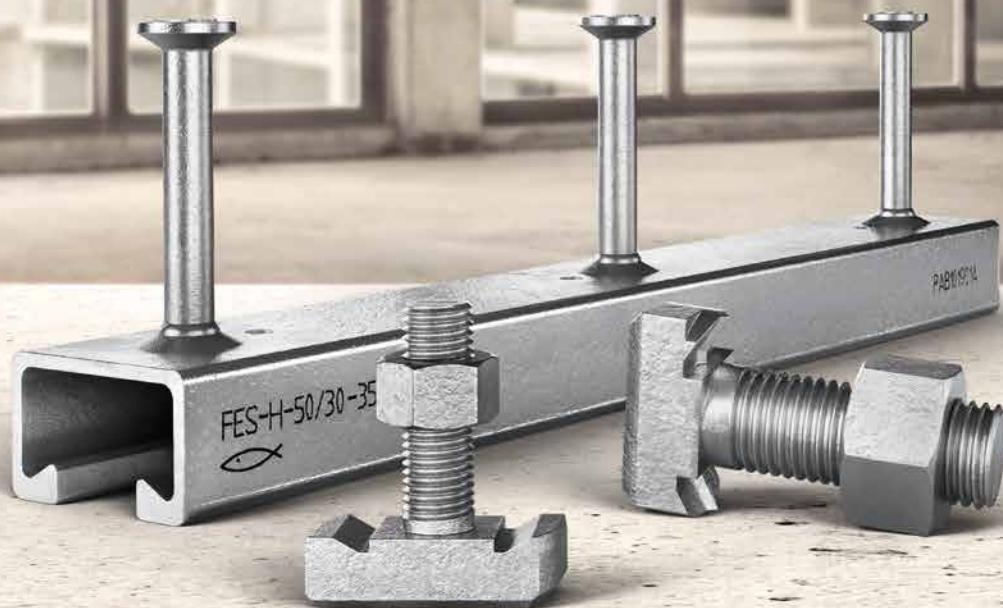


fischer 

Catalogue Cast-in Channel Systems



“Innovative strength and technological competence strengthen our position at market.”



Foreword

Dear fischer customers and partners,

As a leading supplier of secure and economic construction fixings, the fischer Group of Companies is shaping the future of the fixings industry. We have developed trends, such as advancing digitalisation or Building Information Modelling, into solutions for the buildings of the future. Increasing demands on planning security are changing the requirements placed on fixing technology.

Our innovative Cast-In Channel Systems provide answers to these new conditions. Our portfolio comprises fischer FES-C cold-formed, FES-H hot-rolled and the new rollshaped InnoLock FES-RS-S channels. We have directly incorporated our Cast-In Channel Systems into the fischer FiXperience design software platform to enable simple calculations. Our holistic approach guarantees the highest level of safety and cost efficiency. Our preinstalled anchor significantly reduces the total operating costs when combined with Building Information Modelling. The fischer Cast-In Channel Systems achieve this thanks to the low follow-on costs with every additional fixing. Its simple installation no longer requires time- and energy-consuming drilling in challenging circumstances such as heavily reinforced

concrete. With no drill dust and without requiring heavy machinery, the fischer Cast-In Channel Systems offers further advantages in terms of health and safety and environmental management – advantages which are noticeable from the very first application.

As the market leader for fixing systems we are shaping the buildings of the future on the construction sites of the present. Discover the advantages of the fischer Cast-In Channel Systems in our catalogue!



Dr. Oliver Geibig
Managing Director Business Units & Engineering



1

“Whoever chooses fischer receives more than a range of safe products. The aim is to always develop the best solutions for our customers across the globe.”

Besides the innovative products, this predominantly concerns support that is focused on the customer, and services designed to improve customer benefit.

A brand and its promise to perform.

Continuous improvement

With our fischer ProzessSystem (fPS), we ensure that we are adapting and optimising our processes in line with customer requirements in a flexible manner and on a continuous basis. Thus we are glad having been awarded with the 1st place “Excellence in Operations” within the challenging contest “Factory of the Year”.



Award 2015
Excellence in
Operations

Safety that connects. Decisive quality.

