

HALFEN HCC COLUMN SHOE

Technical Product Information





Wir entwickeln, modellieren und produzieren technische Produkte und innovative Konstruktionslösungen, die dazu beitragen, architektonische Visionen in die Realität umzusetzen und unseren Baupartnern ermöglichen, besser, sicherer, stärker und schneller zu bauen.

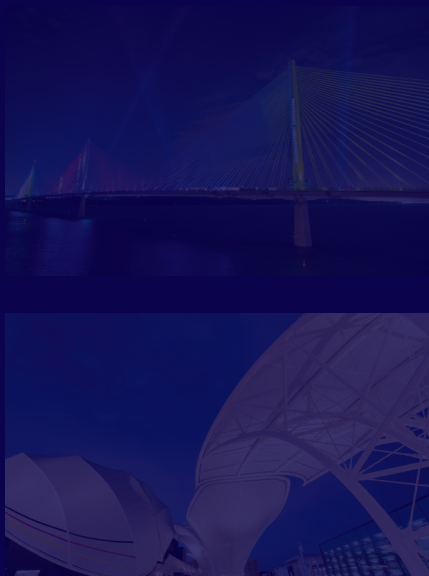
Leviat ist einer der weltweit führenden Anbieter von Verbindungs-, Befestigungs-, Hebe- und Verankerungstechnik.

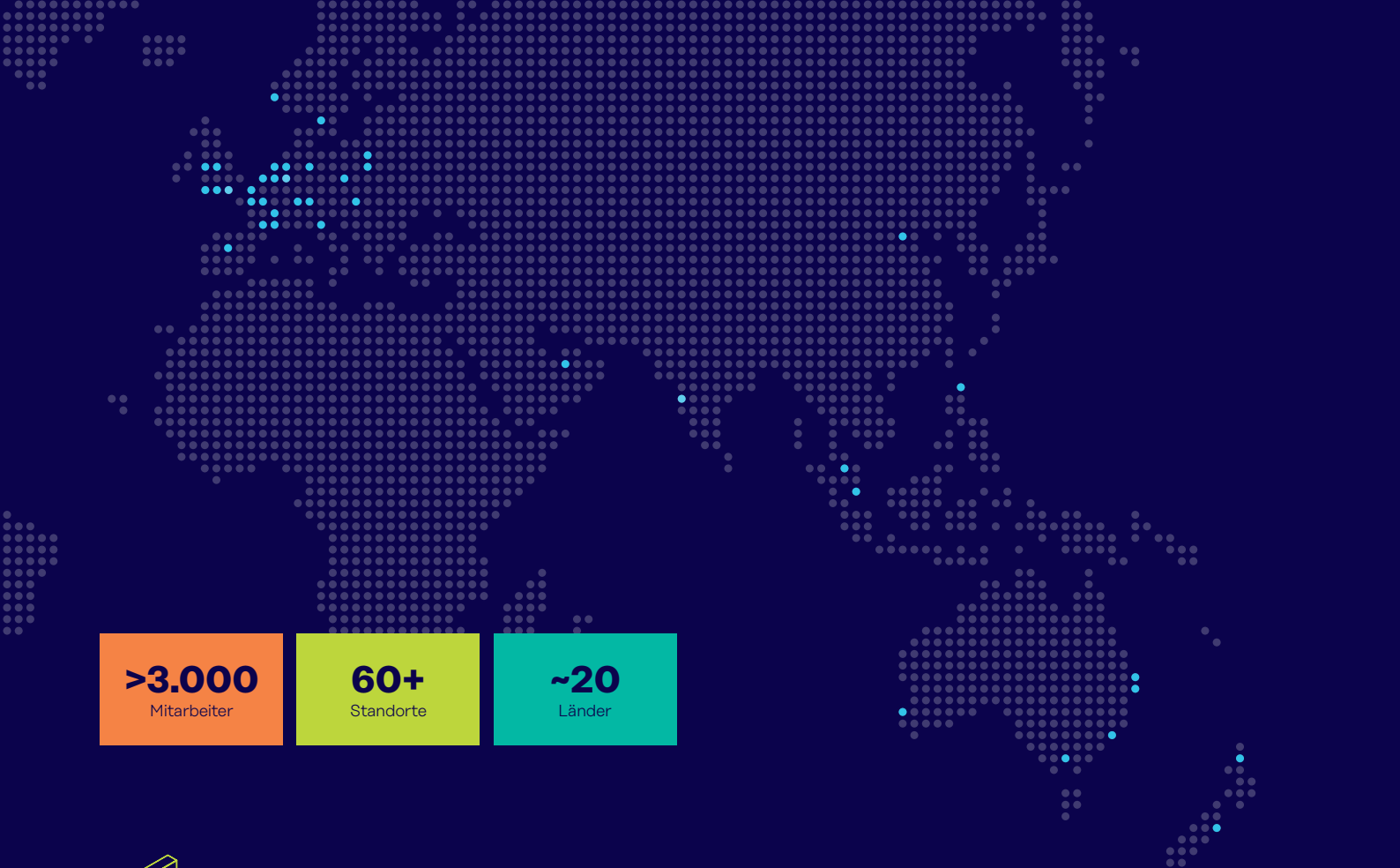
Vom Bau neuer Schulen, Krankenhäuser, Wohnhäuser und Infrastrukturen bis hin zur Reparatur und Instandhaltung historischer Bauwerke - unsere Ingenieurskunst und Produkttechnologie machen weltweit einen Unterschied.

Wir bieten technische Unterstützung in jeder Phase eines Projekts, von der ersten Planung bis zur Installation und darüber hinaus.

Unser technischer Support reicht von der einfachen Produktauswahl bis hin zur Entwicklung einer vollständig maßgeschneiderten projektspezifischen Konstruktionslösung.

Hinter jedem Versprechen, das wir vor Ort geben, stehen das Engagement und die Erfahrung unseres globalen Teams. Wir beschäftigen fast 3.000 Mitarbeiter an 60 Standorten in Nordamerika, Europa und im asiatisch-pazifischen Raum und bieten einen flexiblen und reaktionsschnellen Service weltweit.

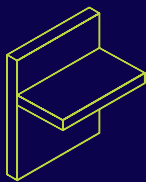




>3.000
Mitarbeiter

60+
Standorte

~20
Länder

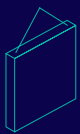


Lasttragende Verbindungen

Systeme, die robuste, effiziente Verbindungen und eine durchgehende Betonbewehrung zwischen Wänden, Platten, Säulen, Trägern und Balkonen herstellen und so die strukturelle Integrität sowie die thermische und akustische Leistung verbessern.

- Balkonanschlüsse
- Schraubanschlüsse
- Betonverbindungen
- Bewehrungsanschlüsse
- Durchstanzbewehrung
- Querkraftdorne
- Bodenfugensysteme
- Bewehrte Fertigteilstützen
- Infrastrukturprodukte
- Fertigteilverbindungen
- Schalldämmprodukte
- Vorspannung

Weitere Fachgebiete



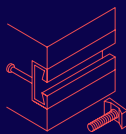
Heben & Abstützen

Systeme für den sicheren und effizienten Transport, das Heben und die temporäre Aussteifung von gegossenen Betonelementen und aufklappbaren Platten, bevor dauerhafte strukturelle Verbindungen hergestellt werden.



Fassaden-befestigungen & -verstärkungen

Systeme für die sichere und thermisch effiziente Befestigung der äußeren Gebäudehülle, einschließlich Ziegel und Naturstein, isolierte Sandwichpaneele, Vorhangfassaden und abgehängte Betonfassaden, sowie die Reparatur und Verstärkung bestehender Mauerwerke.



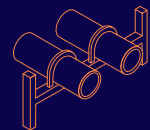
Verankern & Befestigen

Systeme zur Befestigung von Sekundärteilen in Beton, einschließlich Ankerschienen, Bolzen und Dübeln; außerdem Zugstabsysteme für Dächer und Vordächer.



Schalung & Zubehör

Nicht-strukturelles Zubehör, das unsere technischen Lösungen ergänzt und dazu beiträgt, dass Ihr Baumfeld sicher und effizient funktioniert, einschließlich Formen zum Gießen von Standard- und Spezialbetonelementen und Bauzubehör wie Abstandhalter für Bewehrungsstäbe.



Industrietechnik

Montageschienen, Rohrschellen und andere modulare Installationssysteme, die eine sichere Befestigung in einer Vielzahl von industriellen Anwendungen ermöglichen.

Weitere Produktpaletten

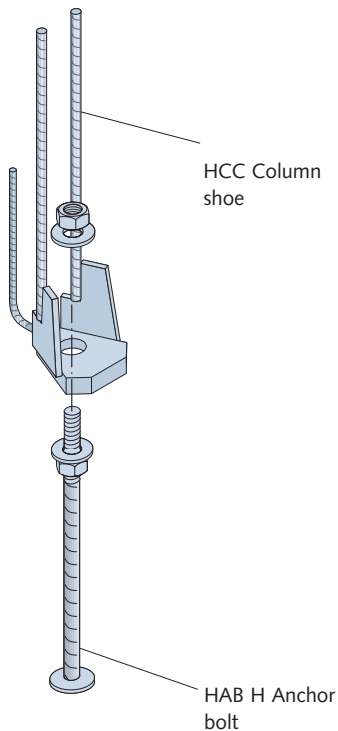
Ancon | Aschwanden | Connolly | Halfen | Helifix | Isedio | Meadow Burke | Modersohn | Moment | Plaka | Scaldex | Thermomass

HALFEN COLUMN SHOE SYSTEM

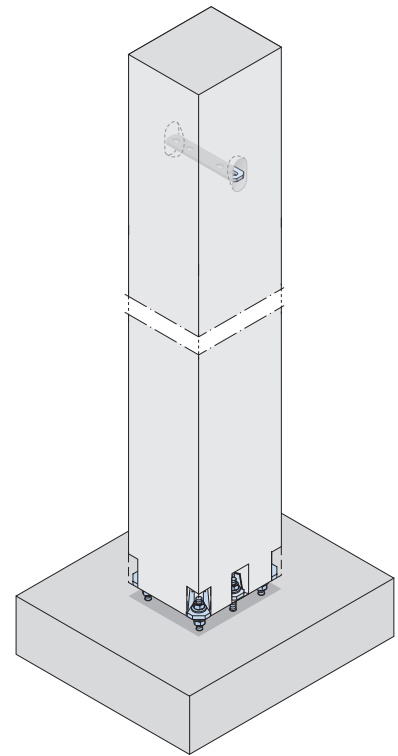
Introduction

The better solution for connecting precast columns

HALFEN HCC Column shoe
in combination with
HALFEN HAB Anchor bolts



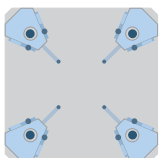
There is now a significantly more economical and modern method to erect precast columns. The HALFEN HCC Column shoe provides a perfect solution for precast connections between columns and footings. A major advantage of the prefabricated system with a HCC connection is its rapid assembly on site. The connection is simple to adjust and ready for immediate load application. This eliminates the need for temporary props on-site and optimizes crane-use. The system includes the HCC Column shoe and the respective HAB Anchor bolts for the foundations. The column shoes are set into the precast columns, the anchor bolts are cast into the foundation on site using a template. The components are mechanically connected on-site. To finalize erection, the remaining recesses and the gap at the foot of the column are filled with low-shrink mortar.



