fischer

Concrete screw FBS IN.

The powerful concrete screw for fast and simple installation.

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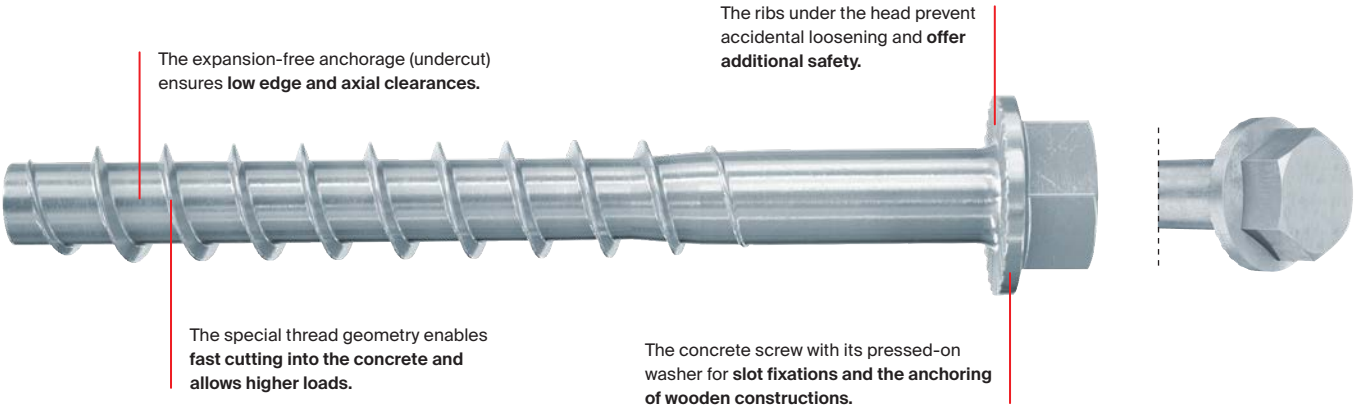
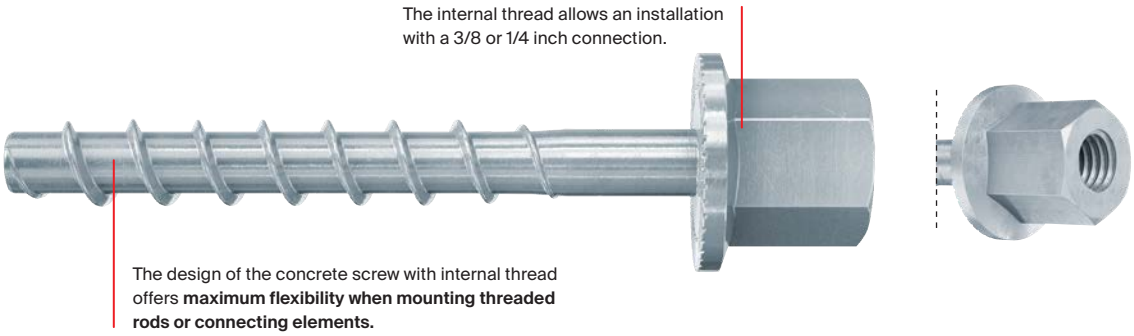




Recommendations

Suitable for building materials such as:


Cracked concrete


Uncracked concrete

Certificates / Features

ICC ES ESR-5456 See ICC-ES Evaluation Report at www.icc-es.org

Advantages, functions and installation steps.

