21	8	7
SD19	1719175	50-175	19	31.7	24	10	9
SD22	1722200	50-200	22.2	34.9	28	10	10

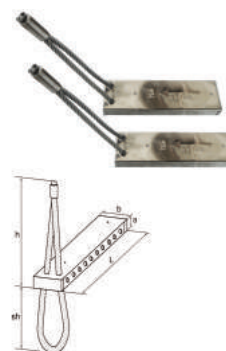


Material: High Strength Steel, black or galvanized.

MAGO Fixing Box

The **MAGO** Fixing Box is designed for simple and safe fixing of precast concrete components. It is easy to install by simply attaching it to the reinforcement as well as the fact that it can be used on the thinnest wall thicknesses. The components can be transported using the lifting any additional lifting device efficiently and safely.

Dimensions	Ref. No.	Dimensions (mm)				
		a	b	L	h	sh
LB 80	50201	20	50	160	212	80
LB 100	50204	20	50	160	212	100
LB 120	50207	20	50	160	212	120



Due to our consistent technical development and improvement, the technical data might be changed without notice.



MAGO Spiral Pipe

Post tension pipe is made of zinc-plated or non-zinc-plated mild steel stripes.

The steel stripes are spiraled and locked overlap joint by rolling process.

The pipe can be used in making holes for post tensioning prestressed concrete structure and components.

Parameters of post tension pipe:

Bore Ø d (mm)	Allowable Deviation	Width of Stripes (mm)	Thickness of Stripes (mm)	Spiral Angle α°	Mandrel Ø	Spiral Guide Ø (mm)	Pipe Die Ø (mm)	Number of Gear Teeth	Point Load (N)	Even Load (N)	Deformation (mm)
40	+ 0.5	36	0.25 - 0.3 (+ / - 0.02)	10°49'	22	40	40	27	800	496	<8
45				9°38'	22	45	45	30	800	628	<9
50				8°41'	35	50	50	33	800	775	<10
55				7°55'	35	55	55	36	800	938	<11
60				7°16'	35	60	60	39	800	1116	<12
65				6°43'	35	65	65	42	800	1310	<13
70				6°14'	35	70	70	45	800	1519	<14
75				5°49'	35	75	75	49	800	1744	<15
80				5°28'	35	80	80	52	800	1984	<16
85				5°08'	35	85	75	55	800	2240	<17
90				4°51'	35	90	90	58	800	2511	<18
95				4°36'	35	95	95	61	800	2798	<19
100				4°22'	35	100	100	65	800	3100	<20
105	+1.0			4°10'	35	105	105	68	800	3418	<21
110				3°58'	35	110	111	70	800	3751	<22



Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Befestigungstechnik GmbH ■ Innotech Center / Top 1.1e ■ Salurnerstr. 22 ■ A-6330 Kufstein ■ Austria

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FN 233766 z. Sitz Kufstein ■ Firmenbuchgeicht: Landesgericht Innsbruck ■ UID: ATU 57063812

MAGO LIFTING STUD

MAGO Lifting Stud

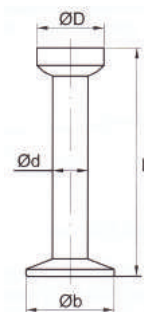
MAGO Lifting Stud is suitable for lifting precast concrete pipes and slabs.

The round foot transfers the load into the concrete thus reaching high permissible load even with relatively short anchor length.

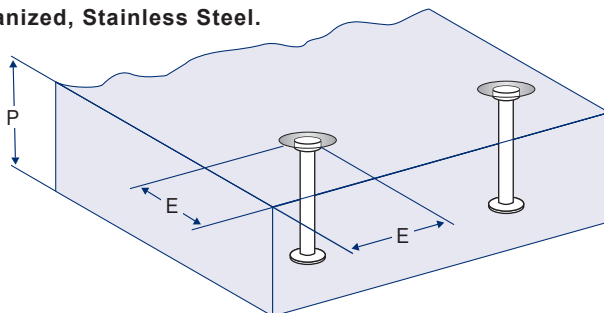
Longer lengths are used for reduced edge space or reduced concrete strengths.

Dimensions and Load Classes

Load Class (Ton)	Ref. No.	A4 Ref. No.	Dimensions (mm)				Edge Distance E	Panel Thickness P
			L	D	d	b		
1.3	16113055	22113055	55	19	10	25	68	90
1.3	16113065	22113065	65	19	10	25	80	110
1.3	16113085	22113085	85	19	10	25	85	110
1.3	16113120	22113120	120	19	10	25	190	250
2.5	16125055	22125055	55	26	14	35	90	120
2.5	16125085	22125085	85	26	14	35	135	180
2.5	16125120	22125120	120	26	14	35	190	250
2.5	16125170	22125170	170	26	14	35	260	350
5	16150075	22150075	75	36	20	50	135	180
5	16150095	22150095	95	36	20	50	150	200
5	16150120	22150120	120	36	20	50	190	250
5	16150240	22150240	240	36	20	50	370	490
7.5	16175120	22175120	120	47	24	60	185	245
7.5	16175164	22175164	165	47	24	60	255	335
10	16110120	22110120	120	47	28	70	175	230
10	16110170	22110170	170	47	28	70	260	340
20	16120340	16120340	340	69	38	98	500	670
20	16120500	16120500	500	69	38	98	745	990
32	16132320	22132320	320	88	50	135	470	625



Material: High Strength Steel, black or galvanized, Stainless Steel.



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MAGO Lifting Stud with Foot Eye

MAGO Lifting Stud with Foot Eye is mainly designed for the use in slender reinforced concrete elements, e.g. beams and girders.