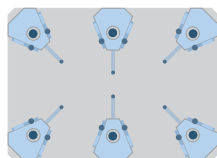
Column connection, designed for normal forces and bending moment loads.

Application

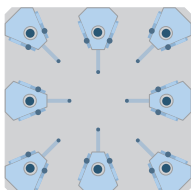
Arrangement in the column



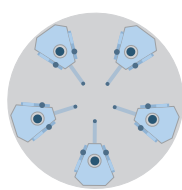
Square column



Rectangular column



Highly stressed square column



Round column

Fitting the HALFEN HAB Anchor bolts

The anchor bolts must be fitted exactly in the positions and to the layout specified in the design drawings.

An installation template should be used to ensure that the anchor bolts are fixed exactly as specified, and to prevent displacement during concreting and compacting.

Fitting templates → page 15.

Fitting the HALFEN HCC Column shoes

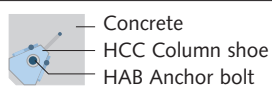
Fixing sets for fixing the column shoes in formwork are available as accessories → page 13.

Errecting the precast columns

Adjust and align the column vertically, tighten the nuts, fill the gap → page 15.

User-friendly planning tools

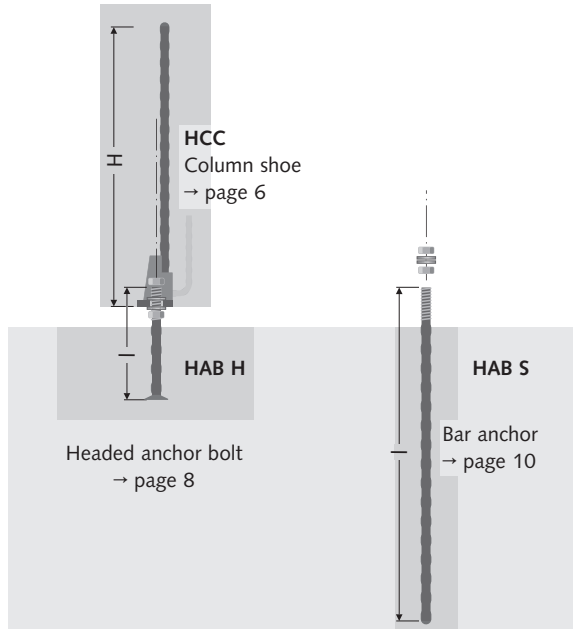
Calculation software and type selection → page 4-5.



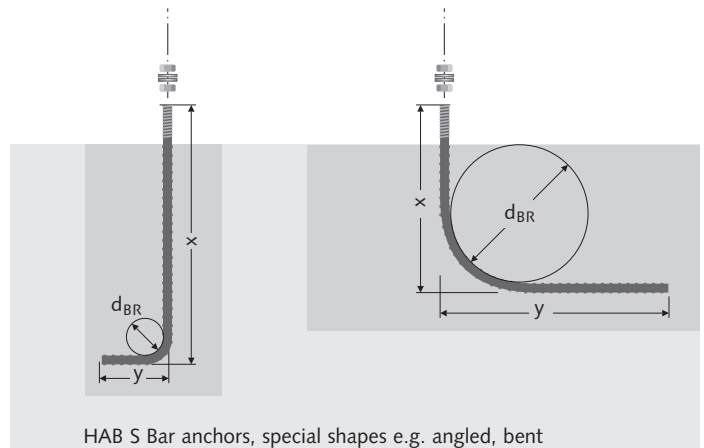
HALFEN COLUMN SHOE SYSTEM

Column shoe combinations, product variants

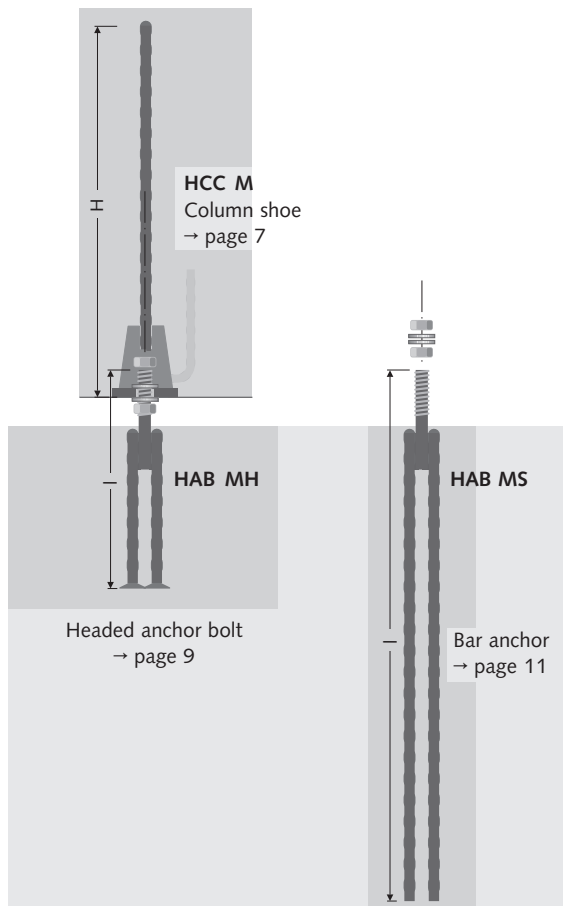
HCC Column shoe, combined with single Anchor bolt



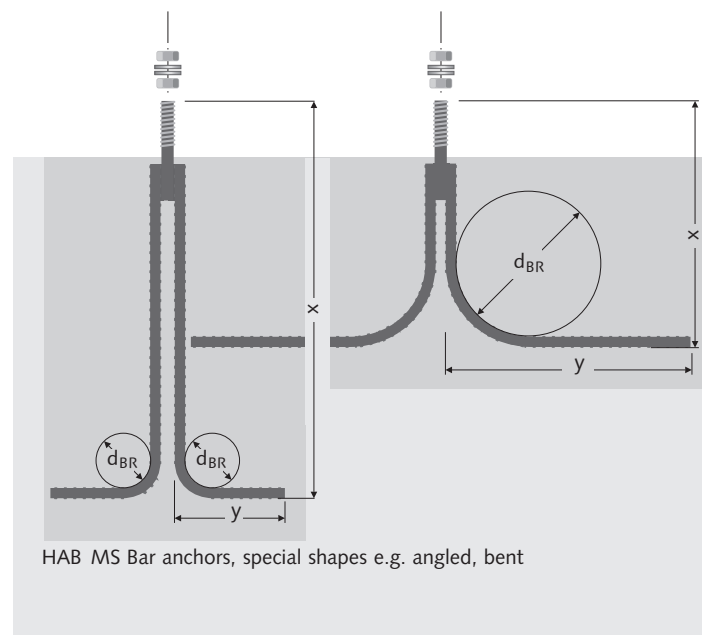
Bent or angled anchor bars are available on customers' request.



HCC M Column shoe, combined with multiple Anchor bolts



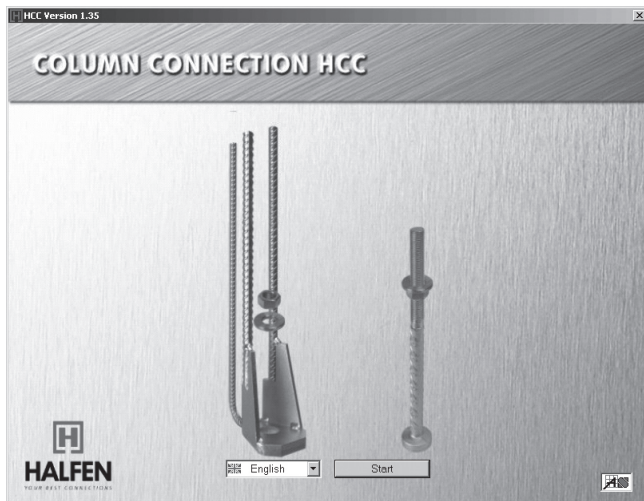
Bent or angled anchor bars are available on customers' request.