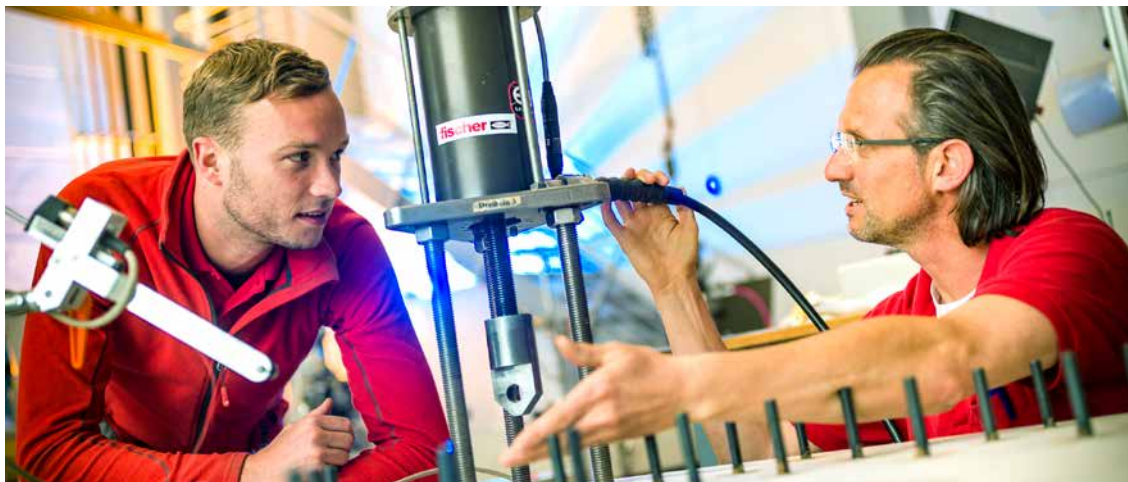
We don't make any compromises when it comes to the safety of our products. A whole host of our products are distinguished by comprehensive, up-to-date and international approvals. The fischer product range is well positioned in all sectors of fixing technology – Steel, Nylon and Chemical fixings. In award-winning quality which continues to impress both professional clients and private customers with equal measure.



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



International approvals characterise many of our products.





Always on the pulse of time

At fischer, innovation is more than just a sum of the patents. We are open to new things and are prepared for change – always with the aim of offering our customers the greatest possible benefits. Over the years, our own development and production sites have been developing numerous fixing solutions for the most wide-ranging applications. Be it new production procedures or materials, such as renewable raw materials: We are carrying out the research for your safety and will continue to do so in the future. This gives us such great flexibility that we can even develop tailor-made customer solutions. This power to innovate has seen fischer become market leader in anchor technology and the fixing industry.

Our service to you

We are a reliable partner, one that will stand at your side and address your individual requirements with advice and action:

- Our products range from chemical systems to steel anchors through to plastic anchors.
- Competence and innovation through own research, development and production.
- Global presence and active sales service in over 100 countries.
- Qualified technical consulting for economical and compliant fastening solutions. Also on-site at the construction site requested.
- Training sessions, some with accreditation, at your premises or at the fischer academy.
- Design and construction software for demanding applications.

We take responsibility

Our active environment management policy means that we are helping to maintain an intact environment for our generation and for those that follow. The environment management policy at the Tumlingen site has been certified in line with DIN EN ISO 14001.

It fills us with particular pride that in 2020 we have received the most important and largest award in Europe in the field of sustainability: the German Sustainability Award – category large companies.

This was in recognition of our holistic approach and the strategic anchoring of our sustainability management. With our greenline products we have launched the first range of fixings on the market that is based on renewable raw materials to more than 50%.



Greenline assortment based on 50% regrowing raw materials



German Sustainability Award



H&M

Downtown · Auckland · New Zealand

Innovations that inspire professionals.

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Introduction

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Channel nomenclature.

1

fischer-Einlege-Schiene
(fischer Cast-in Channel)

S - Serrated
(if applicable)
FES-RS is always
serrated

P - Plus Version
(if applicable)

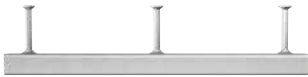
Width / Height e.g. 52/34
or
Size Information e.g. 700

InnoLock FES-RS-S-I-700

FES-H- S-I-52/34-P

C - Cold-formed
H - Hot-rolled
RS - Rollshaped

I anchor (if applicable). Note: round anchors
are considered standard and go without
special abbreviation in the product naming.



Cold-formed Cast-in Channel Systems

Economical cold-formed Cast-in Channels combining high loading capacity and safety.

- Two directional load capacity: tension and shear perpendicular to the channel axis.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.



Non-serrated hot-rolled Cast-in Channel Systems

Hot-rolled Cast-in Channels combining excellent load capacity with high safety and flexibility.