It is also suitable for lightweight concrete elements; please take the reduced bond stresses into account.

MAGO lifting stud with foot eye designed for installation on the end of wall slabs, the stud is held fast by the reinforcement bar which is inserted through the cross hole at the bottom of the stud and anchored in the concrete.

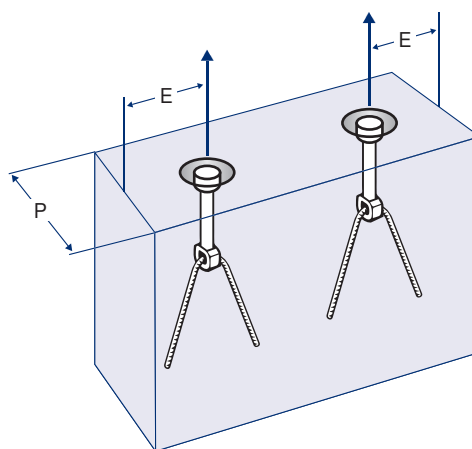
The anchorage bar can be bent at an obtuse angle or at an acute angle, but the bar must be definitely be in direct contact with the bottom of the cross hole.

Specific edge distance must be kept to ensure local load transfer into the concrete. The concrete minimum thickness must be also considered.

Dimensions and Load Classes

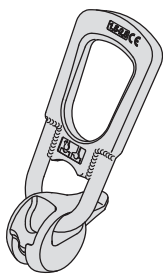
Load Class (Ton)	Ref. No.	A4 Ref. No.	Dimensions (mm)				Edge Distance E	Panel Thickness P
			D	d	D ¹	L		
1.3	16213065	22213065	19	10	19	65	250	80
2.5	16225090	22225090	26	14	27	90	300	100
5	16205120	22205120	36	20	42	120	400	160
10	16210180	22210180	46	28	57	180	600	240
20	16220250	22220250	69	38	76	250	800	240

Material: High Strength Steel, black or galvanized, Stainless Steel.



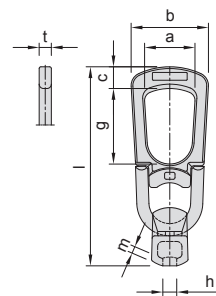
Due to our consistent technical development and improvement, the technical data might be changed without notice.

MAGO Universal-Head Lifting Link



MAGO Universal-Head Lifting Link is an attachment link for the lifting and transporting of precast concrete units in combination with the Spherical Head Anchor. The Universal Head Lifting Link is a manually operated and is manufactured in the versions given in the following table.

The allowable loads for individual cases must be checked using the tables for each anchor type .



Dimensions of Universal-Head Lifting Link

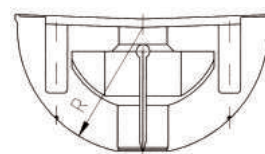
Load Class (Ton)	Ref. No.	Weight (kg)	Dimensions (mm)							
			a	b	c	g	h	t	l	m
1.3	00001	0.9	47	75	20	71	11	12	188	7.0
2.0 and 2.5	00002	1.4	59	91	25	86	16	14	230	8.5
3.0 and 5.0	00003	3.4	70	118	37	88	21	16	283	10.0
6.0 and 10.0	00004	9.1	88	160	50	115	30	25	401	14.0
12.0 and 20.0	00005	21.0	106	180	75	135	41	30	506	21.0
32.0	00006	47.0	172	272	100	189	52	40	680	28.5
45.0	00007	59.0	179	349	100	192	52	40	676	28.5



MAGO Round Recess Former

The round rubber recess formers are produced from stable shape, oil and temperature (120 deg) resistant rubber and can be used repeatedly. In order to ease the identification of the load groups the formers are produced in different colors.

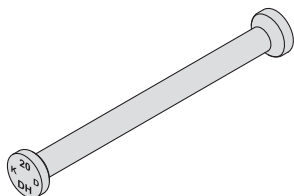
Description	Ref. No.	SWL (kg)	Dimensions (mm)	Colour
			R	
RF 30 x 13	2206030013	1300	30.0	Blue
RF 37 x 25	2206037025	2500	37.0	Yellow
RF 47 x 40	2206047040	4000	47.0	Black
RF 47 x 50	2206047050	5000	47.0	Blue
RF 59 x 75	2206059075	7500	59.0	Red
RF 59 x 100	2206059100	10000	59.0	Yellow
RF 80 x 150	2206080150	15000	80.0	Grey
RF 80 x 200	2206080200	20000	80.0	Black
RF 107 x 320	2206080320	32000	107.0	Black



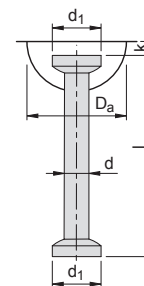
Due to our consistent technical development and improvement, the technical data might be changed without notice.



Dimensions, load capacity and reinforcement of Narrow foot anchors



This anchor is used in prestressed beams, because of good concrete strength at lifting and in most cases a thin web, the small foot is easier to use.