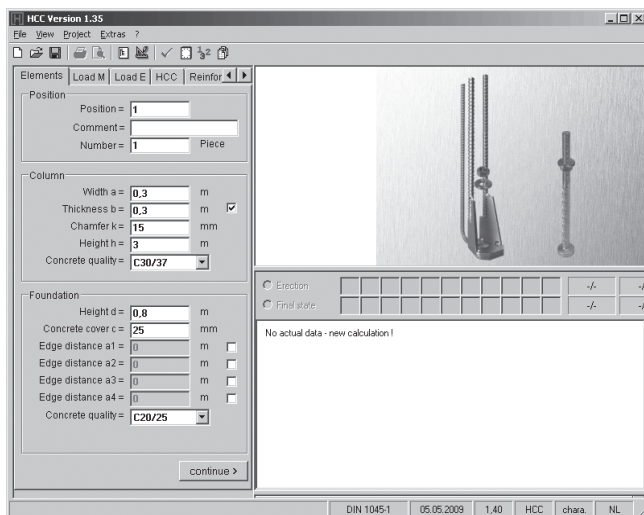
HALFEN COLUMN SHOE SYSTEM

Dimensioning software

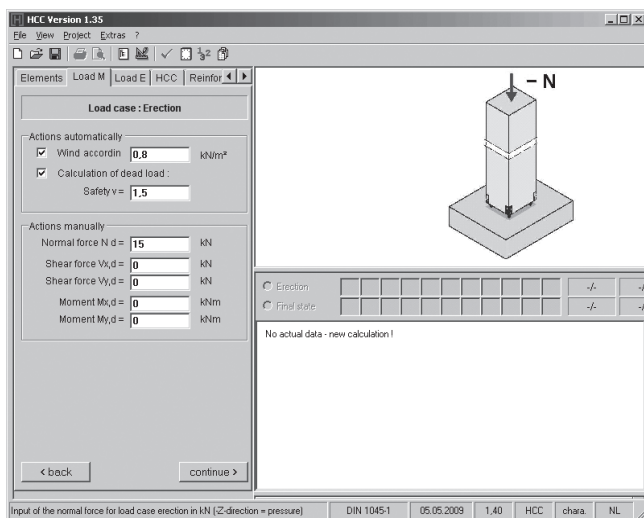
HCC Column shoes, HAB Anchor bolts



Splash-screen



Geometry and material



Load application for stage I (assembly state).

User-friendly software is available for selection and calculation of the required HAB Anchor bolts and HCC Column shoes. The software allows calculation of the loads for HALFEN HCC Column shoes both during erection and after final installation.

With the help of the module for double bending combined with axial force the maximum load on the column shoe is determined. The software also calculates the anchorage of HAB Anchor bolts in accordance with official approvals. The selection of the anchor diameter can be done automatically or preselected by the user.

User-Interface for data input (position, dimensions of structural members, edge distances and further details e.g. column and footing concrete strength).

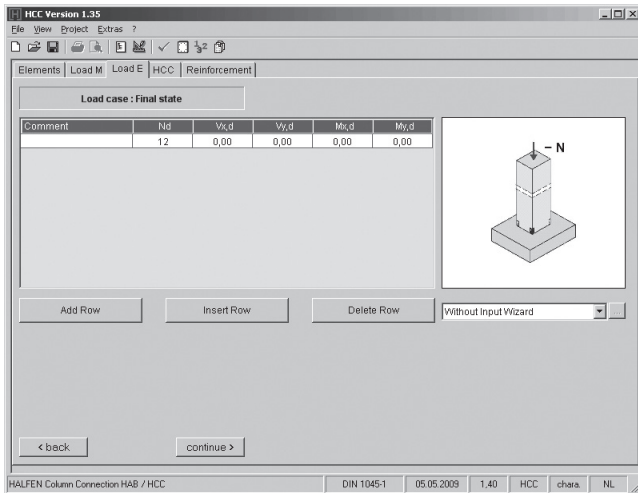
Appropriate auxiliary texts are displayed in the status bar during input.

Input window to consider load impacts during installation on site. The following options are available:
automatic calculation with wind loads and dead loads;
calculation with input of applicable loads.

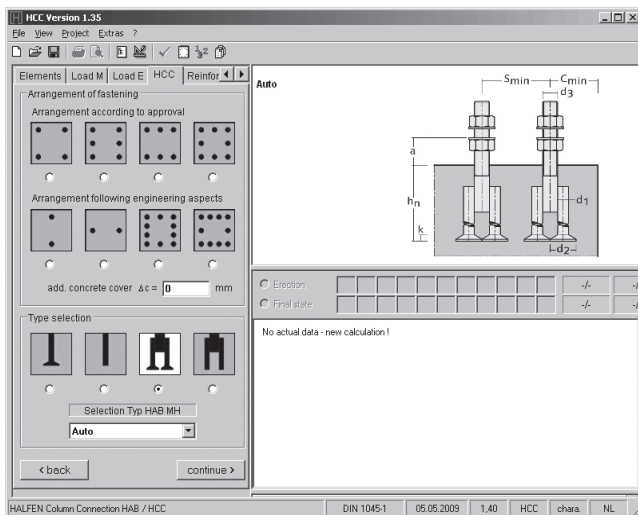
HALFEN COLUMN SHOE SYSTEM

Dimensioning software

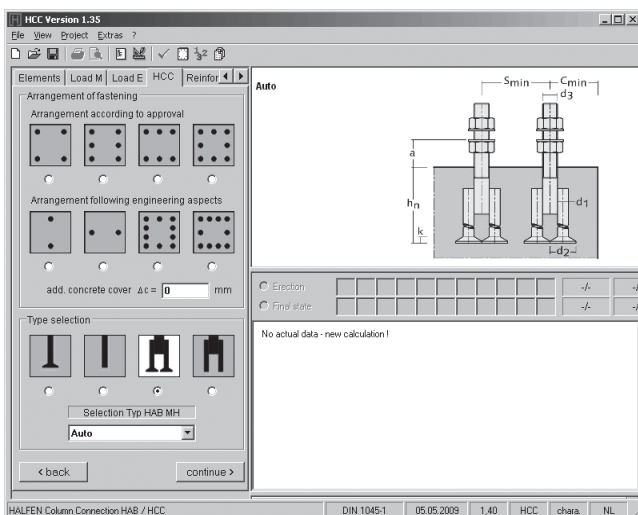
HCC Column shoes, HAB Anchor bolts



Load application Stage II (final state)



Layout and HALFEN Anchor bolts type



Results

Design loads regarding the final state can be defined individually. Alternatively 2 input assistants are available, these are useful for generating any combination of permanent and variable loads as well as for freely definable load cases.

The number of anchor bolts and the bolt layout can be determined including the HAB anchor bolt type. Additional concrete cover can be set. The load group can be preselected by the user or determined by the software.

After final calculation, the status for all values is displayed in detail. The results can be checked on screen.

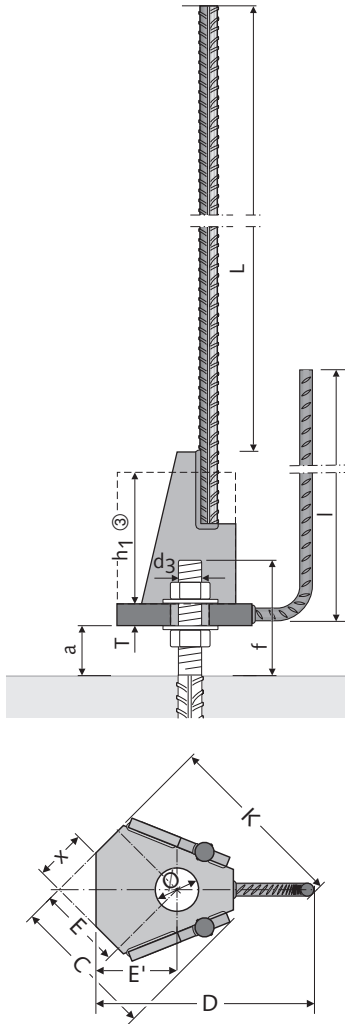
The position of the neutral line in the column section is displayed. Detailed results, the exact dimension for the layout, reinforcement bending, and an items list for the project can be sent to any standard printer.

HALFEN COLUMN SHOE SYSTEM

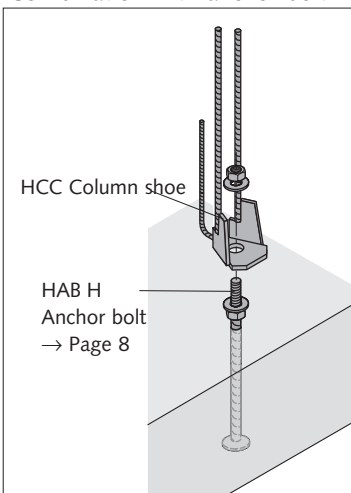
Column shoe

Column shoe type HCC

HALFEN HCC Column shoe



Combination with anchor bolt



HALFEN Column shoes type HCC are connection elements that form rigid column connections and joints. The rigid connection is effective both during Stage I (assembly) and stage II (final state). Occuring internal loads are transferred into the anchorage via the HALFEN HAB H Anchor bolts (headed anchor bolts) or HAB S (straight anchor bolts).

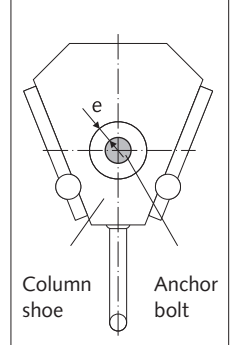
Type selection HCC

Item name HCC d3- L ②	Article no.	Sizes, Installation dimensions [mm]											Weight [kg/ piece]
Type [mm] - [mm]	0950.010-	h_1 ③	C	D	E	x	K	ϕ	T	l	a	f	
HCC 16- 640	00001	80	87	135	50	30	112	27	15	300	50	105	2.3
HCC 20- 830	00002	90	95	142	50	30	117	30	20	450	50	115	3.8
HCC 24- 905	00003	100	106	150	50	30	123	35	25	550	50	130	5.8
HCC 30-1100	00004	115	119	188	50	30	150	40	35	800	50	150	11.0
HCC 39-1450	00005	145	157	245	60	37	195	55	45	900	50	165	26.5

Load bearing capacity HCC

Item name HCC d3- L ②	Suitable anchor bolts:		Design value tensile stress $N_{Rd,s}$ ① [kN]	Max. eccentricity = installation tolerance e [mm]
	with headed anchor bolt	straight anchor bolt		
HCC 16- 640	HAB-H16	HAB-S16	61.7	± 5
HCC 20- 830	HAB-H20	HAB-S20	96.3	± 5
HCC 24- 905	HAB-H24	HAB-S24	138.7	± 5
HCC 30-1100	HAB-H30	HAB-S30	220.4	± 5
HCC 39-1450	HAB-H39	HAB-S39	383.4	± 8

Installation tolerance e



- ① for concrete strength class of column $\geq C30/37$ in acc. with the type test report no. 03/30.
Additional reinforcement and information of the lapping with the column reinforcement → page 12
- ② Length L for 'good' anchorage conditions (incl. $1.0 \times f_{bd}$). Also available for 'moderat' anchorage conditions on request (incl. $0.7 \times f_{bd}$).
- ③ Dimension h_1 corresponds to the height of the recess former (PU or Styrofoam) → page 12.