- All directional load capacity.
- Fundamental load capacity in longitudinal direction in combination with channel bolts FBC-N.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.



Serrated hot-rolled Cast-in Channel Systems

Hot-rolled Cast-in Channels combining optimum load capacity with high safety.

- All directional load capacity. Excellent loading capacity in longitudinal direction in combination with FBC-S due to the full serration of the system.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.



Serrated rollshaped InnoLock Cast-in Channel Systems

Leading-edge rollshaped anchor channels combining maximum load capacity and installation convenience, setting new standards in safety.

- All directional load capacity. Excellent loading capacity in longitudinal direction in combination with InnoLock FBC-S due to the full serration of the system.
- Unrivalled dimensional stability and material strength.
- Ideal pre-positioned fixing solution which can cover on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Coating HDG
e.g. HDG: > 50 µm

for curved channels only:

ri [mm] stands for 'radius inwards' means channels bent towards the inner face of the concrete member

ro [mm] stands for 'radius outwards' means channels bent towards the outside face of the concrete member

-L-HDG (-rixxxx)

-L-HDG (-rixxxx)

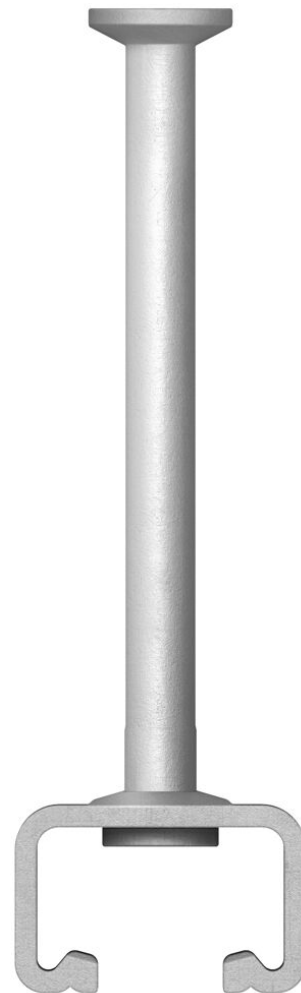
Length [mm]



Example standard plain channel.

FES-C-49/30-300-HDG for:

- Cold-formed
- Round anchors
- HDG > 50 µm



Example channel InnoLock.

FES-RS-S-700-350-HDG for:

- Rollshaped
- Round anchors
- HDG > 50 µm

Channel bolt nomenclature.

1

Fischer Bolt Channel

Channel profile 50/30, 52/34
fits to FBC-N-50/30;
InnoLock 700 fits to FBC-S-225

Diametre [mm]

InnoLock FBC-S-225- -MddxII FBC-N-50/30-MddxII

S - Serrated (if applicable)
N - Notched (if applicable)

Length [mm]
Metric Thread



Standard channel bolt

Cast-in Channel System with smooth surface of the channel lips in combination with a smooth surface on the underside of the channel bolt head.

- Two directional load capacity.
- Marked on bolt tip with one groove.
- Steel grade: 8.8 or A4-70



Notched channel bolt

Cast-in Channel with smooth surface of the channel lips in combination with a notching channel bolt.

- Only for hot-rolled profiles without teeth.
- All directional load capacity.
- Fundamental load capacity in channel longitudinal direction provided.
- Marked on bolt tip with two parallel grooves.
- Steel grade: 8.8



Serrated channel bolt

Cast-in Channel with serrated channel lips in combination with locking channel bolts and matching serrations on the channel bolt head.

- Only for hot-rolled profiles with teeth.
- All directional load capacity.
- Qualified load capacity in channel longitudinal direction to prevent bolt slide risks.
- Marked on bolt tip with two staggered grooves.
- Steel grade: 8.8



Serrated InnoLock channel bolt

Channel bolts with unique design and serration, matching the InnoLock Cast-in channels.

- Only for InnoLock FES RS-S channels with serration
- All directional load capacity.
- Qualified load capacity in channel longitudinal direction to prevent bolt slide risks.
- Unique design with form-lock for maximum safety.
- Marked on bolt tip with two staggered grooves.
- Steel grade 8.8

Steel grade
e.g. 8.8

-S.S-HDG

-S.S-HDG

Coating, e.g. HDG: > 50 µm
Material, e.g. A4: Stainless steel (A4-70)



Example notched channel bolt.

