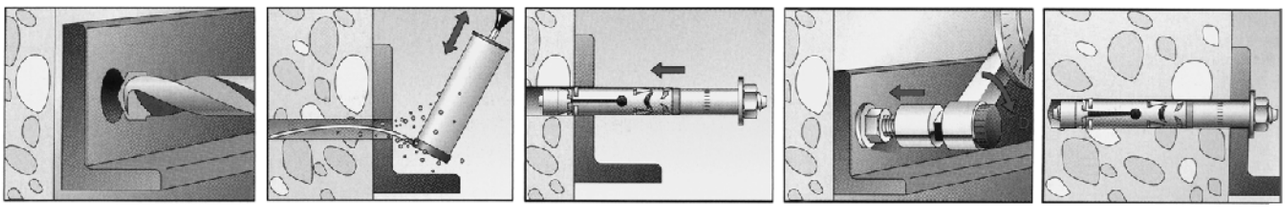
High performance anchor type FH II-B

Technical data

Type	d	L	d_o	Min. t_d	h_{ef}	t_{fix}	s	Ring ø	k_N
FH 10/10 B	M6	85	10	80	50	10	10	18X1,6	2,0
FH 10/25 B	M6	100	10	95	50	25	10	18X1,6	2,0
FH 10/50 B	M6	125	10	120	50	50	10	18X1,6	2,0
FH II 12/10 B	M8	90	12	90	60	10	12	22X2,5	5,7
FH II 12/25 B	M8	105	12	105	60	25	13	22X2,5	5,7
FH II 12/50 B	M8	130	12	130	60	50	13	22X2,5	5,7
FH II 12/100 B	M8	184	12	190	60	100	13	22X2,5	5,7
FH II 15/10 B	M10	110	15	100	70	10	17	25X3	7,6
FH II 15/25 B	M10	125	15	115	70	25	17	25X3	7,6
FH II 15/50 B	M10	150	15	140	70	50	17	25X3	7,6
FH II 15/100 B	M10	200	15	190	70	100	17	25X3	7,6
FH II 18/25 B	M12	135	18	130	80	25	19	30X3	11,9
FH II 18/50 B	M12	160	18	155	80	50	19	30X3	11,9
FH II 18/100 B	M12	214	18	205	80	100	19	30X3	11,9
FH II 24/25 B	M16	167	24	150	100	25	24	40X5	17,1
FH II 24/50 B	M16	195	24	175	100	50	24	40X5	17,1
FH II 24/100 B	M16	242	24	225	100	100	24	40X5	17,1

- **d_o = Nominal diameter of drill bit.**
- **Min. t_d = Recommended drilling depth.**
- **h_{ef} = Effective anchorage depth.**
- **t_{fix} = Grip range.**
- **s = Width across flats.**
- **kN = Load in kN.**
- The allowable load is valid for one single anchor, at cracked concrete (tensile zone) with concrete class C20/25, incl. partial safety factor γ_f = 1,4 and if the S_{cr}, N and C_{cr}, N are taken in to account.
- When reduction on spacing and edge distance take place a re-calculation of forces should be carried out by making use of the technical guide or calculation software, they are available on request.
- Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

Assembly sequence



8

LIEBIG Anchors

LIEBIG

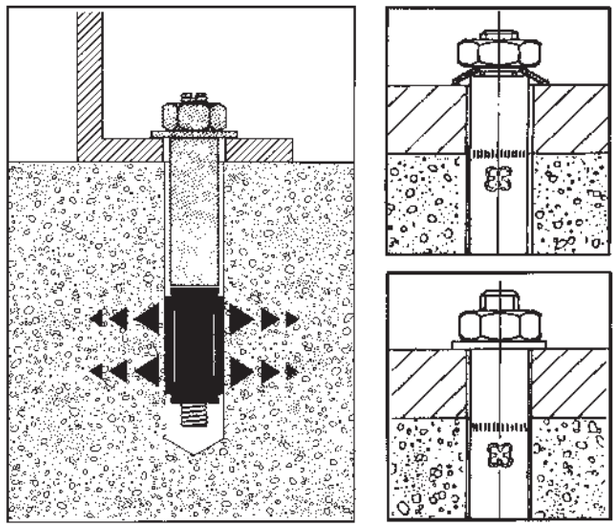
General
LIEBIG anchors are mechanically expanding fixtures for anchoring in ready concrete of heavy-duty constructions with safe working loads as indicated in the approvals of the "Institute für Bautechnik" (IfBT) in Berlin.