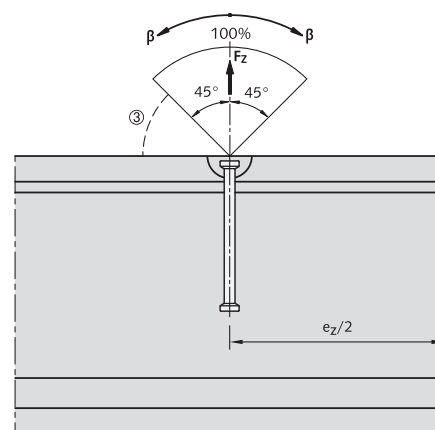
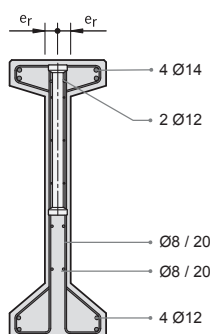
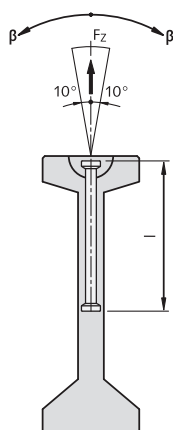
Dimensions of Narrow foot Spherical Head Anchors

Load Class (Ton)	Ref. No.	Dimensions (mm)				
		l	d	d1	k	Da
10.0	00056	340	28	46	15	118
15.0	00057	400	34	69	15	160
20.0	00067	500	38	69	15	160
32.0	00058	700	50	88	23	214

Load capacity for axial pull and angled pull up to $\beta = 45^\circ$

Load Class (Ton)	wed thickness 2 x er (mm)	Distance between anchors ez (mm)	Axial pull and angled pull up to 45° [β] Load capacity (kN) Concrete strength	
			45 N/mm ²	55 N/mm ²
10.0	120	≥ 1360	88.0	98.0
15.0	120	≥ 1600	130.0	145.0
20.0	120	≥ 2000	136.0	151.0
20.0	140	≥ 2000	173.0	192.0
32.0	120	≥ 2800	189.0	210.0
32.0	140	≥ 2800	220.0	245.0

Angled pull with $\beta > 60^\circ$ caused by spread of cables/chains is not permitted !



Due to our consistent technical development and improvement, the technical data might be changed without notice.

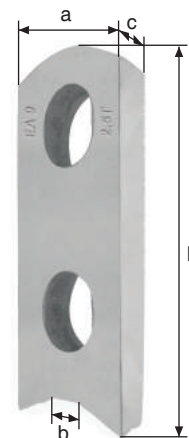
MAGO DOUBLE HOLE ANCHORS

MAGO Tow - Hole Anchors

Simple but universal use, suitable for thin slabs / panels and low - grade / light - weight concrete, the load is distributed into the concrete by the reinforcement rebar inserted through the bottom hole .

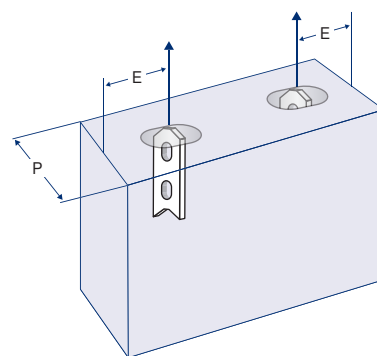
Load Class (2.5) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
EA 1.4 - 9	30	6	90	14	250	80
EA 2.0 - 9	30	8	90	14	300	90
EA 2.5 - 9	30	10	90	14	300	100



Load Class (5) ton.

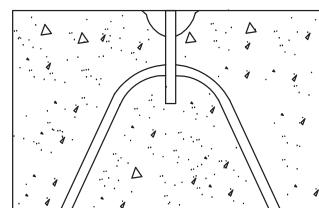
Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
EA 3.0 - 12	40	10	120	18	325	100
EA 4.0 - 12	40	12	120	18	350	110
EA 5.0 - 12	40	15	120	18	375	120



Load Class (10) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
EA 7.5 - 16	60	16	160	26	600	130
EA 10.0 - 17	60	20	165	29	600	140

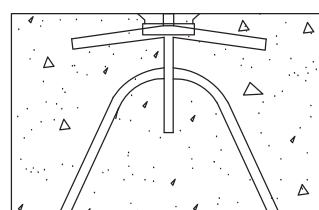
Without angled pull reinforcement



Load Class (26) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
EA 14.0 - 24	80	20	240	35	750	160
EA 22.0 - 30	80	26	300	35	750	180
EA 26.0 - 30	120	30	300	65	750	200

With angled pull reinforcement



other lengths upon request

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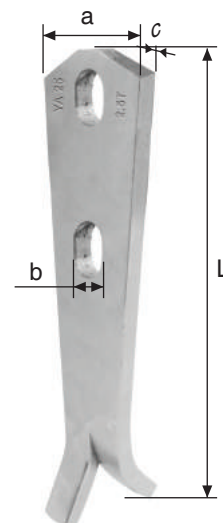


MAGO Spread Anchors

The most versatile anchor, suitable for columns and beams, wall panels and slabs, the load is transferred into the concrete either by the spread feet, or with the load distribution of the reinforcement bar inserted through the bottom hole .

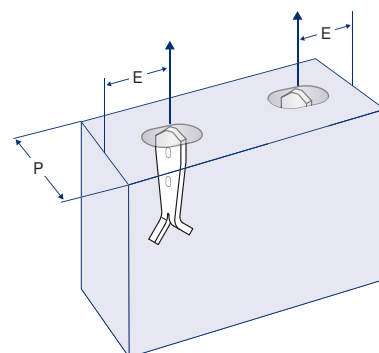
Load Class (2.5) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
YA 1.4 - 11	30	6	110	14	70	145
YA 2.0 - 13	30	8	130	14	100	165
YA 2.0 - 21	30	8	210	14	80	195
YA 2.5 - 15	30	10	150	14	120	185
YA 2.5 - 25	30	10	250	14	75	285



Load Class (5) ton.