FBC-N-50/30-M20x80-8.8-HDG for:







- Notched channel bolt
- Applicable in combination with FES-H-50/30 and FES-H-52/34 channels
- Size: M20x80
- Steel grade: 8.8
- HDG > 50 µm

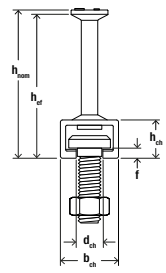


Example channel bolt InnoLock.

FBC-S-225-M12x60-8.8-HDG:

- Serrated channel bolt
- Applicable in combination with FES-RS-S-600 and FES-RS-S-700
- Size: M12x60
- Steel grade: 8.8
- HDG > 50 µm







Profile		Non-serrated channels					
		FES-C-54/33	FES-C-49/30	FES-C-40/25	FES-C-38/17	FES-C-28/15	FES-H-I-52/34
							
Type		Cold-formed	Cold-formed	Cold-formed	Cold-formed	Cold-formed	Hot-rolled
Channel bolts		FBC-50/30	FBC-50/30	FBC-40/22	FBC-38/17, FBC-S-38/23	FBC-28/15, FBC-S-29/20	FBC-50/30 FBC-N-50/30
Thread		M10 - M20	M10 - M20	M10 - M16	M10 - M16	M8 - M12	M10 - M20
Design resistance for connection between anchor and channel	$N_{Rd,s,c}$ [kN]	30.6	17.2	11.1	10.0	5.0	39.1
Design resistance for connection between anchor and channel	$V_{Rd,s,c,y}$ [kN]	30.6	17.2	11.1	10.0	5.0	55.6
Design resistance for connection between anchor and channel	$V_{Rd,s,c,x}$ [kN]	-	-	-	-	-	23.4
Design resistance for lip failure of channel	$N_{Rd,s,l}$ [kN]	30.6	17.2	11.1	10.0	5.0	40.0
Design resistance for lip failure of channel	$V_{Rd,s,l,y}$ [kN]	30.6	17.2	11.1	10.0	5.0	55.6
Design resistance for lip failure of channel	$V_{Rd,s,l,x}$ [kN] (V_{inst} included)	-	-	-	-	-	7.4
Dimension of anchor channel	b_{ch} [mm]	53.5	50	40	38	28	52.5
Dimension of anchor channel	h_{ch} [mm]	33	30	25	17.3	15.5	34
Dimension of anchor channel	d_{ch} [mm]	21.5	22	18	18	12	22.5
Dimension of anchor channel	f [mm]	7.5	7	6	3	2.3	11.5
Dimension of anchor channel	$h_{nom,min}$ [mm]	157.5	96.2	81	78	46.5	160
Dimension of anchor channel	$h_{ef,min}$ [mm]	155	94	79	76	45	155
Approvals/assessments		ETA	ETA	ETA	ETA	ETA	ETA



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FES-H-52/34	FES-H-I-50/30	FES-H-50/30	FES-H-50/30-P	FES-H-I-40/22	FES-H-40/22	FES-H-40/22-P
Hot-rolled	Hot-rolled	Hot-rolled	Hot-rolled	Hot-rolled	Hot-rolled	Hot-rolled
FBC-50/30 FBC-N-50/30	FBC-50/30 FBC-N-50/30	FBC-50/30 FBC-N-50/30	FBC-50/30 FBC-N-50/30	FBC-40/22	FBC-40/22	FBC-40/22
M10 - M20	M10 - M20	M10 - M20	M10 - M20	M10 - M16	M10 - M16	M10 - M16
30.6	22.2	17.2	24.4	19.4	11.1	23.3
55.6	33.3	33.3	48.8	22.2	22.2	28.2
18.3	13.3	10.3	14.6	-	12.6	14
40.0	23.9	23.9	28.8	21.1	21.1	23.3
55.6	33.3	33.3	48.8	22.2	22.2	14
7.4	7.4	7.4	7.4	-	-	-
52.5	50	50	50	40	40	40
34	30	30	30	23.5	23.5	23.5
22.5	22.5	22.5	22.5	18	18	18
11.5	8.1	8.1	8.1	6.2	6.2	6.2
160	99	96.2	108	84	92	93
155	94	94	106	79	90	91
ETA	ETA	ETA	ETA	ETA	ETA	ETA

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Profile		Serrated channels					
		FES-H-S-38/23	FES-H-S-29/20	FES-RS-S-600	FES-RS-S-I-600	FES-RS-S-700	FES-RS-S-I-700
							