The advantages at a glance

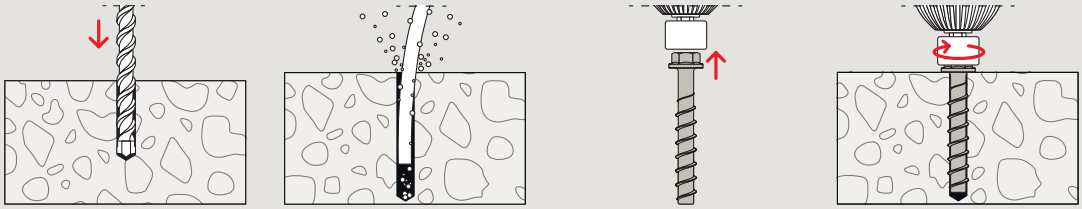
- The FBS IN offers tension and shear loads for the concrete classes 2,500psi until 8,000psi.
- The fischer concrete screw FBS IN is a powerful anchoring solution with good installation comfort in inch-systems.
- The special thread geometry enables fast cutting into the concrete and allows higher loads.
- The expansion-free anchorage (undercut) ensures low edge and axial clearances.
- The ribs under the head prevent accidental loosening of the concrete screw and make the system more secure.
- The concrete screw with its pressed-on washer is ideal for slot fixations and the anchoring of wooden constructions as well as beams and sills.
- The internal thread design fits perfectly to applications like fixings of pipe routes, channel systems, ventilation ducts and facilities in the building service engineering.

Function

- The concrete screw FBS IN is suitable for push-through and pre-positioned installation.
- For the installation, we recommend an impact wrench with a compatible socket.
- If the screw head is in contact with the fixture, the correct installation of the screw is ensured (visual setting check).

Installation steps exemplary for FBS IN I at the ceiling

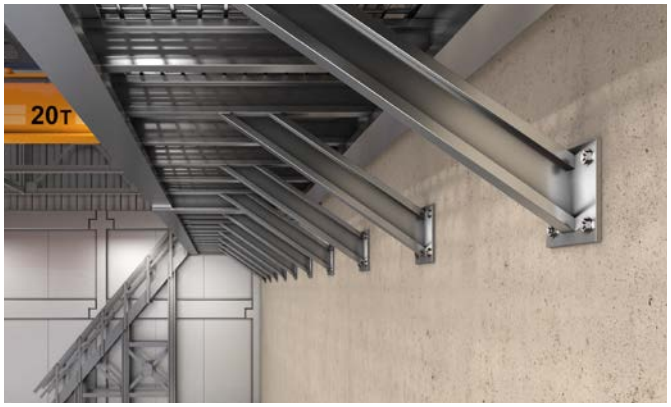
Installation steps exemplary for FBS IN HW at the floor