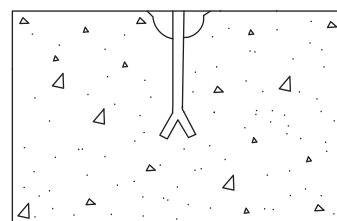
Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
YA 3.0 - 16	40	10	160	18	145	195
YA 3.0 - 20	40	10	200	18	115	235
YA 4.0 - 18	40	12	180	18	190	215
YA 4.0 - 32	40	12	320	18	110	355
YA 5.5 - 18	40	15	180	18	260	215
YA 5.5 - 24	40	15	240	18	195	275



Load Class (10) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
YA 7.5 - 26	60	16	260	26	300	300
YA 7.5 - 30	60	16	300	26	265	340
YA 10.0 - 30	60	20	300	26	390	340
YA 10.0 - 37	60	20	270	26	315	410

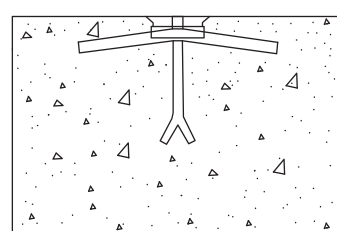
Without angled pull reinforcement



Load Class (26) ton.

Designation	a (mm)	c (mm)	L (mm)	b (mm)	E (mm)	P (mm)
YA 14.0 - 37	80	20	370	35	500	410
YA 14.0 - 46	80	20	460	35	400	500
YA 22.0 - 50	80	26	500	35	675	540
YA 22.0 - 62	80	26	620	35	540	660

With angled pull reinforcement



other lengths upon request



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FN 233766 z . Sitz Kufstein · Firmenbuchgeicht: Landesgericht Innsbruck · UID: ATU 57063812

MAGO Flat Foot Anchor YT

MAGO Flat Foot anchor is a surface embedded anchor used for lifting ceiling slabs.

It transfers the load into precast concrete by additional reinforcement close to the anchor's flat foot.

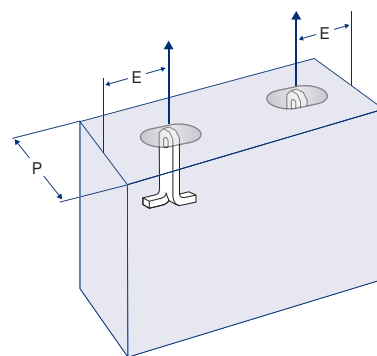
Load Class (2.5) ton.

Designation	a (mm)	L (mm)	c (mm)	e (mm)	E (mm)	P (mm)
YT 0.7 - 6	30	65	5	70	140	95
YT 1.4 - 6	30	65	6	70	140	95
YT 2.0 - 7	30	70	8	80	150	100
YT 2.5 - 7	30	75	10	94	160	105



Load Class (5) ton.

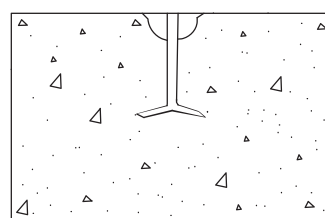
Designation	a (mm)	L (mm)	c (mm)	e (mm)	E (mm)	P (mm)
YT 4.0 - 11	40	110	12	100	230	140
YT 5.0 - 12	40	125	15	105	260	160
YT 5.3 - 15	60	150	12	120	290	180



Load Class (10) ton.

Designation	a (mm)	L (mm)	c (mm)	e (mm)	E (mm)	P (mm)
YT 7.5 - 17	60	170	16	120	340	215
YT 10.0 - 20	60	200	20	120	400	245

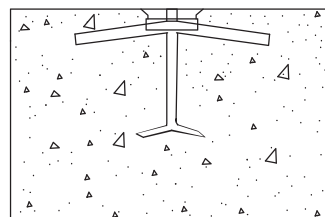
Without angled pull reinforcement



Load Class (26) ton.

Designation	a (mm)	L (mm)	c (mm)	e (mm)	E (mm)	P (mm)
YT 12.5 - 22	80	220	16	200	440	265
YT 17.0 - 27	80	270	20	200	540	315
YT 22.0 - 31	80	310	26	200	620	355

With angled pull reinforcement



other lengths upon request

Due to our consistent technical development and improvement, the technical data might be changed without notice.



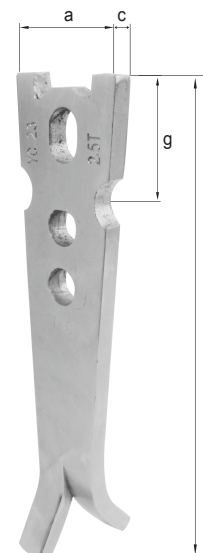
MAGO Erection Anchors

Combines the advantages of Two - hole anchor and the spread anchor, good for horizontal to vertical edge pull applications and the shear rotation of thin - walled unit.

Notches on the side of the anchor is reserved for side reinforcement bar to ensure spall - free panel rotation, while the major load transferred into the concrete by the spread feet as well as the reinforcement bar inserted through the bottom hole .