When designing the column connection, the requirements of type test report no. 03/30 (for HCC and HCC M) and approvals Z-21.5-1761 (for HAB H) and Z.21.5-1758 (for HAB MH) must be observed.

HALFEN HCC Calculation software is available → page 4-5.

Technical support

HALFEN is represented with sales offices and distributors worldwide.
Please contact us at www.halfen.com → see back of catalogue

Materials, standards

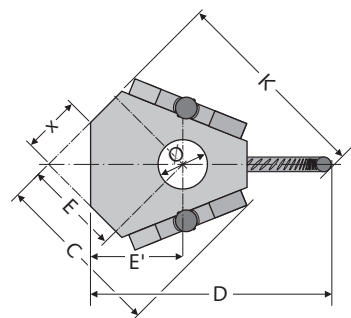
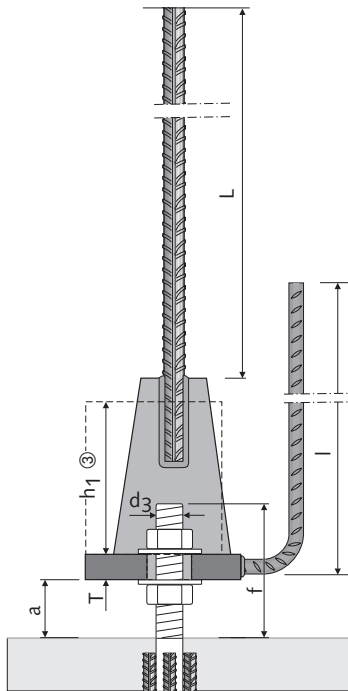
Base plate, side plates	S355J2, DIN EN 10025-2
Reinforcement steel	B500B, DIN 488-1

HALFEN COLUMN SHOE SYSTEM

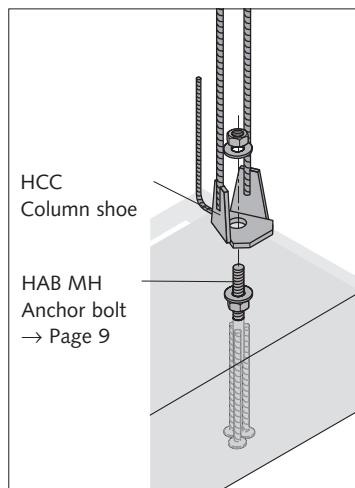
Column shoe

Column shoe type HCC M

HALFEN HCC M Column shoe



Combination with anchor bolt



HALFEN Column shoes type HCC M can be considered as a rigid column connection for highly-stressed construction elements. The rigid connection is effective both during and after final installation. Occuring internal loads are transferred into the anchorage via the HALFEN HAB MH Anchor bolts (headed anchor bolts) or HAB MS (straight anchor bolts).

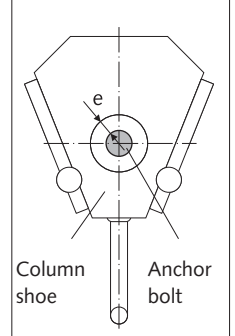
Type selection HCC M

Item name HCC M d3 - L ② Type [mm] - [mm]	Article no.	Sizes, Installation dimensions [mm]											Weight [kg/ piece]
		h ₁ ③	C	D	E	x	K	ø	T	I	a	f	
HCC-M30 - 1200	00006	125	134	220	50	30	173	45	45	1050	50	165	18.5
HCC-M36 - 1650	00007	155	157	245	60	37	195	55	50	1000	55	165	29.0
HCC-M39 - 1650	00008	175	172	267	60	37	210	55	55	1000	55	185	40.5
HCC-M45 - 2070	00009	175	207	317	60	37	246	65	60	1460	65	195	69.0
HCC-M52 - 2290	00010	175	232	366	60	35	280	70	70	1450	70	240	95.0

Load bearing capacity HCC M

Item name HCC M d3 - L ② Type [mm] - [mm]	Suitable anchor bolts:		Design value tensile stress N _{Rd,s} ① [kN]	Max. eccentricity = installation tolerance e [mm]
	with headed anchor bolt	straight anchor bolt		
HCC-M30 - 1200	HAB-MH30-(36)	HAB-MS30-(36)	299	± 4.5
HCC-M36 - 1650	HAB-MH36w	HAB-MS36	436	± 9.5
HCC-M39 - 1650	HAB-MH39	HAB-MS39	520	± 8
HCC-M45 - 2070	HAB-MH45	HAB-MS45	696	±10
HCC-M52 - 2290	HAB-MH52	HAB-MS52	937	± 9

Installation tolerance e



- ① for concrete strength class of column $\geq$ C30/37 in acc. with the type test report no.03/30. Additional reinforcement and information of the lapping with the column reinforcement → page 12
- ② Length L for 'good' anchorage conditions (incl. $1.0 \times f_{bd}$). Also available for 'moderate' anchorage conditions on request (incl. $0.7 \times f_{bd}$).
- ③ Dimension h₁ corresponds to the height of the recess former (styrofoam only) → page 12.

When designing the column connection, the requirements of type test report no. 03/30 (for HCC and HCC M) and approvals Z-21.5-1761 (for HAB H) and Z.21.5-1758 (for HAB MH) must be observed.

HALFEN HCC Calculation software is available → page 4-5.

Technical support

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Materials, Standards

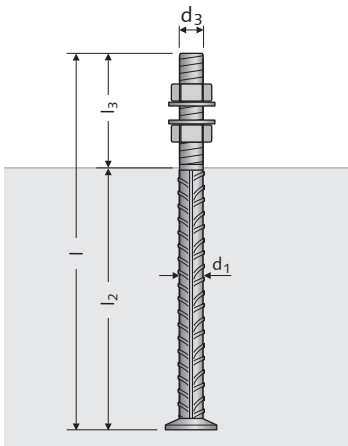
Base plate, side plates	S355J2, DIN EN 10025-2
Reinforcement steel	B 500 B, DIN 488-1

HALFEN COLUMN SHOE SYSTEM

Anchor bolts

Headed anchor bolt type HAB H

HALFEN HAB H Anchor bolts,
including 2 nuts
+ 2 washers



HALFEN Anchor bolts type HAB H are made of reinforcement steel B 500 B with rolled thread. Anchoring is achieved by the forged head (headed anchor bolt). The minimal installation depth required for the HAB MH Anchor bolts makes them particularly suitable for applications in large-surface components, i.e. footings or walls with sufficiently large edge distances.

Type selection HAB H

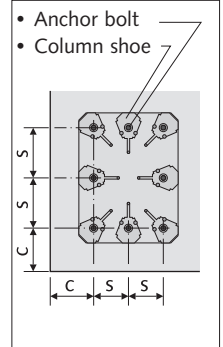
Item name	Article no.	Length	Installation depth	Thread-length	Anchor bar diameter	Thread diameter	Weight
HAB H d ₃ TYPE [mm]	0951.010-	l [mm]	l ₂ [mm]	l ₃ [mm]	d ₁ [mm]	d ₃ [mm]	[kg/piece]
HAB-H16	00001	280	175	105	16	16	0.7
HAB-H20	00002	350	235	115	20	20	1.2
HAB-H24	00003	430	300	130	25	24	2.2
HAB-H30	00004	500	350	150	32	30	4.0
HAB-H39	00005	700	535	165	40	39	9.0

Order example:

Anchor bolt type HAB H20
article no. 0951.010-00002
and the suitable
column shoe type HCC 20-830
article no. 0950.010-00002

Load bearing capacity HAB H

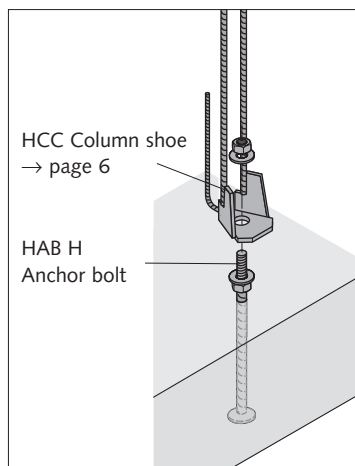
Item name	Tension/ compression capacity	Transverse pull capacity	Bending load capacity	Must be observed:	
				minimum centre spacing s _{min} [mm]	minimum edge distance c _{min} [mm]
HAB-H16	61.4	28	182	80	50
HAB-H20	95.7	44	357	100	70
HAB-H24	138.6	63.3	617	100	70
HAB-H30	220.0	100.7	1237	130	100
HAB-H39	383.6	176.7	2837	150	130



① for concrete strength class $\geq$ C20/25 and applications in connection with HALFEN HCC M Column shoe $\rightarrow$ page 6 in accordance with approval Z-21.5-1761.

Please contact our technical team (reinforcement HCC Column shoes) for load bearing characteristics in other applications. For contact details $\rightarrow$ see back of catalogue.

Column shoe combination



Verification of the anchorage in the concrete, must be provided in accordance with approval Z-21.5-1761, taking the geometry and the anchorage base into account.

HALFEN HCC calculation software is available $\rightarrow$ page 4-5.