Applications

Shelving systems

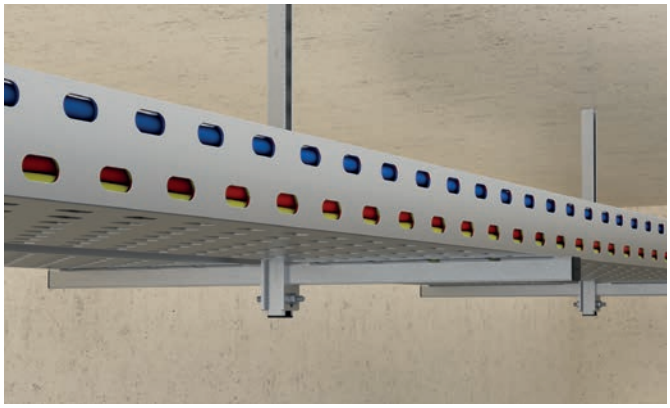
Steel beams



Brackets / base plates

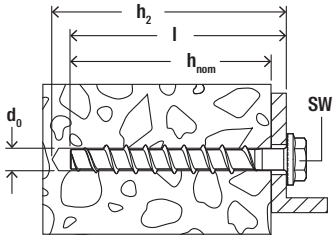
Stair railing

Pipelines



Cable trays

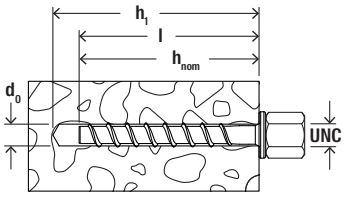
Assortment



Concrete screw FBS IN HW

FBS IN HW - hexagon head

Item	Item no.	Drill diameter d_0 [in]	Min. drill hole depth for through fixings h_2 [in]	Anchor length l [in]	Screw-in depth h_{nom} [in]	Max. usable length t_{fix} [in]	Through hole d_f [in]	Sales unit [pcs]
FBS IN 3/8x2-1/8 HW	574032	3/8	2 1/4	2 1/8	1 5/8	1/2	1/2	50
FBS IN 3/8x3 HW	574033	3/8	3	3	2 1/2	1/2	1/2	50
FBS IN 1/2x4 HW	574034	1/2	3 1/2	4	3	1	5/8	25
FBS IN 1/2x6 HW	574035	1/2	4 3/4	6	4 1/4	1 3/4	5/8	25
FBS IN 5/8x4 HW	574036	5/8	3 3/4	4	3 1/4	3/4	3/4	15
FBS IN 3/4x5-1/2 HW	574037	3/4	4 1/2	5 1/2	4	1 1/2	7/8	10
FBS IN 3/4x7 HW	574038	3/4	6 3/4	7	6 1/4	3/4	7/8	10



Concrete screw FBS IN I

FBS IN I - internally threaded head

Item	Item no.	Drill diameter d_0 [in]	Min. drill hole depth for pre-positioned installation h_1 [in]	Anchor length l [in]	Screw-in depth h_{nom} [in]	Through hole d_f [in]	Connection thread UNC [in]	Sales unit [pcs]
FBS IN 1/4 X 1-5/8 I 3/8	574028	1/4	2 1/8	2 1/2	1 5/8	3/8	3/8	100
FBS IN 1/4 X 2-1/2 I 3/8	574029	1/4	2 5/8	2 1/2	2 1/2	3/8	3/8	100
FBS IN 1/4 X 1-5/8 I 1/4	574030	1/4	2 1/8	1 5/8	1 5/8	3/8	1/4	100
FBS IN 1/4 X 2-1/2 I 1/4	574031	1/4	2 5/8	2 1/2	2 1/2	3/8	1/4	100

Loads

Allowable loads of single anchors with large spacing and large edge distance

Allowable values[1)]

FBS IN HW (zp) (carbon steel, zinc-plated)				Ø3/8 "		Ø1/2 "			Ø5/8 "	Ø3/4 "		
Nominal embedment depth		h_{nom}	[in]	1 5/8 "	2 1/2 "	2 1/4 "	3 "	4 1/4 "	3 1/4 "	4 "	5 1/2 "	6 1/4 "
Effective embedment depth		h_{ef}	[in]	1.21	1.98	1.66	2.30	3.37	2.54	3.14	4.41	5.05
Uncracked concrete												
Tension	2,500 psi	N_{allow}	[lb]	613	1,313	954	1,529	2,759	2,133	2,791	4,130	5,061
	8,000 psi	N_{allow}	[lb]	1,096	2,349	1,706	2,736	4,935	3,816	4,993	7,388	9,053
Shear	≥ 2,500 psi	V_{allow}	[lb]	755	1,277	1,214	1,980	2,734	4,101	6,105	6,105	6,105
Cracked concrete												
Tension	2,500 psi	N_{allow}	[lb]	316	771	502	1,037	1,931	1,372	1,637	2,724	3,267
	8,000 psi	N_{allow}	[lb]	566	1,379	897	1,855	3,454	2,186	2,928	4,873	5,843
Shear	≥ 2,500 psi	V_{allow}	[lb]	535	1,120	860	1,402	2,734	3,255	6,105	6,105	6,105

Allowable loads of single anchors with large spacing and large edge distance

Allowable values[1)2)]

FBS IN I (zp) (carbon steel, zinc-plated)				Ø1/4 "	
Nominal embedment depth		h_{nom}	[in]	1 5/8 "	2 1/2 "
Effective embedment depth		h_{ef}	[in]	1.24	2.01
Uncracked concrete					
Tension	2,500 psi	N_{allow}	[lb]	504	1,271
	8,000 psi	N_{allow}	[lb]	901	2,014
Shear	≥ 2,500 psi	V_{allow}	[lb]	547	547
Cracked concrete					
Tension	2,500 psi	N_{allow}	[lb]	184	401
	8,000 psi	N_{allow}	[lb]	293	639
Shear	≥ 2,500 psi	V_{allow}	[lb]	547	547

[1)] Above values base on ESR-5456 and ACI 318-19 and apply for following requirements:
- Allowable loads consider a partial safety factor for action load of α = (1.2) D +(1.6) L = (1.2) (0.30) + (1.6) (0.70) = 1.48

[2)] Above values for FBS IN I (Hex coupler) do not consider the steel insert element used and resulting values might be lower depending on the steel grade of the used steel insert element.