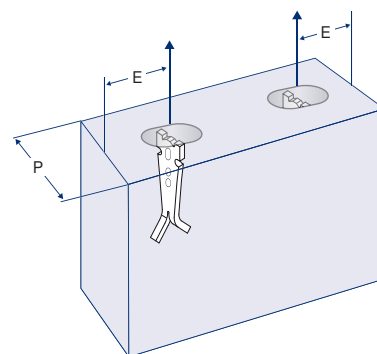
Load Class (2.5) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YC 1.4 - 20	55	6	45	200	350	100
YC 2.5 - 23	55	10	45	230	400	120



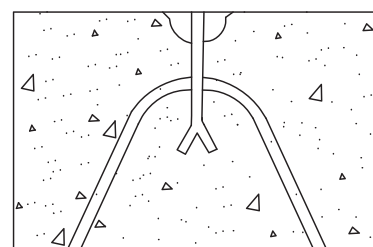
Load Class (5) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YC 4.0 - 27	70	12	70	270	425	150
YC 5.0 - 29	70	15	70	290	500	180



Load Class (10) ton.

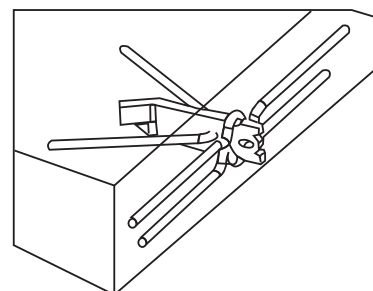
Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YC 7.5 - 32	95	15	90	320	600	200
YC 10.0 - 39	95	20	90	390	750	250



Load Class (26) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YC 12.5 - 50	148	20	90	500	750	320
YC 17.0 - 50	148	25	90	500	750	380
YC 22.0 - 50	148	30	90	500	750	450

other lengths upon request



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MAGO Unilateral Erection Anchors

MAGO Unilateral erection anchor is a special type of erection anchor which only has one notch on the side for side reinforcement to ensure the panel rotation.

Load Class (2.5) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YB 1.4 - 20	40	6	42.5	200	350	100
YB 2.5 - 20	40	10	42.5	200	400	120

Load Class (5) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YB 4.0 - 27	55	12	50.5	270	425	150
YB 5.0 - 29	55	15	50.5	290	500	180

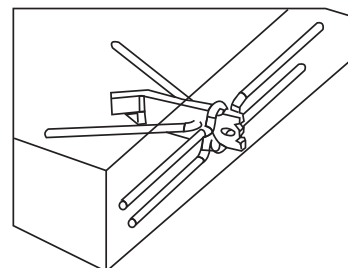
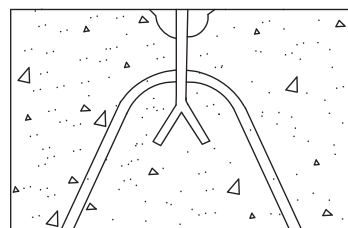
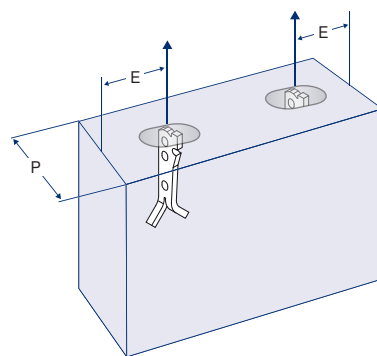
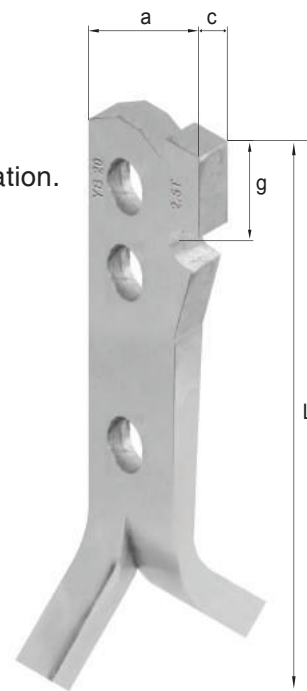
Load Class (10) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YB 7.5 - 32	80	15	78	320	600	200
YB 10.0 - 39	80	20	78	390	750	250

Load Class (26) ton.

Designation	a (mm)	c (mm)	g (mm)	L (mm)	E (mm)	P (mm)
YB 12.5 - 50	115	20	88.5	500	750	320
YB 17.0 - 50	115	25	88.5	500	750	380
YB 22.0 - 50	115	30	88.5	500	750	450

other lengths upon request



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MAGO Lifting Clutches

The ring clutch consists of a shackle and a clutch head.

The shackle is free to move in any direction.

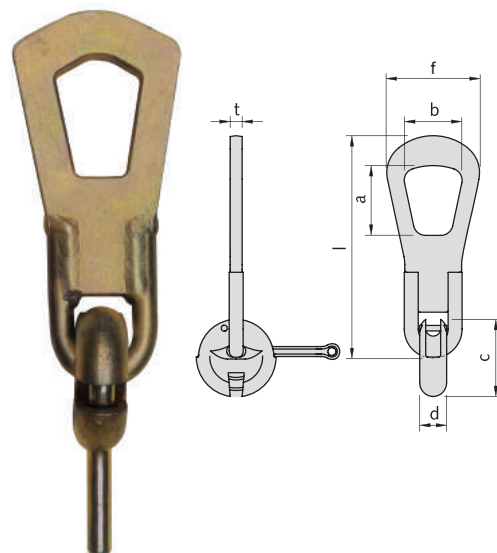
The clutch head incorporates a locking bolt which fastens to the anchor.

Anchors must be cast in with the correct recess former.

Ring clutches are available in four load groups.

There are four anchors in each load group.

Load (Ton)	l (mm)	a (mm)	b (mm)	c (mm)	d (mm)	t (mm)
2.5	265	70	58	80	27	12
5.0	330	86	65	105	36	16
10.0	425	112	90	150	50	25
26.0	605	160	120	206	72	30



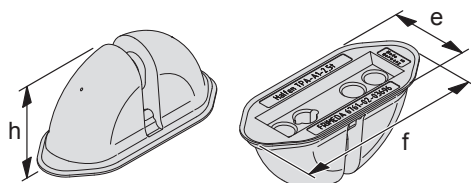
MAGO Plastic Rubber Recess

MAGO plastic recess former are used for easy attachment to the formwork.