Materials, standards

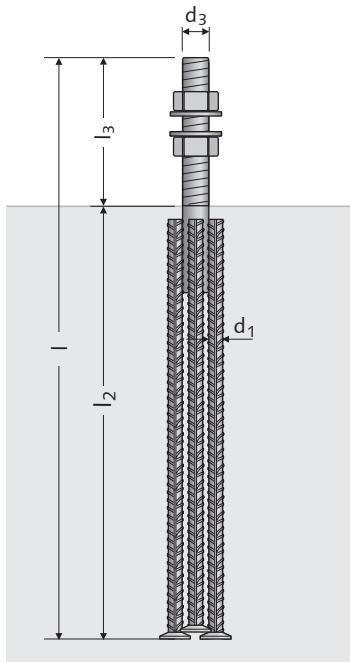
Anchor bolts	Reinforcement steel B 500 B, DIN 488-1
Hexagon nuts	Strength grade 8, DIN EN 20898-2
Washers	i.a. S355J0 see approval Z-21.5-1761, DIN EN 10025-2

HALFEN COLUMN SHOE SYSTEM

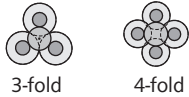
Anchor bolts

Headed anchor bolt type HAB MH

HALFEN HAB MH Anchor bolts, including 2 nuts + 2 washers



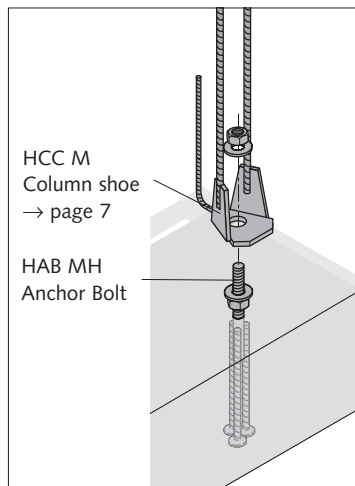
Anchor arrangement:



Order example:

Anchor bolt type HAB MH36
article no. 0951.030-00004
and the suitable column shoe
type HCC M36-1650
article no. 0950.010-00007

Column shoe combination



HALFEN Anchor bolts type HAB MH are made from 2 to 4 headed B 500 B reinforcement bars which are factory welded to a threaded high-strength steel stud. The minimal installation depth required for the HAB MH Anchor bolts makes them particularly suitable for anchoring in large-surface components, i.e. foundations or walls with sufficiently large edge distances.

Type selection HAB MH

Item name	Article no.	Length	Installation depth	Thread-length	No. and diam. anch. bars d ₁	Thread diameter d ₃	Weight
HAB MH d ₃ TYPE [mm]	0951.030-	l [mm]	l ₂ [mm]	l ₃ [mm]	d ₁ [mm]	d ₃ [mm]	[kg/piece]
HAB-MH30-(36)	00003	755	575	165	4, Ø 20	36	9.5
HAB-MH36	00004	755	575	165	4, Ø 20	36	10.0
HAB-MH39	00005	880	695	185	3, Ø 25	39	13.0
HAB-MH45	00006	980	785	195	4, Ø 25	45	19.0
HAB-MH52	00007	1160	900	240	4, Ø 32	52	34.5

Load bearing capacity HAB MH

Item name	Tension/compression capacity N _{Rd,s} ① [kN]	Transverse pull capacity V ⁰ _{Rd,s} ① [kN]	Bending load capacity M ⁰ _{Rk,s} ① [Nm]	Must be observed:	
				minimum centre spacing s _{min} [mm]	minimum edge distance c _{min} [mm]
HAB MH d ₃ TYPE [mm]					
HAB-MH30-(36)	467*	218*	3160*	160	140
HAB-MH36	467	218	3160	160	140
HAB-MH39	558	261	4130	180	150
HAB-MH45	746	349	6390	200	160
HAB-MH52	1004	469	9980	280	180

① for concrete strength class ≥ C20/25 and applications in connection with HALFEN HCC-M Column shoe → page 7 in accordance with approval Z-21.5-1758.

Please contact our technical team (reinforcement HCC Column shoes) for load bearing characteristics in other applications. For contact details → see back of catalogue.

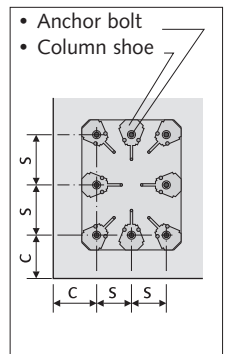
* Values for bolts as HAB MH36

Verification of the anchorage in the concrete, must be provided in accordance with approval Z-21.5-1761, taking the geometry and the anchorage base into account.

HALFEN HCC calculation software is available → page 4-5.

Materials, standards

Anchor bolts	Reinforcement steel B 500 B, DIN 488-1
Threaded component	High strength steel, e.g. Imacro M acc. to material specification sheet MS Imacro Ø 36, Ø 39, Ø 45, Ø 52
Hexagon nuts	Strength grade 10, DIN EN 20898-2
Washers	i.a. S355J0 see approval Z-21.5-1761, DIN EN 10025-2

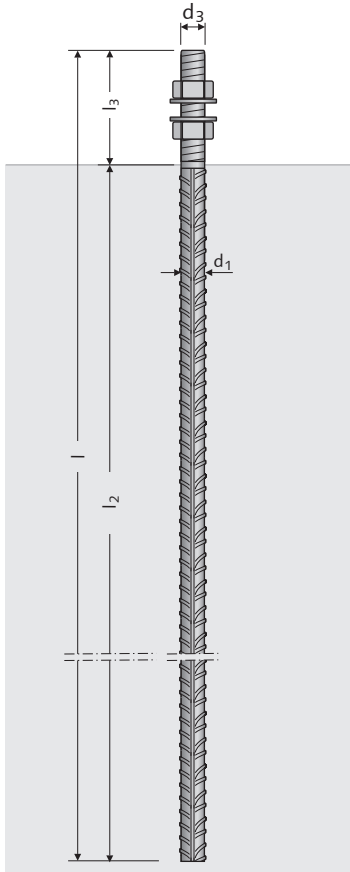


HALFEN COLUMN SHOE SYSTEM

Anchor bolts

Straight anchor bolt type HAB S

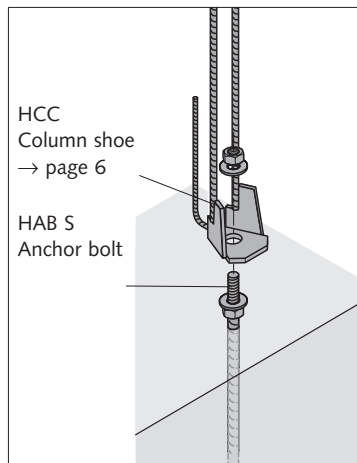
HALFEN HAB S Anchor bolt,
including 2 nuts
+ 2 washers



Order example:

Anchor bolt Type HAB S20
article no. 0951.020-00002
and the suitable
column shoe Type HCC 20-830
article no. 0950.010-00002

Column shoe combination



HALFEN Anchor bolts type HAB S are made of reinforcement steel grade B 500 B with rolled thread. Anchorage is achieved with overlap-connections or anchorage in accordance with reinforced concrete standards. This enables minimum centre spacings and edge distances. HAB S Anchor bolts are also available with bent or angled end on request.

Type selection HAB S

Item name	Article no.	Length	Installation depth	Thread length	Anchor bar diameter	Thread diameter	Weight
HAB S d ₃ TYPE [mm]	0951.020-	l [mm]	l ₂ [mm]	l ₃ [mm]	d ₁ [mm]	d ₃ [mm]	[kg/piece]
HAB-S16	00001	970	865	105	16	16	1.7
HAB-S20	00002	1170	1055	115	20	20	3.1
HAB-S24	00003	1360	1230	130	25	24	5.6
HAB-S30	00004	1660	1510	150	32	30	11.0
HAB-S39	00005	1980	1815	165	40	39	20.5

Load bearing capacity HAB S

Item name	Tension/ compression capacity	Transverse pull capacity	Bending load capacity
HAB S d ₃ TYPE [mm]	N _{Rd,s} ① [kN]	V _{Rd,s} ① [kN]	M ⁰ _{Rk,s} ① [Nm]
HAB-S16	61.4	28	182
HAB-S20	95.7	44	357
HAB-S24	138.6	63,3	617
HAB-S30	220.0	100,7	1237
HAB-S39	383.6	176,7	2778

Anchorage in acc. with
EC2 (DIN EN 1992-1-1)

① for concrete strength class $\geq$ C20/25 and applications using HALFEN HCC Column shoes (→ page 6), see approval Z-21.5-1761.

Please contact our technical team (reinforcement HCC Column shoes) for load bearing characteristics in other applications. For contact details → see back of catalogue.

HALFEN HCC Calculation software for straight bar ends in concrete is available, see → pages 4-5.

Materials, standards

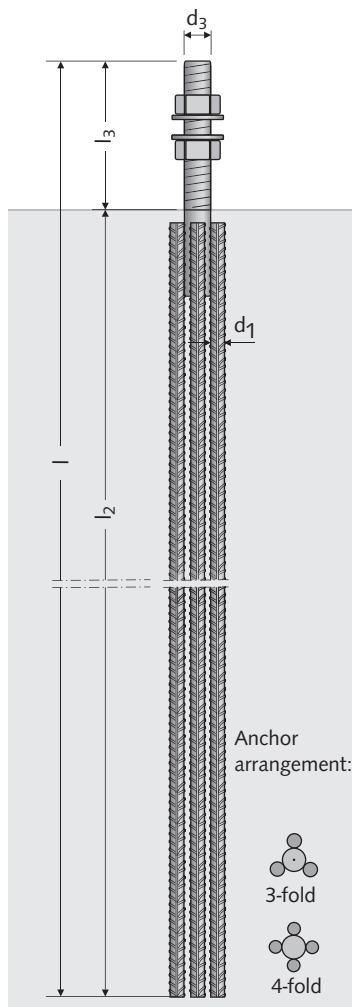
Anchor bolts	Reinforcement steel B 500 B, DIN 488-1
Hexagon nuts	Strength grade 8, DIN EN 20898-2
Washers	i.a. S355J0 see approval Z-21.5-1761, DIN EN 10025-2

HALFEN COLUMN SHOE SYSTEM

Anchor bolts

Straight anchor bolt type HAB MS

HALFEN HAB MS Anchor bolt,
including 2 nuts
+ 2 washers



HALFEN HAB MS Anchor bolts are made from 2 to 4 ribbed B 500 B reinforcement bars which are factory welded to a threaded high-strength steel stud. Anchorage is achieved with overlap-connections or anchorage in accordance with reinforced concrete standards. This enables minimum centre spacings and edge distances. HAB MS Anchor bolts are also available with bent or angled bars on request.