Design strength of single anchors with large spacing and large edge distance

Design values[1]

FBS IN HW (zp) (carbon steel, zinc-plated)				Ø3/8 "		Ø1/2 "			Ø5/8 "	Ø3/4 "		
Nominal embedment depth		h_{nom}	[in]	1 5/8 "	2 1/2 "	2 1/4 "	3 "	4 1/4 "	3 1/4 "	4 "	5 1/2 "	6 1/4 "
Effective embedment depth		h_{ef}	[in]	1.21	1.98	1.66	2.30	3.37	2.54	3.14	4.41	5.05
Uncracked concrete												
Tension	2,500 psi	ϕN_n	[lb]	907	1,944	1,412	2,263	4,083	3,158	4,131	6,112	7,490
	8,000 psi	ϕN_n	[lb]	1,622	3,477	2,525	4,049	7,304	5,648	7,390	10,934	13,398
Shear	≥ 2,500 psi	ϕV_n	[lb]	1,118	1,890	1,797	2,930	4,047	6,069	9,036	9,036	9,036
Cracked concrete												
Tension	2,500 psi	ϕN_n	[lb]	468	1,141	743	1,535	2,857	2,031	2,423	4,032	4,835
	8,000 psi	ϕN_n	[lb]	837	2,041	1,328	2,745	5,111	3,235	4,334	7,212	8,648
Shear	≥ 2,500 psi	ϕV_n	[lb]	792	1,658	1,273	2,075	4,047	4,817	9,036	9,036	9,036

Design strength of single anchors with large spacing and large edge distance

Design values[1][2]

FBS IN I (zp) (carbon steel, zinc-plated)				Ø1/4 "	
Nominal embedment depth		h_{nom}	[in]	1 5/8 "	2 1/2 "
Effective embedment depth		h_{ef}	[in]	1.24	2.01
Uncracked concrete					
Tension	2,500 psi	ϕN_n	[lb]	746	1,881
	8,000 psi	ϕN_n	[lb]	1,334	2,980
Shear	≥ 2,500 psi	ϕV_n	[lb]	810	810
Cracked concrete					
Tension	2,500 psi	ϕN_n	[lb]	272	594
	8,000 psi	ϕN_n	[lb]	434	946
Shear	≥ 2,500 psi	ϕV_n	[lb]	810	810

[1] Above values base on ESR-5456 and ACI 318-19 and apply for following requirements.
[2] Above values for FBS IN I (Hex coupler) do not consider the steel insert element used and resulting values might be lower depending on the steel grade of the used steel insert element.

Loads

Ultimate strength of single anchors with large spacing and large edge distance

Mean values[1]

FBS IN HW (zp) (carbon steel, zinc-plated)				Ø3/8 "		Ø1/2 "			Ø5/8 "	Ø3/4 "		
Nominal embedment depth		h_{nom}	**[in]**	1 5/8 "	2 1/2 "	2 1/4 "	3 "	4 1/4 "	3 1/4 "	4 "	5 1/2 "	6 1/4 "
Effective embedment depth		h_{ef}	**[in]**	1.21	1.98	1.66	2.30	3.37	2.54	3.14	4.41	5.05
Uncracked concrete												
Tension	**2,500 psi**	$\bar{N}_u$	**[lb]**	1,594	3,417	3,411	4,703	8,554	6,457	8,875	14,771	18,101
	8,000 psi	$\bar{N}_u$	**[lb]**	2,852	6,113	6,102	8,413	15,302	11,550	15,876	26,424	32,380
Shear	**≥ 2,500 psi**	$\bar{V}_u$	**[lb]**	2,123	*3,150*	3,411	5,564	*6,745*	*10,115*	*15,060*	*15,060*	*15,060*
Cracked concrete												
Tension	**2,500 psi**	$\bar{N}_u$	**[lb]**	823	2,006	1,543	3,189	5,937	3,571	5,034	8,377	10,046
	8,000 psi	$\bar{N}_u$	**[lb]**	1,472	3,588	2,760	5,704	10,621	5,687	9,006	14,985	17,970
Shear	**≥ 2,500 psi**	$\bar{V}_u$	**[lb]**	1,531	*3,150*	2,460	4,011	*6,745*	9,311	13,354	*15,060*	*15,060*