The recess former in open position will be put over the anchor head.

Closing the recess former will fix the anchor tightly. Afterward, the recess former can be fixed to the formwork together with the anchor.

Load (Ton)	e (mm)	f (mm)	h (mm)	Thread M	Colour
2.5	43	104	45	8	Orange
5.0	49	126	59	8	Black
10.0	67	188	85	12	Green
26.0	112	234	118	16	Blue



Due to our consistent technical development and improvement, the technical data might be changed without notice.

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MAGO GUIDANCE FOR LIFTING PRECAST CONCRETE ELEMENTS

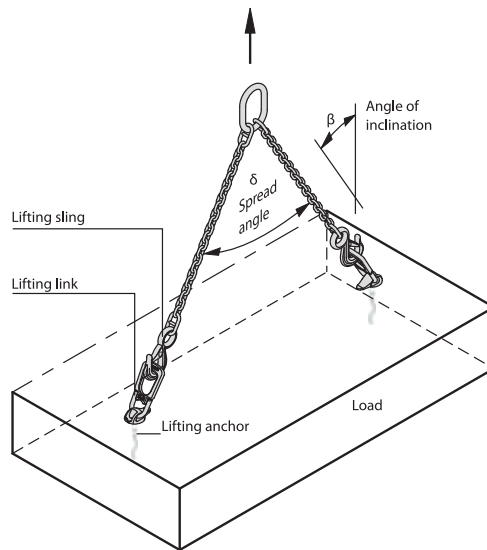
All anchors and lifting links must be designed, calculated and installed according to the instruction in this catalogue .

The system is only suitable for precasting, storing and erecting precast elements .

For long term use, such as counter weights, please consult **MAGO** .

The lifting link must be in a secure position during the lifting operation .

This literature is guidance for professional engineers/precasters, if in doubt, refer to **MAGO** engineering dept .



Safety rules

A lifting system consists of the anchors, permanently cast in and the temporarily attached lifting links. The german association of commercial and industrial workers compensation insurance carriers has issued "Safety rules for anchors and systems for lifting prefabricated concrete components" (BGR 106), which represent the generally acknowledged status of technology.

These safety rules require the following safety factors:

Safety factors

Steel rupture of anchors:	$\gamma = 3$
Breakage concrete cone:	$\gamma = 2.5$
Failure of lifting links:	$\gamma = 4$

Identification

All **MAGO** anchors and lifting links are clearly marked for the user. The identification markings on the anchor are visible after casting: it is essential to check before installing the lifting link.



Quality control

Factory quality control is carried out in accordance to DIN EN ISO 9001/ 2000.

Workmanship

Incorrectly installed lifting anchors or lifting links, or those with damaged parts, e.g. by corrosion, visible deformation etc. must not be used. Please contact **MAGO** .

In order to ensure safe use of the **MAGO** lifting system, the installation instructions in this catalogue must be always available at place of use, i.e. in the precast yards and on site. The production management and the site management have to ensure that the personnel are aware of, and have understood the installation and general safety regulations.

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MAGO Crane Factors

Introduction

Permissible loads, edge distances and reinforcement are shown on tables in this catalogue.

Special lifting proposals can be provided by our technical department. Please contact **MAGO**.

Software downloads or catalogues can be provided.

The anchors in each load group are offered in a range of designs to suit the concrete shape, whichever anchor is used, the factors used in the calculation are:

- weight of precast unit
- number of anchors
- positioning of anchors
- angle of lift β
- dynamic forces/crane factor
- adhesion to the mould

The allowance for adhesion to the mould, the angle of lift and the crane shock (dynamic load) are all in the actual design / selection. Concrete strength has to be assumed at time of lift.

Edge distances of the anchors is of less importance, as it can normally be solved by special reinforcement.

Weight of precast unit

A specific weight of 25 kN/m^3 is to be used as a basis for determining the weight [G] of a fresh reinforced precast unit. Heavy concentration of reinforcement increases the weight and this should be taken into account by job engineer.

Adhesion to the mould

When the precast unit is first lifted out of the mould, the required force may be a multiple of the actual concrete weight. This is caused by suction, adhesion and friction between the mould and the concrete unit. From experience, one can calculate using the following adhesion forces:

Adhesion to the mould

for smooth, oiled moulds	$q = 1 \text{ kN/m}^2$
for smooth, non-oiled moulds	$q = 2 \text{ kN/m}^2$
for rough moulds	$q = 3 \text{ kN/m}^2$

Adhesion:

$$H_a = q \times A \quad \textcircled{1}$$

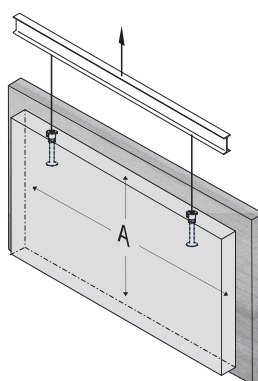
$\textcircled{1}$ base area of concrete element

π - slabs, ribbed slabs and waffled slabs cause more adhesion:

Adhesion to the mould

π - slabs	$H_a = 2 \times G$
ribbed slabs	$H_a = 3 \times G$
waffled slabs	$H_a = 4 \times G$

Increased adhesion is caused by vertical parts of the mould that cannot be removed before lifting.