Types
Three types are available from stock:
the LIEBIG safety bolt type B and type S and the LIEBIG anchor type AB with following advantages:
- they are approved (Zulassung of the IfBT) and a periodical quality control is exercised by the "Institut für Massivbau an der T.H. Darmstadt"
- suited for drill-trough and drop-in method by using the recommended drillhole in the construction to be fastened
- after installation immediately fully loadable
- installation control of expansion force by applying the prescribed tightening torque wrench
- increasing load causes forced expansion because the cone is pressed further into the expansion sleeve
- the essential difference between the anchor types is characterised by the way the expansion of the sleeve is realised

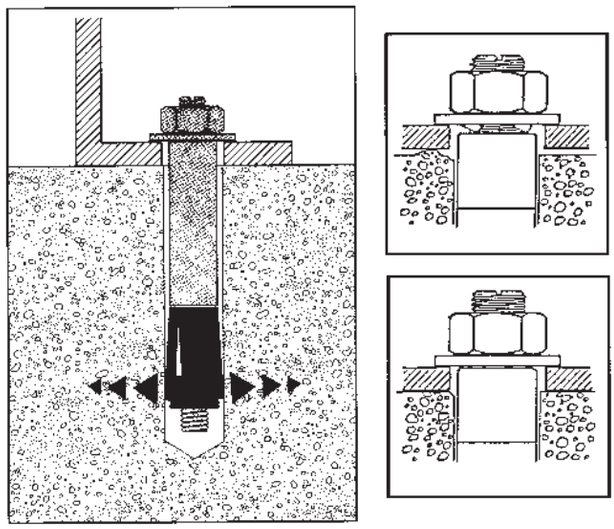
LIEBIG safety bolt type B and type S
The clamping force against the wall of the hole is realised in a cilindrically expanding way because during tightening the hardened steel sleeve will break at pre-calibrated points via the second cone, pressing the shields with its whole surface parallel against the wall of hole. Through this, high pull-out forces and an even equalisation of pressure are obtained in the concrete. The domed washer will be flattened at the prescribed tightening torque so giving an extra optical control on right installation. The thick walled expansion shields guarantee high expansion reserves and equalize drillhole tolerances. As a consequence of these properties the efficiency of this type is higher than that of a conically expanding anchor. In other words tightening torque and assembly pre-load are converted into an optimal clamping force.

LIEBIG anchor type AB
Only one cone is pulled into the expansion sleeve giving single conical expansion deep into the hole. The flattening of the feet under the washer guarantees clamping pressure by pulling the material to be fastened tight against the concrete.

Assembly data



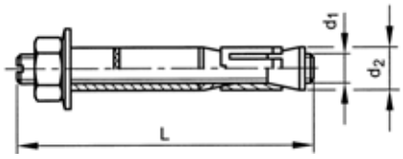
LIEBIG safety bolt type B and type S

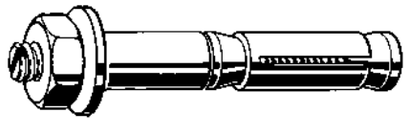


LIEBIG anchor type AB

For anchoring DURING casting concrete, see VEMO concrete inserts.

Safety bolt type B





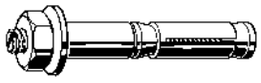
Technical data

Type	d_1	L	d_2	Drill depth (min.)	Drill ø in construction	Grip range (max.)	k_N
B M6-10/45/5	M6	70	10	60	12	5	2,4
B M6-10/45/15	M6	80	10	60	12	15	2,4
B M6-10/45/40	M6	105	10	60	12	40	2,4
B M8-12/55/5	M8	85	12	70	14	5	3,6
B M8-12/55/15	M8	95	12	70	14	15	3,6
B M8-12/55/40	M8	120	12	70	14	40	3,6
B M8-12/55/65	M8	145	12	70	14	65	3,6
B M8-12/55/100	M8	180	12	70	14	100	3,6
B M10-15/70/5	M10	100	15	85	17	5	7,6
B M10-15/70/15	M10	110	15	85	17	15	7,6
B M10-15/70/40	M10	135	15	85	17	40	7,6
B M10-15/70/65	M10	160	15	85	17	65	7,6
B M10-15/70/100	M10	195	15	85	17	100	7,6
B M10-15/70/140	M10	235	15	85	17	140	7,6
B M12-20/80/5	M12	120	20	100	21	5	12,3
B M12-20/80/15	M12	130	20	100	21	15	12,3
B M12-20/80/40	M12	155	20	100	21	40	12,3
B M12-20/80/65	M12	180	20	100	21	65	12,3
B M12-20/80/100	M12	215	20	100	21	100	12,3
B M12-20/80/140	M12	255	20	100	21	140	12,3
B M16-25/100/5	M16	150	25	125	26	5	17,1
B M16-25/100/15	M16	160	25	125	26	15	17,1
B M16-25/100/40	M16	185	25	125	26	40	17,1
B M16-25/100/65	M16	210	25	125	26	65	17,1
B M16-25/100/100	M16	245	25	125	26	100	17,1
B M20-30/125/15	M20	180	30	150	32	15	18,6
B M20-30/125/40	M20	205	30	150	32	40	18,6
B M20-30/125/65	M20	230	30	150	32	65	18,6
B M20-30/125/100	M20	265	30	150	32	100	18,6