Type		Hot-rolled	Hot-rolled	Rollshaped	Rollshaped	Rollshaped	Rollshaped
Channel bolts		FBC-S-38/23	FBC-S-29/20	FBC-S-225	FBC-S-225	FBC-S-225	FBC-S-225
Thread		M12 - M16	M12	M12-M20	M12-M20	M12-M20	M12-M20
Design resistance for connection between anchor and channel	$N_{Rd,s,c}$ [kN]	16.8	11.2	30.6	31.6	40.5	44.4
Design resistance for connection between anchor and channel	$V_{Rd,s,c,y}$ [kN]	16.8	11.2	54.7	54.7	66.6	66.6
Design resistance for connection between anchor and channel	$V_{Rd,s,c,x}$ [kN]	10.1	6.7	18.3	19.3	24.3	26.6
Design resistance for lip failure of channel	$N_{Rd,s,l}$ [kN]	16.8	11.2	35.5	35.5	44.4	44.4
Design resistance for lip failure of channel	$V_{Rd,s,l,y}$ [kN]	16.8	11.2	42.7	42.7	51.1	51.1
Design resistance for lip failure of channel	$V_{Rd,s,l,x}$ [kN] (γ_{inst} included)	12.9	10.4	12.5-17.6	12.5-17.6	18.7	18.7
Dimension of anchor channel	b_{ch} [mm]	38	30	50.5	50.5	52.5	52.5
Dimension of anchor channel	h_{ch} [mm]	23	20	29.0	29.0	34.0	34.0
Dimension of anchor channel	d_{ch} [mm]	18	14	22.5	22.5	22.5	22.5
Dimension of anchor channel	f [mm]	6	5.2	6.0	6.0	7.0	7.0
Dimension of anchor channel	$h_{nom,min}$ [mm]	99.2	79.2	153.0	159.0	178.0	159.0
Dimension of anchor channel	$h_{ef,min}$ [mm]	97	77	150.0	154.0	175.0	154.0
Approvals/assessments		ETA	ETA	ETA	ETA	ETA	ETA

Typical applications

Commercial and residential buildings



- Façade
- Elevators fastening
- MEP applications

Industrial and power facilities



- Façade
- Machine and shelf fastening
- MEP applications
- Elevators fastening

Subway and railway construction



- MEP applications
- Traffic signs fastening
- Evacuation platform fastening

Road & bridge construction



- MEP applications
- Traffic signs fastening
- Security fence fastening
- Noise & safety barrier fastening

Prefabricated concrete structure



- Various pre-cast elements
- MEP applications
- Facilities fastening

Other applications







- Stadium construction (seat fastening, fastening of precast elements & supply lines)
- Airports



2

Cast-in Channels

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Cast-in Channel FES-C

Cold-formed anchor channel. Strong and safe.



2



Pre-cast elements



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated Elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- Economical cold-formed Cast-in Channels combining high loading capacity and safety.
- Two directional load capacity: tension and shear perpendicular to the channel axis.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Approvals



ETA-18/0862, FES with special screw FBC



Fire resistance classification R120

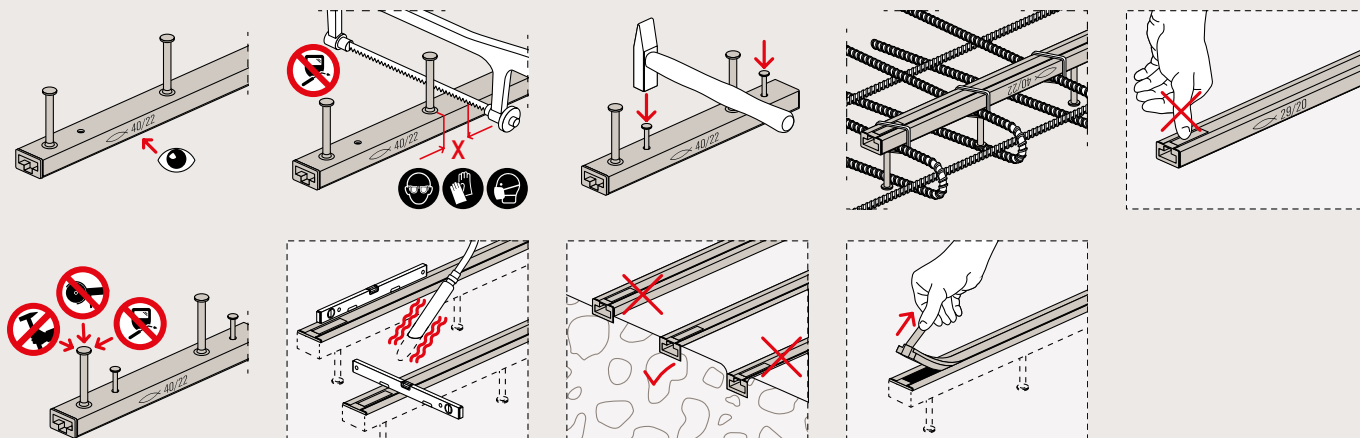
Building materials

Concrete C12/15 to C90/105, cracked and non-cracked

Functioning

Suitable for use in combination with plain channel bolts FBC or serrated channel bolts FBC-S (however with no longitudinal load capacity).