The adhesion should be minimized by removing as many parts of the mould as possible before lifting.

Dynamic forces

The size of the dynamic loading is mainly determined by the choice of the lifting equipment.

Cables made of steel or synthetic fibre have a damping effect. This effect increases with the increase of the cable length. In contrast, short chains have an adverse effect.

In unfavourable cases the forces acting on the lifting anchor should be calculated according to the following table.

Crane Factors

Lift Equipment	Lifting Speed [m/min.]	Impact Factor ψ
Stationary Crane, Revolving Crane, Rail-mounted Crane	< 90	1.0 - 1,2
Stationary Crane, Revolving Crane, Rail-mounted Crane	≥ 90	1.3 - 1,4
Lifting and transporting with excavator on even ground	-	1.5 - 1,65
Lifting and transporting with excavator on uneven ground	-	≥ 2.0

Tensile forces at anchor

The tensile force Z acting on the anchor is normally determined using the following equation :

1. Lifting from the mould:

$$V_1 = G + H_a$$

2. Transporting:

$$V_2 = G \times f$$



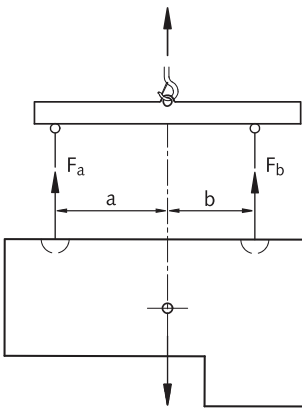
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MAGO Spread Angle Factors

Anchor positioned asymmetrically

If the anchors cannot be placed symmetrically to the centre of gravity, the load on the anchors must be calculated according to simple static design rules.

Unequal loads on the anchors resulting from anchors positioned asymmetrically to the centre of gravity:



The load always is searching its position with centre of gravity under the hook.

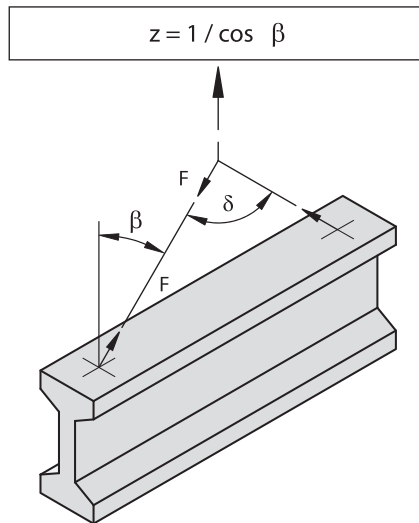
The real loads for two anchors under a spreader beam can be calculated as following:

$$F_a = V_{ges} \times b / (a + b)$$

$$F_b = V_{ges} \times a / (a + b)$$

Inclination Angle (β)

If a lifting sling is used in a triangle form, the acting forces on the anchors (sling loads) are increasing compared to simple vertical lifting. As the angle of lift (β) increases, the acting forces on the anchors and slings increase as well. This influence is taken into account by factor ω dependent on angle β .



Information:

For avoiding sloped hanging position of the precast elements, the position of the hook at a spreader beam should be straight above the centre of gravity.

If lifting is executed without spreader beam, the anchors should be positioned symmetrically to the centre of gravity.

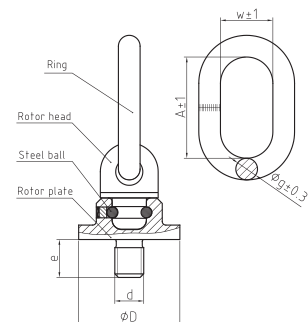
Spread Angle Factors

Angle of link β	Spread angle δ	Factor z
0°	-	1.00
7.5°	15.0°	1.01
15.0°	30.0°	1.04
22.5°	45.0°	1.08
30.0°	60.0°	1.16
37.5°	75.0°	1.26
45.0°	90.0°	1.41
52.5°	105.0°	1.64
60.0°	120.0°	2.00

Resulting tension load affecting the anchor, if the anchors are positioned symmetrically:

$$F = z \times V_{tot} / n$$

n = number of working anchors



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Multiple slings

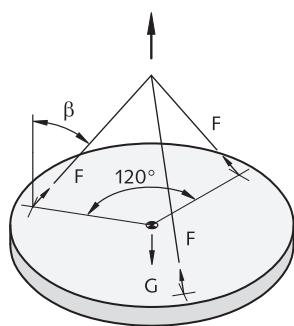
For a beam with more than two suspension points and for a panel with more than three, it is impossible to work out the load per anchor precisely, even if the anchors are arranged symmetrically to the load centre. Due to unavoidable tolerances in the suspension system and in the position of the anchors, it can never be determined whether the load on each anchor is equal.

The use of tolerance-compensating suspension systems (e.g. articulated lifting beam combinations, multiple slings with compensating rig, etc.) permits exact load distribution, but should only be used by experienced specialists, also bear in mind that such a system must be used both in yard and on site. In case of doubt, only two anchors should be assumed to be load bearing (BGR 500 Ch. 2.8 Point 3.5.3).

The use of two anchors is recommended for beams and upright panels, and four anchors installed symmetrically to the load centre is recommended for horizontal slabs. In both instances, it can be assumed that two anchors will be bearing equal loads.

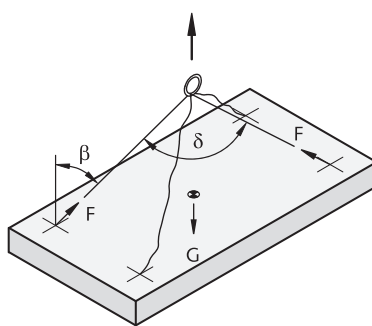
Examples:

The use of three anchors ensures that the static load is shared evenly.