Type selection HAB MS

Item name	Article no.	Length	Installation depth	Thread-length	No. and diam. anch. bars d ₁	Thread diameter	Weight
HAB MS d ₃ TYPE [mm]	0951.040-	l [mm]	l ₂ [mm]	l ₃ [mm]	d ₁ [mm]	d ₃ [mm]	[kg/piece]
HAB-MS30-(36)	00003	1430	1265	165	4, Ø 20	36	15.5
HAB-MS36	00004	1430	1265	165	4, Ø 20	36	16.0
HAB-MS39	00005	1600	1415	185	3, Ø 25	39	21.0
HAB-MS45	00006	1800	1605	195	4, Ø 25	45	31.5
HAB-MS52	00007	1910	1670	240	4, Ø 32	52	52.0

Load bearing capacity HAB MS

Item name	Tension/ compression capacity	Transverse pull capacity	Bending load capacity
HAB MS d ₃ TYPE [mm]	N _{Rd,s} ① [kN]	V ⁰ _{Rd,s} ① [kN]	M ⁰ _{Rk,s} ① [Nm]
HAB-MS30-(36)	436*	218*	3160*
HAB-MS36	436	218	3160
HAB-MS39	520	261	4130
HAB-MS45	696	349	6390
HAB-MS52	937	469	9980

Anchorage acc. to
EC2 (DIN EN 1992-1-1)

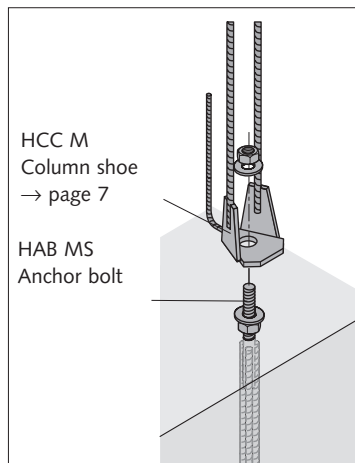
① for concrete strength class $\geq$ C20/25 and applications using HALFEN Column shoes HCC M (→ page 7).

* Values for bolts as HAB MS36

Please contact our technical team (reinforcement HCC Column shoes) for load bearing characteristics in other applications. For contact details → see back of catalogue.

HALFEN HCC Calculation software for straight bar ends in concrete is available, see → pages 4-5.

Column shoe combination



Materials, standards

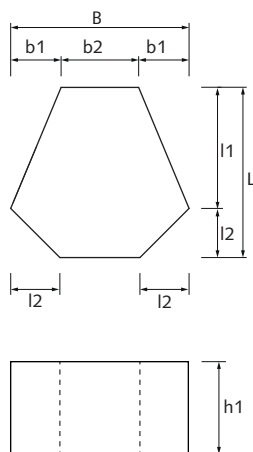
Anchor bolts	Reinforcement steel B 500 B, DIN 488-1
Threaded component	High strength steel, e.g. Imacro M acc. to material specification sheet MS Imacro Ø 36, Ø 39, Ø 45, Ø 52
Hexagon nuts	Strength grade 10, DIN EN 20898-2
Washers	i.a. S355J0 see approval Z-21.5-1761, DIN EN 10025-2

HALFEN COLUMN SHOE SYSTEM

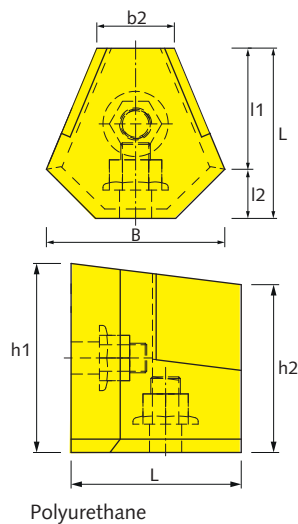
Recess formers

Type selection												
		Item name/ Colour coding	Article no.	Dimensions								
				h1 [mm]	h2 [mm]	B [mm]	b1 [mm]	b2 [mm]	L [mm]	l1 [mm]	l2 [mm]	
Corner recess former	Styrofoam	HCC-A1-16-PS	0952.010-00001	80	-	78	23.5	31	80	62	18	
		HCC-A1-20-PS	0952.010-00002	90	-	82	20.5	41	85	65	20	
		HCC-A1-24-PS	0952.010-00003	100	-	94	26.5	41	90	64	26	
		HCC-A1-30-PS	0952.010-00004	115	-	106	30.5	45	100	68	32	
		HCC-A1-39-PS	0952.010-00005	145	-	125	30.5	64	120	84	36	
		HCC-A1-M30-PS	0952.010-00006	125	-	110	28	54	100	67	33	
		HCC-A1-M36-PS	0952.010-00007	155	-	123	29.5	64	120	84	36	
		HCC-A1-M39-PS	0952.010-00008	175	-	125	27	71	120	84	36	
		HCC-A1-M45-PS	0952.010-00009	175	-	142	25	92	130	85,5	44,5	
		HCC-A1-M52-PS	0952.010-00010	175	-	157	28.5	100	140	86	54	
	Polyurethane	HCC-A1-16-PU		0952.010-00011	80	70	78	23.5	31	80	62	18
		HCC-A1-20-PU		0952.010-00012	90	80	82	20.5	41	85	65	20
		HCC-A1-24-PU		0952.010-00013	100	89	94	26.5	41	90	64	26
		HCC-A1-30-PU		0952.010-00014	115	103	106	30.5	45	100	68	32
		HCC-A1-39-PU		0952.010-00015	145	130	125	30.5	64	120	84	36
Edge recess former	Styrofoam	HCC-A2-16-PS	0952.020-00001	80	-	92	30.5	31	80	-	-	
		HCC-A2-20-PS	0952.020-00002	90	-	95	27	41	85	-	-	
		HCC-A2-24-PS	0952.020-00003	100	-	116	37.5	41	90	-	-	
		HCC-A2-30-PS	0952.020-00004	115	-	135	45	45	100	-	-	
		HCC-A2-39-PS	0952.020-00005	145	-	151	43.5	64	120	-	-	
		HCC-A2-M30-PS	0952.020-00006	125	-	138	42	54	100	-	-	
		HCC-A2-M36-PS	0952.020-00007	155	-	148	42	64	120	-	-	
		HCC-A2-M39-PS	0952.020-00008	175	-	149	39	71	120	-	-	
		HCC-A2-M45-PS	0952.020-00009	175	-	168	38	92	130	-	-	
		HCC-A2-M52-PS	0952.020-00010	175	-	193	46.5	100	140	-	-	
	Polyurethane	HCC-A2-16-PU		0952.020-00011	80	70	92	30.5	31	80	-	-
		HCC-A2-20-PU		0952.020-00012	90	80	95	27	41	85	-	-
		HCC-A2-24-PU		0952.020-00013	100	89	116	37.5	41	90	-	-
		HCC-A2-30-PU		0952.020-00014	115	103	135	45	45	100	-	-
		HCC-A2-39-PU		0952.020-00015	145	130	151	43.5	64	120	-	-

Corner recess former:

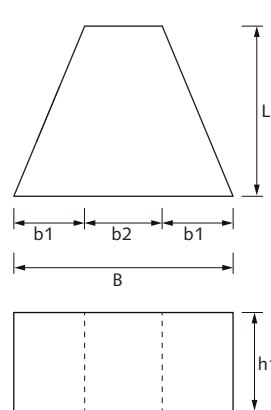


Styrofoam

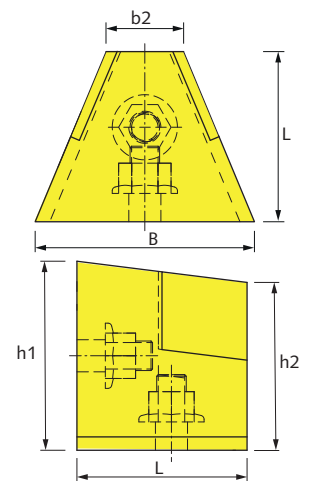


Polyurethane

Edge recess former:



Styrofoam



Polyurethane

HALFEN COLUMN SHOE SYSTEM

Components fixing set Components fixing set

Accessories for precast plant installation

The fixing elements in combination with the recess formers provide an auxiliary system to allow the HALFEN HCC Column shoes to be precisely and securely attached to the formwork.

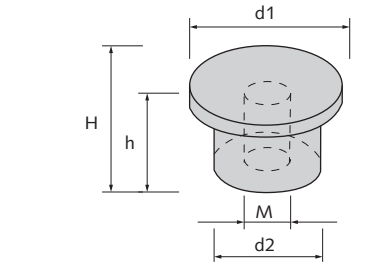
Components fixing set					
Item name	Dimensions				
	d1 [mm]	d2 [mm]	h [mm]	H [mm]	M [mm]
HCC-ZM-16	40	26	12	15	16
HCC-ZM-20	55	29	15	18	16
HCC-ZM-24	60	34	20	23	16
HCC-ZM-30	75	39	30	35	16
HCC-ZM-39/M36/M39-PS	95	54	40	45	16
HCC-ZM-M30	80	44	35	40	16
HCC-ZM-M45	120	64	50	55	16
HCC-ZM-M52	120	69	60	65	16
HCC-ZR-16-PU	26	17	-	14	-
HCC-ZR-20-PU	29	17	-	19	-
HCC-ZR-24-PU	34	17	-	24	-
HCC-ZR-30-PU	39	17	-	34	-
HCC-ZR-39-PU	54	17	-	44	-
TPA S1-M16 Fixing bolt	-	-	-	180	16

Depending on the selected recess former (Styrofoam/PU), the fixing set is made up of different components.

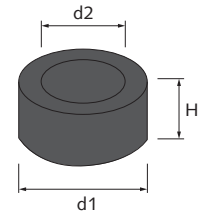
Recess formers made of polystyrene are used in combination with a steel centring nut (ZM). For polyurethane recess formers centring rings (ZR) are used which are made of polyurethane.

A fixing bolt is required for both variants to secure the recess formers to the formwork.

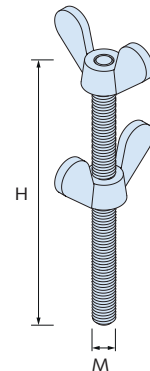
Recess formers made of polyurethane are reusable, the system made of polystyrene is for single use.