Ultimate strength of single anchors with large spacing and large edge distance

Mean values[1][2]

FBS IN I (zp) (carbon steel, zinc-plated)				Ø1/4 "	
Nominal embedment depth		h_{nom}	**[in]**	1 5/8 "	2 1/2 "
Effective embedment depth		h_{ef}	**[in]**	1.24	2.01
Uncracked concrete					
Tension	**2,500 psi**	$\bar{N}_u$	**[lb]**	2,202	4,545
	8,000 psi	$\bar{N}_u$	**[lb]**	3,940	*4,585*
Shear	**≥ 2,500 psi**	$\bar{V}_u$	**[lb]**	*1,350*	*1,350*
Cracked concrete					
Tension	**2,500 psi**	$\bar{N}_u$	**[lb]**	691	1,234
	8,000 psi	$\bar{N}_u$	**[lb]**	1,101	1,966
Shear	**≥ 2,500 psi**	$\bar{V}_u$	**[lb]**	*1,350*	*1,350*

[1] Above values base on fischer ENSO specification and apply for following requirements:
- Concrete strength based on ACI 318-19
- *Steel failure decisive = Figures in italics*

[2] Above values for FBS IN I (Hex coupler) do not consider the steel insert element used and resulting values might be lower depending on the steel grade of the used steel insert element.

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The Expert Guide provides you with all the technical information about the product at a glance. From a brief overview with general information to instructions for installation and loads, all the data is included.
In clearly laid out tables, you will find details about the material of the FBS IN and further overviews of building materials and certificates. You can download the entire document at the QR code.

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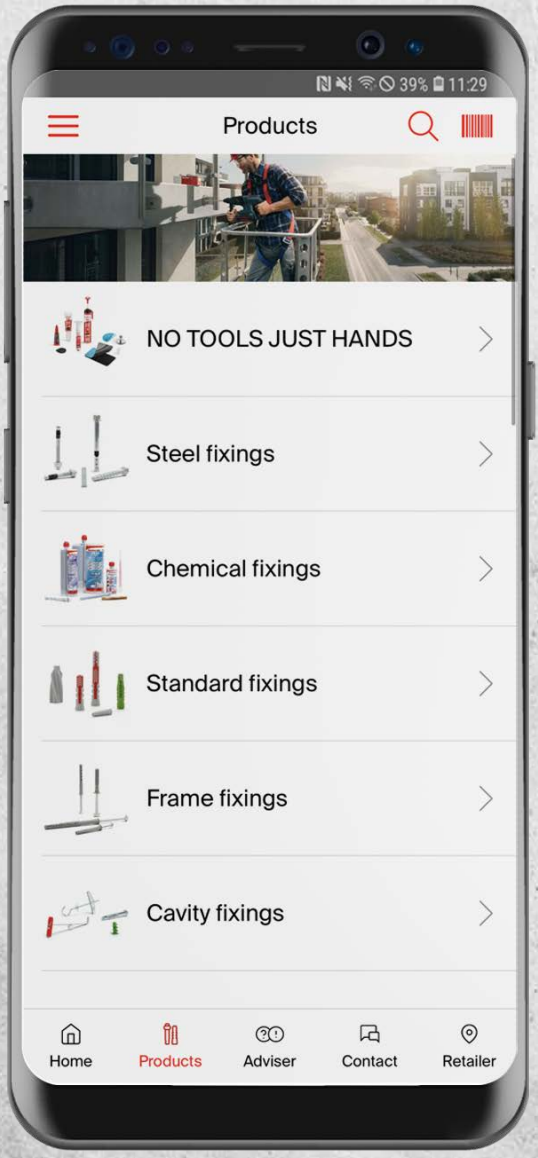

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