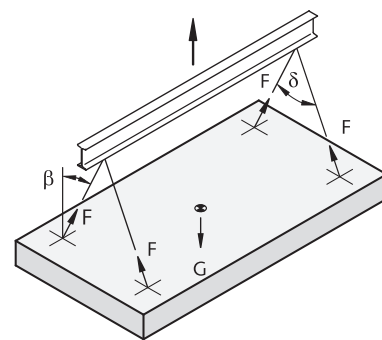
Number of load-bearing anchors:
 $n = 3$

For an arrangement of four independent cable runs or continuous diagonal cable runs, only two anchors can be assumed to be load-bearing.



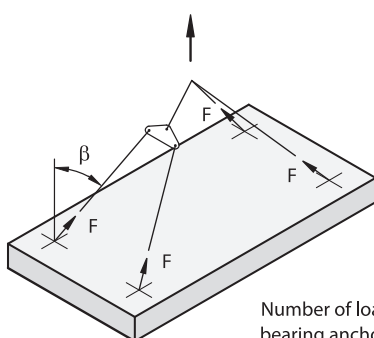
Number of load-bearing anchors:
 $n = 2$

A perfect static weight distribution can be obtained by the use of a spreader beam and two pairs of anchors set out symmetrically.



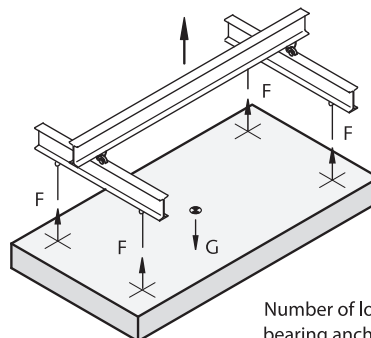
Number of load-bearing anchors:
 $n = 4$

The system with compensating rig makes it possible to distribute the load evenly over 4 anchors.



Number of load-bearing anchors:
 $n = 4$

A perfect static weight distribution can be obtained using a crossed spreader beam, which avoids angled pull.



Number of load-bearing anchors:
 $n = 4$



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MAGO Crane Factors

Example slab unit

For selecting the anchor, a distinction can be made between the situation in the manufacturing yard and on the construction sites. Avoid selecting an anchor that is too large by including too many factors.

Example slab unit:

Lifting, transporting in the yard and on site

Lifting from the mould (demould):

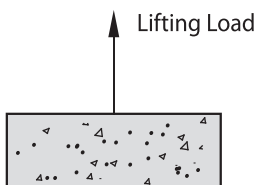
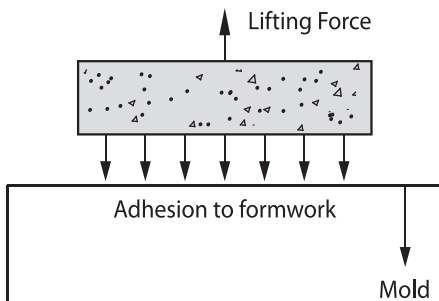
$$F = (G + q \times A) \times z / n$$

Transport in the yard:

$$F = G \times f \times z / n$$

Transport on the site:

$$F = G \times f \times z / n$$



Calculation parameters for this example

Example Slap unit	Manufacturing plant		On site
	Lifting	Transport	
G Mass	10 t ($\approx$ 100 kN)		10 t ($\approx$ 100 kN)
A Mould area	20 m ²		-
q Adhesion to formwork	2 kN/m ²	-	-
f Lifting load coefficient	-	1,1	1,4
z Cable angle factor	1.04 (β = 15°)		1,41 (β = 45°)
β_w Concrete strenght	15 N/mm ²		35 N/mm ²

With 2 supporting anchors, the angled pull force F per anchor is as follows:

Lifting from the mould (demould):

$$F = (100\text{kN} + 2 \text{ kN/m}^2 \times 20 \text{ m}^2) \times 1.04 / 2 = 72,8 \text{ kN}$$

Transport in the yard:

$$F = 100 \text{ kN} \times 1,1 \times 1.04 / 2 = 57,2 \text{ kN}$$

Transport on the site:

$$F = 100 \text{ kN} \times 1,4 \times 1,41 / 2 = 98,7 \text{ kN}$$

An anchor in the 10 t load range is just adequate.

If all detrimental factors were included, the result would be

$$F = (100\text{kN} + 20\text{m}^2 \times 2 \text{ kN/m}^2) \times 1,4 \times 1,41 / 2 = 138 \text{ kN}$$

e.g. an anchor in the load group 15 would have to be used.

The loads occurring on site are often higher than in the manufacturing plant as a result of greater cable spread and possibly higher crane factors. However the concrete strength is usually higher, i.e. the anchor's load capacity in the concrete is higher.

In the above example, the result for a lifting anchor would be as follows:

At the yard ($\beta_w = 15 \text{ N/mm}^2$, cable angle 15°):

Angled pull 15° $\leq$ 30°

- full permissible load at angled pull, even with $\beta_w = 15 \text{ N/mm}^2$

On the site ($\beta_w = 35 \text{ N/mm}^2$, cable angle 45°):

Angled pull 45° $>$ 30°

- full permissible load at angled pull for concrete strength of $\beta_w = 35 \text{ N/mm}^2 > 23 \text{ N/mm}^2$, with angled pull reinforcement

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are no margins, text, or other markings on the page.