Installation FES



Technical data

Profile FES-C-28/15



FES-C

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-C-28/15-100-HDG	552543	●	100	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	200
FES-C-28/15-150-HDG	552544	●	150	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	140
FES-C-28/15-200-HDG	552545	●	200	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	100
FES-C-28/15-250-HDG	552546	●	250	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	85
FES-C-28/15-300-HDG	552547	●	300	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	70
FES-C-28/15-350-HDG	552548	●	350	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	60
FES-C-28/15-450-HDG	552549	●	450	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	40
FES-C-28/15-500-HDG	552550	●	500	4	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	30
FES-C-28/15-850-HDG	552551	●	850	5	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-1050-HDG	552552	●	1050	6	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-3050-HDG	552553	●	3050	16	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-6070-HDG	552554	●	6070	31	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1

Technical data

Profile FES-C-38/17



FES-C

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-C-38/17-100-HDG	552555	●	100	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	105
FES-C-38/17-150-HDG	552556	●	150	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	70
FES-C-38/17-200-HDG	552557	●	200	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	45
FES-C-38/17-250-HDG	552558	●	250	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	40
FES-C-38/17-300-HDG	552559	●	300	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	35
FES-C-38/17-350-HDG	552560	●	350	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	30
FES-C-38/17-450-HDG	552561	●	450	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	20
FES-C-38/17-500-HDG	552562	●	500	4	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	15
FES-C-38/17-850-HDG	552563	●	850	5	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-1050-HDG	552564	●	1050	6	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-3050-HDG	552565	●	3050	16	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-6070-HDG	552566	●	6070	31	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1

Technical data

Profile FES-C-40/25



FES-C

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-C-40/25-150-HDG	552567	●	150	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	60
FES-C-40/25-200-HDG	552568	●	200	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	40
FES-C-40/25-250-HDG	552569	●	250	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	35
FES-C-40/25-300-HDG	552570	●	300	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	30
FES-C-40/25-350-HDG	552571	●	350	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	25
FES-C-40/25-400-HDG	552572	●	400	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	15
FES-C-40/25-550-HDG	552573	●	550	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	12
FES-C-40/25-800-HDG	552574	●	800	4	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	12
FES-C-40/25-1050-HDG	552575	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-3050-HDG	552576	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-6070-HDG	552577	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1

Technical data

Profile FES-C-49/30



FES-C

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-C-49/30-150-HDG	552578	●	150	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	40
FES-C-49/30-200-HDG	552579	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	30
FES-C-49/30-250-HDG	552580	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	25
FES-C-49/30-300-HDG	552581	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	25
FES-C-49/30-350-HDG	552582	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	20
FES-C-49/30-400-HDG	552583	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	12
FES-C-49/30-550-HDG	552584	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	8
FES-C-49/30-800-HDG	552585	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	8
FES-C-49/30-1050-HDG	552586	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-3050-HDG	552587	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-6070-HDG	552588	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1

Technical data

Profile FES-C-54/33



FES-C

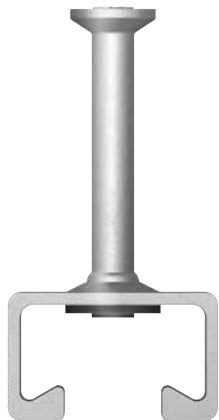
Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-C-54/33-150-HDG	552589	●	150	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	25
FES-C-54/33-200-HDG	552590	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	15
FES-C-54/33-250-HDG	552591	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	13
FES-C-54/33-300-HDG	552592	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	12
FES-C-54/33-350-HDG	552593	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	10
FES-C-54/33-400-HDG	552594	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	6
FES-C-54/33-550-HDG	552595	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	6
FES-C-54/33-800-HDG	552596	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	5
FES-C-54/33-1050-HDG	552597	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-3050-HDG	552598	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-6070-HDG	552599	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1

2

Cast-in Channel FES-H

Hot-rolled for excellent strength and safety.