Centring nut ZM



Centring ring ZR



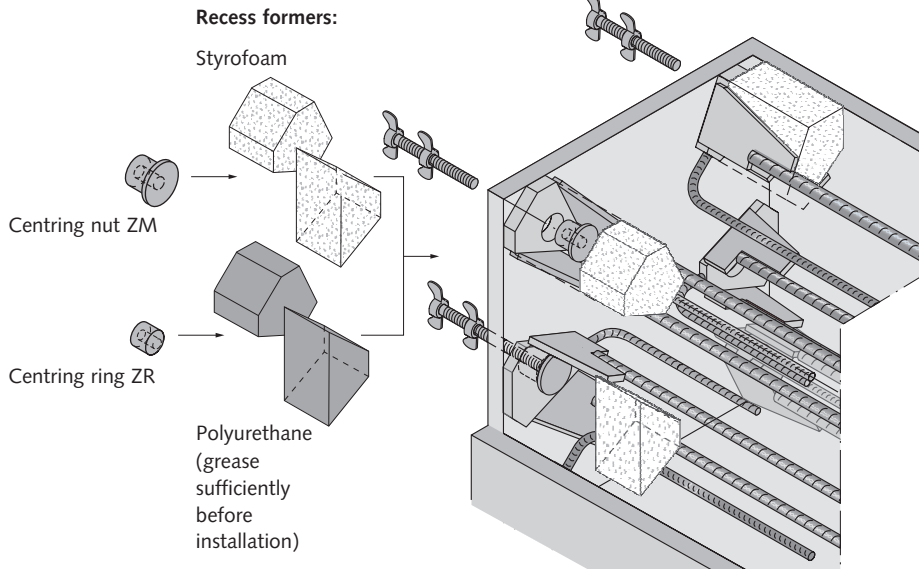
Fixing bolt

Type selection				
	Item name/Colour coding	for HCC type	included in the set	Article no.
Styrofoam	HCC-Fix-Typ16-PS	HCC 16	HCC-ZM-16+TPA S1-M16 Fixing bolt	0952.090-00001
	HCC-Fix-Typ20-PS	HCC 20	HCC-ZM-20+TPA S1-M16 Fixing bolt	0952.090-00002
	HCC-Fix-Typ24-PS	HCC 24	HCC-ZM-24+TPA S1-M16 Fixing bolt	0952.090-00003
	HCC-Fix-Typ30-PS	HCC 30	HCC-ZM-30+TPA S1-M16 Fixing bolt	0952.090-00004
	HCC-Fix-Typ39-PS	HCC 39/M36/M39	HCC-ZM-39/M36/M39-PS+TPA S1-M16	0952.090-00005
	HCC-Fix-TypM30-PS	HCC M30	HCC-ZM-M30+TPA S1-M16 Fixing bolt	0952.090-00006
	HCC-Fix-TypM36-PS	HCC M45	HCC-ZM-M45+TPA S1-M16 Fixing bolt	0952.090-00007
	HCC-Fix-TypM39-PS	HCC M52	HCC-ZM-M52+TPA S1-M16 Fixing bolt	0952.090-00008
Polyurethane	HCC-Fix-Typ16-PU	HCC 16	HCC-ZR-16-PU+TPA S1-M16 Fixing bolt	0952.090-00011
	HCC-Fix-Typ20-PU	HCC 20	HCC-ZR-20-PU+TPA S1-M16 Fixing bolt	0952.090-00012
	HCC-Fix-Typ24-PU	HCC 24	HCC-ZR-24-PU+TPA S1-M16 Fixing bolt	0952.090-00013
	HCC-Fix-Typ30-PU	HCC 30	HCC-ZR-30-PU+TPA S1-M16 Fixing bolt	0952.090-00014
	HCC-Fix-Typ39-PU	HCC 39	HCC-ZR-39-PU+TPA S1-M16 Fixing bolt	0952.090-00015

HALFEN COLUMN SHOE SYSTEM

Application

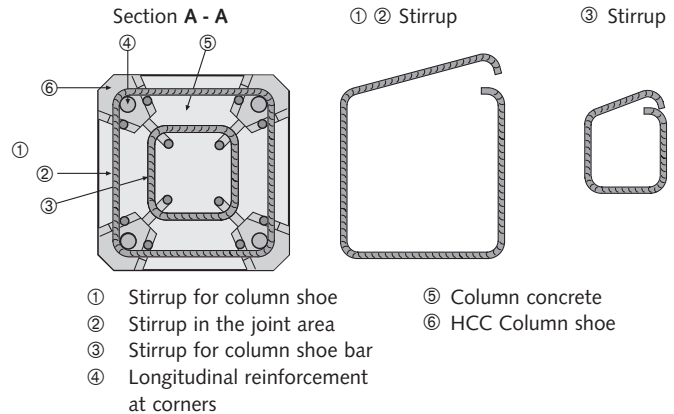
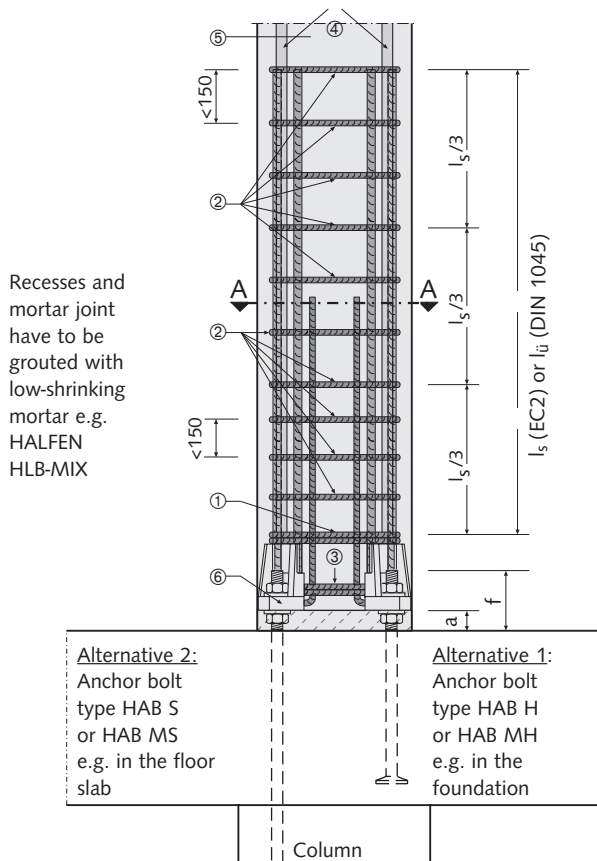
Fitting the column shoes to the formwork



Type selection		
	Item name	Article no.
Styrofoam	HCC-Fix-Typ16-PS	0952.090-00001
	HCC-Fix-Typ20-PS	0952.090-00002
	HCC-Fix-Typ24-PS	0952.090-00003
	HCC-Fix-Typ30-PS	0952.090-00004
	HCC-Fix-Typ39/M36/M39-PS	0952.090-00005
	HCC-Fix-TypM30-PS	0952.090-00006
	HCC-Fix-TypM45-PS	0952.090-00007
	HCC-Fix-TypM52-PS	0952.090-00008
Polyurethane	HCC-Fix-Typ16-PU	0952.090-00011
	HCC-Fix-Typ20-PU	0952.090-00012
	HCC-Fix-Typ24-PU	0952.090-00013
	HCC-Fix-Typ30-PU	0952.090-00014
	HCC-Fix-Typ39-PU	0952.090-00015

Order example: Fixing set HCC-Fix type16 PS
Order no.: 0952.090-00001

Additional reinforcement example



Additional stirrups in the column shoe area

Column shoe	Anchor bolt	①	②	③
HCC - 16	HAB H16 / HAB S16	1 $\varnothing$ 8	$\varnothing$ 8	1 $\varnothing$ 8
HCC - 20	HAB H20 / HAB S20	1 $\varnothing$ 10	$\varnothing$ 10	1 $\varnothing$ 10
HCC - 24	HAB H24 / HAB S24	1 $\varnothing$ 10	$\varnothing$ 10	1 $\varnothing$ 10
HCC - 30	HAB H30 / HAB S30	1 $\varnothing$ 12	$\varnothing$ 12	1 $\varnothing$ 12
HCC - 39	HAB H39 / HAB S39	2 $\varnothing$ 12	$\varnothing$ 12	2 $\varnothing$ 12
HCC - M30	HAB MH30(36)/HAB MS30(36)	2 $\varnothing$ 10	$\varnothing$ 10	2 $\varnothing$ 10
HCC - M36	HAB MH36/HAB MS36	2 $\varnothing$ 12	$\varnothing$ 12	2 $\varnothing$ 12
HCC - M39	HAB MH39/HAB MS39	2 $\varnothing$ 12	$\varnothing$ 12	2 $\varnothing$ 12
HCC - M45	HAB MH45/HAB MS45	3 $\varnothing$ 12	$\varnothing$ 12	3 $\varnothing$ 12
HCC - M52	HAB MH52/HAB MS52	3 $\varnothing$ 12	$\varnothing$ 12	3 $\varnothing$ 12

Further information on stirrup placement see type test report no. 03/30.

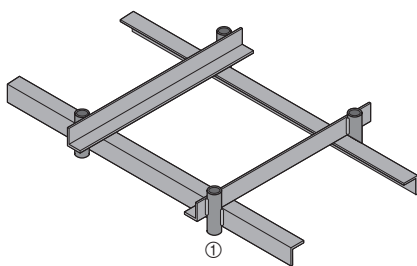
HALFEN COLUMN SHOE SYSTEM

Application

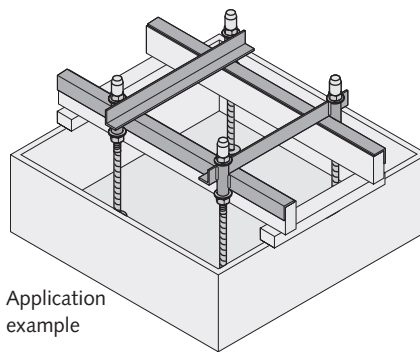
Installing HAB Anchor bolts

Fitting template

Installation templates are used to properly position the HAB Anchor bolts to the formwork. The templates facilitate fitting the individual bolts (2 nuts and provided washers fitted) at the same height in the formwork. These are then correctly aligned both horizontally and vertically, and secured against displacement during the concrete-pour. The templates are reusable.



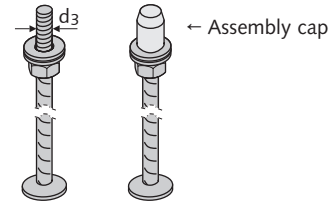
Installation template: Robust welded steel frame. Dimensions and number of sleeves ① according to order specifications.