- **kN = Allowable load in kN in 20/25.**

10015 LIEBIG Safety bolt type B **P05A**

Thread	Metric thread
Material	Steel
Class	8.8
Surface treatment	Zinc plated
Packaging	Standard



European Technical Approval
Option 1 for cracked concrete

Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

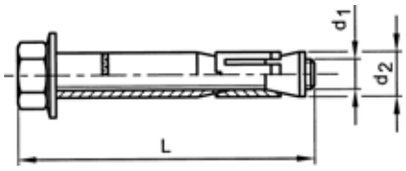
Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
B M6-10/45/5	50	10015.010.005	B M8-12/55/100	25	10015.012.100			
B M6-10/45/15	50	10015.010.015				B M12-20/80/5	10	10015.020.005
B M6-10/45/40	50	10015.010.040	B M10-15/70/5	25	10015.015.005	B M12-20/80/15	10	10015.020.015
			B M10-15/70/15	25	10015.015.015	B M12-20/80/40	10	10015.020.040
B M8-12/55/5	25	10015.012.005	B M10-15/70/40	10	10015.015.040	B M12-20/80/65	10	10015.020.065
B M8-12/55/15	25	10015.012.015	B M10-15/70/65	10	10015.015.065	B M12-20/80/100	20	10015.020.100
B M8-12/55/40	25	10015.012.040	B M10-15/70/100	25	10015.015.100	B M12-20/80/140	20	10015.020.140
B M8-12/55/65	25	10015.012.065	B M10-15/70/140	25	10015.015.140			

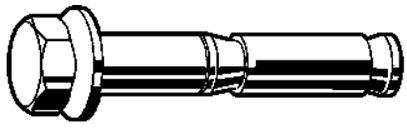
10015 LIEBIG Safety bolt type B

Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
B M16-25/100/5	5	10015.025.005	B M16-25/100/100	10	10015.025.100	B M20-30/125/65	5	10015.030.065
B M16-25/100/15	5	10015.025.015				B M20-30/125/100	5	10015.030.100
B M16-25/100/40	5	10015.025.040	B M20-30/125/15	5	10015.030.015			
B M16-25/100/65	10	10015.025.065	B M20-30/125/40	5	10015.030.040			

8

Safety bolt type S





Technical data

Type	d_1	L	d_2	Drill depth (min.)	Drill ø in construction	Grip range (max.)	k_N
S-M6-10/45/5	M6	70	10	60	12	5	2,4
S-M6-10/45/15	M6	80	10	60	12	15	2,4
S-M6-10/45/40	M6	105	10	60	12	40	2,4
S-M8-12/55/5	M8	80	12	70	14	5	3,6
S-M8-12/55/15	M8	90	12	70	14	15	3,6
S-M8-12/55/40	M8	115	12	70	14	40	3,6
S-M8-12/55/65	M8	140	12	70	14	65	3,6
S-M10-15/70/5	M10	95	15	85	17	5	7,6
S-M10-15/70/15	M10	105	15	85	17	15	7,6
S-M10-15/70/40	M10	130	15	85	17	40	7,6
S-M10-15/70/65	M10	155	15	85	17	65	7,6
S-M12-20/80/5	M12	113	20	100	21	5	12,3
S-M12-20/80/15	M12	123	20	100	21	15	12,3
S-M12-20/80/40	M12	148	20	100	21	40	12,3
S-M12-20/80/65	M12	173	20	100	21	65	12,3
S-M16-25/100/5	M16	145	25	125	26	5	17,1
S-M16-25/100/15	M16	155	25	125	26	15	17,1
S-M16-25/100/40	M16	180	25	125	26	40	17,1
S-M16-25/100/65	M16	205	25	125	26	65	17,1
S-M20-30/125/15	M20	180	30	150	32	15	18,6
S-M20-30/125/40	M20	205	30	150	32	40	18,6