2



Power plant



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- Hot-rolled Cast-in Channels combining excellent load capacity with high safety and flexibility.
- All directional load capacity.
- Fundamental load capacity in longitudinal direction in combination with channel bolts FBC-N.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Approvals



ETA-18/0862, FES with special screw FBC



Fire resistance classification R120

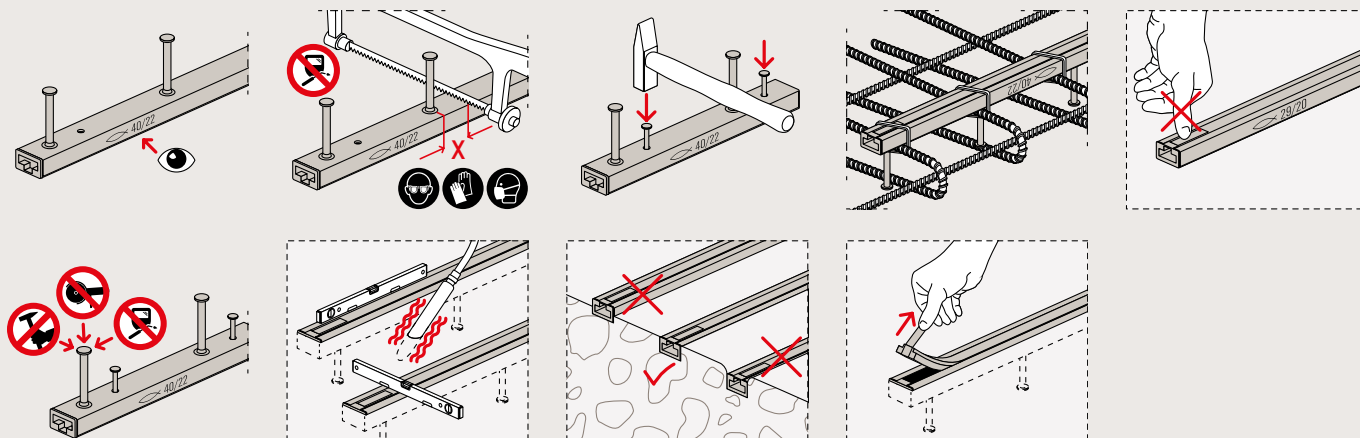
Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

Functioning

Suitable for use in combination with plain channel bolts FBC or notched channel bolts FBC-N.

Installation FES



Technical data

Profile FES-H-40/22



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of an- chors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-40/22-150-HDG	552468	●	150	2	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	45
FES-H-40/22-200-HDG	552469	●	200	2	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	30
FES-H-40/22-250-HDG	552470	●	250	2	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-40/22-300-HDG	552471	●	300	2	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-40/22-350-HDG	552472	●	350	3	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	20
FES-H-40/22-400-HDG	552473	●	400	3	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	15
FES-H-40/22-550-HDG	552474	●	550	3	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	10
FES-H-40/22-800-HDG	552475	●	800	4	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	10
FES-H-40/22-1050-HDG	552476	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-1300-HDG	552477	●	1300	6	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-1550-HDG	552478	●	1550	7	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-1800-HDG	552479	●	1800	8	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-2050-HDG	552480	●	2050	9	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-2300-HDG	552481	●	2300	10	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-3050-HDG	552482	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-6070-HDG	552483	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1

Profile FES-H-40/22



FES-H

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Item	Item no.	Approval ETA	Length l [mm]	Number of an- chors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-40/22-P-150-HDG	563737	●	150	2	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	45
FES-H-40/22-P-200-HDG	563738	●	200	2	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	30
FES-H-40/22-P-250-HDG	563739	●	250	2	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-40/22-P-300-HDG	563740	●	300	2	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-40/22-P-350-HDG	563741	●	350	3	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	20
FES-H-40/22-P-400-HDG	563742	●	400	3	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	15
FES-H-40/22-P-550-HDG	563743	●	550	3	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	10
FES-H-40/22-P-800-HDG	563744	●	800	4	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	10
FES-H-40/22-P-1050-HDG	563745	●	1050	5	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-P-3050-HDG	563746	●	3050	13	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-40/22-P-6070-HDG	563747	●	6070	25	No	Plus anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-I-40/22-150-HDG	552507	●	150	2	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	45
FES-H-I-40/22-200-HDG	552508	●	200	2	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	30
FES-H-I-40/22-250-HDG	552509	●	250	2	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-I-40/22-300-HDG	552510	●	300	2	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	25
FES-H-I-40/22-350-HDG	552511	●	350	3	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	20
FES-H-I-40/22-400-HDG	552512	●	400	3	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	15
FES-H-I-40/22-550-HDG	552513	●	550	3	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	10
FES-H-I-40/22-1050-HDG	552514	●	1050	5	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1
FES-H-I-40/22-6070-HDG	552515	●	6070	25	No	I anchor	hot-dip galvanised	FBC-40/22; FBC-N-40/22	M10 – M16 for FBC-40/22; M16 for FBC-N-40/22	1