Application example

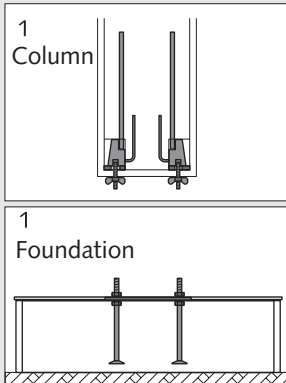
Assembly cap

The steel assembly cap protects the anchor bolts threading area from damage during assembly.



Assembly caps	suitable to d3	article no.
Item name	[mm]	0952.060-
HCC-MKA - 16	16	00001
HCC-MKA - 20	20	00002
HCC-MKA - 24	24	00003
HCC-MKA - 30	30	00004
HCC-MKA - 36	36	00005
HCC-MKA - 39	39	00006
HCC-MKA - 45	45	00007
HCC-MKA - 52	52	00008

Installing the precast column

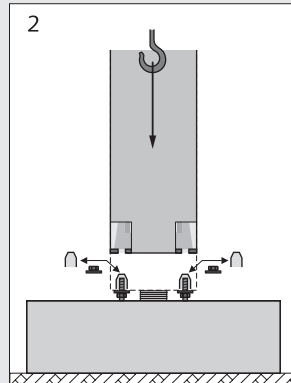


Column:

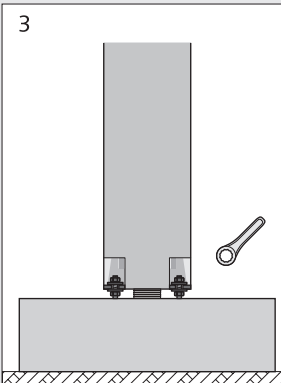
- Attach the HCC column shoe to the base of the formwork

Foundation:

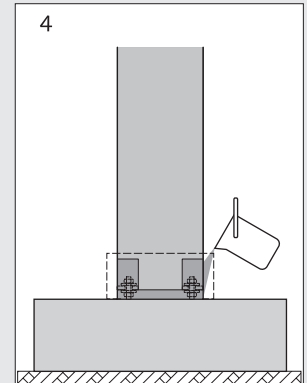
- Fit the anchor bolts into the foundation formwork using the template



- Remove the template, position the installation plates, place assembly caps on the bolt threads
- Set the column down. Remove the assembly caps, screw the top nuts with the washers onto the anchor bolts
- Adjust and align the column
- Tighten the upper nuts. A defined torque is not required, a gap between HCC baseplate and HAB nut has to be avoided.



- The column is connected force-locked with the foundation (install. state)
- The dimensions of the recesses allow the use of ring type slugging wrenches
- The gap at the foot of the column and the recesses must be filled with low-shrink mortar e.g. HALFEN HLB-MIX according to the manufacturer's specification



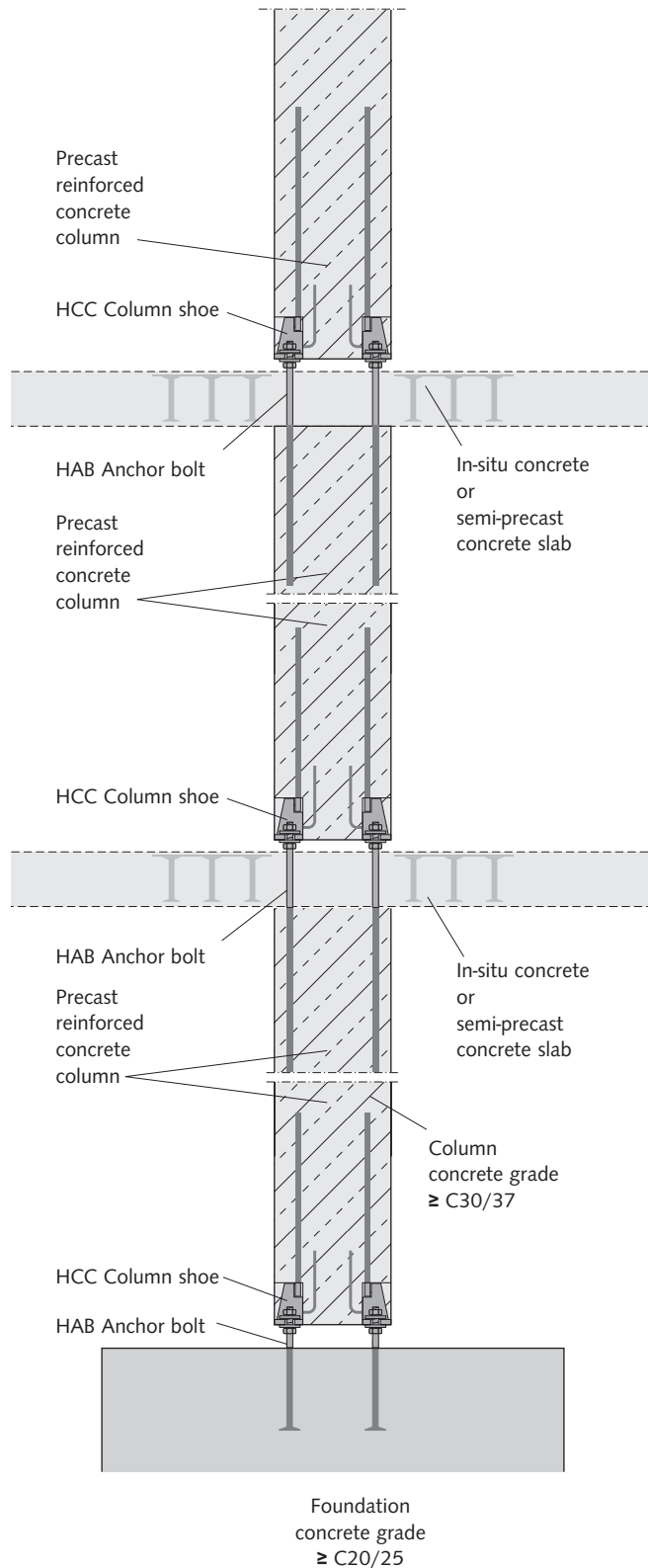
- Plan a casting-pipe in the column or a casting pocket in the formwork around the column to allow the filling process to be completed properly
- The sealing mortar must be filled only from one side to prevent voids and to guarantee complete and even fill of the gap under the column

HALFEN COLUMN SHOE SYSTEM

Application

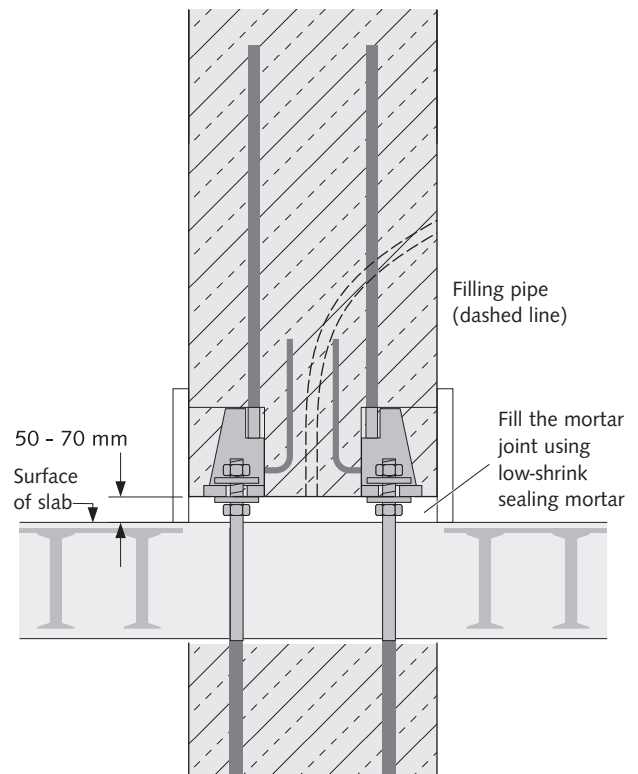
Application examples

Coupling of precast reinforced concrete columns



HALFEN HCC Column shoes are also used for continuous connection of precast column components cast separately from the floor slabs. Complete, storey-high, precast, reinforced concrete columns can be securely and rigidly connected using HALFEN Column shoes and anchor bolts.

Filling the joint at the column base with low-shrinking mortar



The mortar joint under the column must be of low-shrinkage sealing mortar of at least the same strength class as the column. The full final load-bearing capacity is only ensured if the described casting process is followed. HALFEN HLB-MIX low-shrinking mortar is available in 25 kg bags (article no. 0058.060-00001).



For detailed information on our HALFEN HLB-MIX Sealing mortar please refer to the **Technical Product Information "HALFEN HLB Loop Box"**



HALFEN COLUMN SHOE SYSTEM

Application

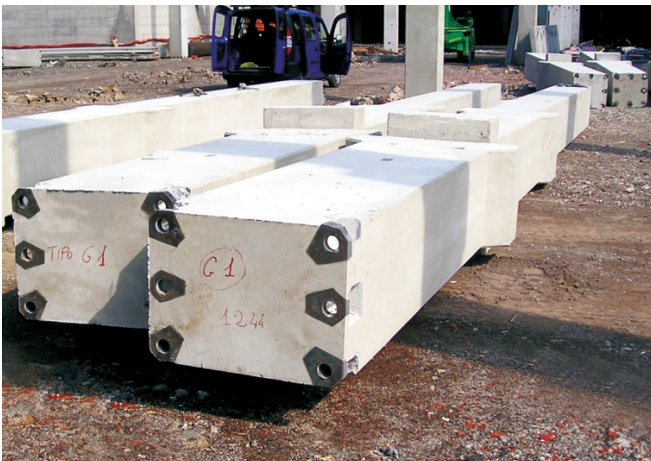
On the construction site: fast and safe erection using the HALFEN HCC Column shoe system



The anchor bolts are cast into the foundation at the exact position, using a installation template, and . . .



. . . when the concrete is sufficiently cured, the column set over the bolt threads directly on the foundation.



The concrete columns, with cast in HALFEN Column shoes, are delivered ready-to-erect to site.



The HALFEN Column shoe system ensure quick installation, . . .



. . . structurally efficient connections, and make. . .



. . . hazardous props redundant.



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