- **kN = Allowable load in kN in C20/25.**

10025 LIEBIG Safety bolt type S **P05A**

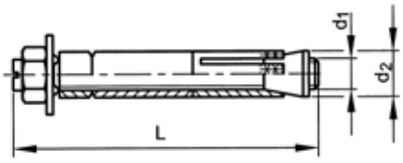
Thread	Metric thread
Material	Steel
Class	8.8
Surface treatment	Zinc plated
Packaging	Standard

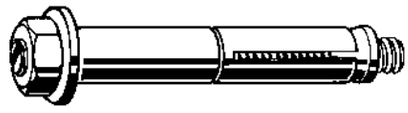
European Technical Approval
Option 1 for cracked concrete

Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
S M6-10/45/5	50	10025.010.005	S M10-15/70/5	25	10025.015.005			
S M6-10/45/15	50	10025.010.015	S M10-15/70/15	25	10025.015.015	S M16-25/100/5	5	10025.025.005
S M6-10/45/40	50	10025.010.045	S M10-15/70/40	10	10025.015.040	S M16-25/100/15	5	10025.025.015
			S M10-15/70/65	10	10025.015.065	S M16-25/100/40	5	10025.025.040
S M8-12/55/5	25	10025.012.005						
S M8-12/55/15	25	10025.012.015	S M12-20/80/5	10	10025.020.005	S M20-30/125/15	5	10025.030.015
S M8-12/55/40	25	10025.012.040	S M12-20/80/15	10	10025.020.015	S M20-30/125/40	5	10025.030.040
S M8-12/55/65	25	10025.012.065	S M12-20/80/40	10	10025.020.040			
			S M12-20/80/65	10	10025.020.065			

SK-Anchor



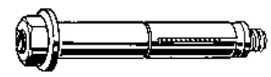


Technical data

Type	AB10/ 15	AB10/ 40	AB12/ 15	AB12/ 40	AB15/ 15	AB15/ 40	AB20/ 15	AB20/ 40	AB25/ 15	AB25/ 40	AB28/ 10	AB28/ 50	AB30/ 15	AB30/ 40
d_1	M6	M6	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M20	M20
d_2	10	10	12	12	15	15	20	20	25	25	28	28	30	30
L	74	99	90	115	105	130	120	145	150	175	150	195	180	205
Drill ø	10	10	12	12	15	15	20	20	25	25	28	28	30	30
Drill depth (min.)	60	60	70	70	85	85	95	95	125	125	150	150	150	150
Drill ø in construction	11	11	13	13	16	16	21	21	26	26	29	29	31	31
Grip range (max.)	15	40	15	40	15	40	15	40	15	40	10	50	15	40
Allowable load in kN														
Concrete C20/25	9,6	9,6	12,9	12,9	21,3	21,3	34,2	34,2	48,6	48,6	66,3	66,3	66,3	66,3

10130 LIEBIG SK-Anchor type AB **P05A**

Thread Metric thread
Material Stainless steel A4
Class 80
Packaging Standard



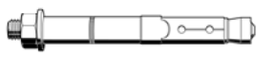
Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
AB10/15	50	10130.010.015	AB15/15	25	10130.015.015	AB25/15	5	10130.025.015
AB10/40	50	10130.010.040	AB15/40	10	10130.015.040	AB25/40	5	10130.025.040
AB12/15	25	10130.012.015	AB20/15	10	10130.020.015	AB30/15	5	10130.030.015
AB12/40	25	10130.012.040	AB20/40	10	10130.020.040	AB30/40	5	10130.030.040

- LIEBIG KS-anchors can be used for drill through installation.

8

63421 FISCHER High performance anchor type FH II-B **N03A**

Thread	Metric thread
Material	Steel
Surface treatment	Zinc plated
Packaging	Standard

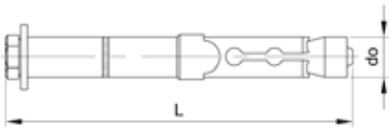


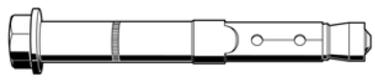
ETA CE
European Technical Approval
Option 1 for cracked concrete

Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
FH II 12/10 B	50	63421.120.010	FH II 15/25 B	25	63421.150.025	FH II 18/100 B	10	63421.180.100
FH II 12/25 B	50	63421.120.025	FH II 15/50 B	25	63421.150.050	FH II 24/25 B	10	63421.240.025
FH II 12/50 B	25	63421.120.050	FH II 15/100 B	20	63421.150.100	FH II 24/50 B	10	63421.240.050
FH II 12/100 B	25	63421.120.100	FH II 18/25 B	20	63421.180.025	FH II 24/100 B	5	63421.240.100
FH II 15/10 B	25	63421.150.010	FH II 18/50 B	20	63421.180.050			

High performance anchor type FH II-S



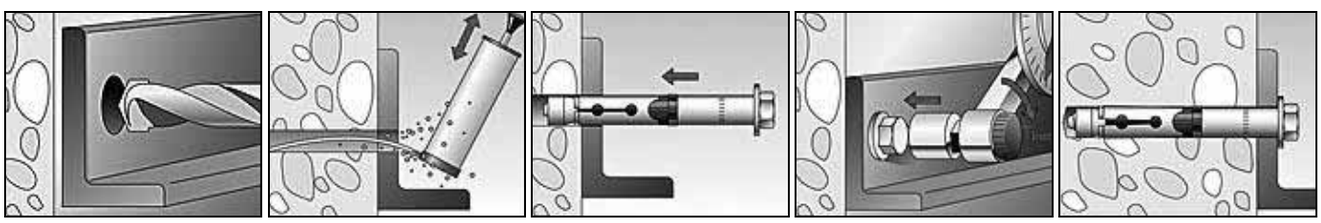


Technical data

Type	d	L	d_o	Min. t_d	h_{ef}	t_{fix}	s	Ring ø	k_N
FH 10/10 S	M6	84	10	85	50	10	10	18X1,6	2,0
FH 10/25 S	M6	99	10	100	50	25	10	18X1,6	2,0
FH 10/50 S	M6	124	10	125	50	50	10	18X1,6	2,0
FH II 12/10 S	M8	90	12	90	60	10	13	22X2,5	5,7
FH II 12/25 S	M8	105	12	105	60	25	13	22X2,5	5,7
FH II 12/50 S	M8	130	12	130	60	50	13	22X2,5	5,7
FH II 15/10 S	M10	106	15	100	70	10	17	25X3	7,6
FH II 15/25 S	M10	121	15	115	70	25	17	25X3	7,6
FH II 15/50 S	M10	146	15	140	70	50	17	25X3	7,6
FH II 18/10 S	M12	118	18	115	80	10	19	30X3	11,9
FH II 18/25 S	M12	132	18	130	80	25	19	30X3	11,9
FH II 18/50 S	M12	157	18	155	80	50	19	30X3	11,9
FH II 24/25 S	M16	160	24	150	100	25	24	40X5	17,1
FH II 24/50 S	M16	185	24	175	100	50	24	40X5	17,1

- **d_o = Nominal diameter of drill bit.**
- **Min. t_d = Recommended drilling depth.**
- **h_{ef} = Effective anchorage depth.**
- **t_{fix} = Grip range.**
- **s = Width across flats.**
- **kN = Load in kN.**
- The allowable load is valid for one single anchor, at cracked concrete (tensile zone) with concrete class C20/25, incl. partial safety factor γ_f = 1,4 and if the S_{cr}, N and C_{cr}, N are taken in to account.
- When reduction on spacing and edge distance take place a re-calculation of forces should be carried out by making use of the technical guide or calculation software, they are available on request.
- Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

Assembly sequence



63422 FISCHER High performance anchor type FH II-S N03A

Thread	Metric thread
Material	Steel
Surface treatment	Zinc plated
Packaging	Standard

ETA CE
European Technical Approval
Option 1 for cracked concrete

Final calculations should comply with the complete European Technical Approval (ETA), this approval is also available on request.

Type	✉	Art.number	Type	✉	Art.number	Type	✉	Art.number
FH II 12/10 S	50	63422.120.010	FH II 15/25 S	25	63422.150.025	FH II 18/50 S	20	63422.180.050
FH II 12/25 S	50	63422.120.025	FH II 15/50 S	25	63422.150.050	FH II 24/25 S	10	63422.240.025
FH II 12/50 S	25	63422.120.050	FH II 18/10 S	20	63422.180.010	FH II 24/50 S	10	63422.240.050
FH II 15/10 S	25	63422.150.010	FH II 18/25 S	20	63422.180.025			