Technical data

Profile FES-H-50/30



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of an- chors l	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-50/30-150-HDG	552484	●	150	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	40
FES-H-50/30-200-HDG	552485	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	25
FES-H-50/30-250-HDG	552486	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-50/30-300-HDG	552487	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-50/30-350-HDG	552488	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	15
FES-H-50/30-400-HDG	552489	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	12
FES-H-50/30-550-HDG	552490	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	8
FES-H-50/30-800-HDG	552492	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	8
FES-H-50/30-1050-HDG	552493	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-50/30-3050-HDG	552494	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-50/30-6070-HDG	552495	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-50/30-P-170-HDG	564571	●	170	2	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	30
FES-H-50/30-P-200-HDG	563749	●	200	2	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	25
FES-H-50/30-P-250-HDG	563750	●	250	2	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-50/30-P-300-HDG	563751	●	300	2	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-50/30-P-350-HDG	563752	●	350	3	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	15
FES-H-50/30-P-400-HDG	563753	●	400	3	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	12
FES-H-50/30-P-550-HDG	563754	●	550	3	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	10
FES-H-50/30-P-800-HDG	563755	●	800	4	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	8
FES-H-50/30-P-1050-HDG	563756	●	1050	5	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-50/30-P-3050-HDG	563757	●	3050	13	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-50/30-P-6070-HDG	563758	●	6070	25	No	Plus anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-I-50/30-150-HDG	552516	●	150	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	30
FES-H-I-50/30-200-HDG	552517	●	200	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	25
FES-H-I-50/30-250-HDG	552518	●	250	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-I-50/30-300-HDG	552519	●	300	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-I-50/30-350-HDG	552520	●	350	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	15
FES-H-I-50/30-400-HDG	552521	●	400	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	12
FES-H-I-50/30-550-HDG	552522	●	550	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	8
FES-H-I-50/30-1050-HDG	552523	●	1050	5	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-I-50/30-6070-HDG	552524	●	6070	25	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1

Technical data

Profile FES-H-52/34



FES-H

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Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-52/34-170-HDG	568213	●	170	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	20
FES-H-52/34-200-HDG	552497	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	15
FES-H-52/34-250-HDG	552498	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	13
FES-H-52/34-300-HDG	552499	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	12
FES-H-52/34-350-HDG	552500	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	10
FES-H-52/34-400-HDG	552501	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	6
FES-H-52/34-550-HDG	552502	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	5
FES-H-52/34-800-HDG	552503	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	5
FES-H-52/34-1050-HDG	552504	●	1050	5	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-52/34-3050-HDG	552505	●	3050	13	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-52/34-6070-HDG	552506	●	6070	25	No	Round anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-I-52/34-150-HDG	552525	●	150	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	15
FES-H-I-52/34-200-HDG	552526	●	200	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	10
FES-H-I-52/34-250-HDG	552527	●	250	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	10
FES-H-I-52/34-300-HDG	552528	●	300	2	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	10
FES-H-I-52/34-350-HDG	552529	●	350	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	7
FES-H-I-52/34-400-HDG	552530	●	400	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	6
FES-H-I-52/34-550-HDG	552531	●	550	3	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	6
FES-H-I-52/34-1050-HDG	552532	●	1050	5	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1
FES-H-I-52/34-6070-HDG	552533	●	6070	25	No	I anchor	hot-dip galvanised	FBC-50/30; FBC-N-50/30	M10 - M20 for FBC-50/30; M16 - M20 for FBC-N-50/30	1

Cast-in Channel FES-H-S

Hot-rolled and serrated for optimum strength and safety.



Airports



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- Hot-rolled Cast-in Channels combining optimum load capacity with high safety and flexibility.
- All directional load capacity. Excellent loading capacity in longitudinal direction in combination with FBC-S due to the full serration of the system.

- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Approvals



ETA-18/0862, FES with special screw FBC



Fire resistance classification R120

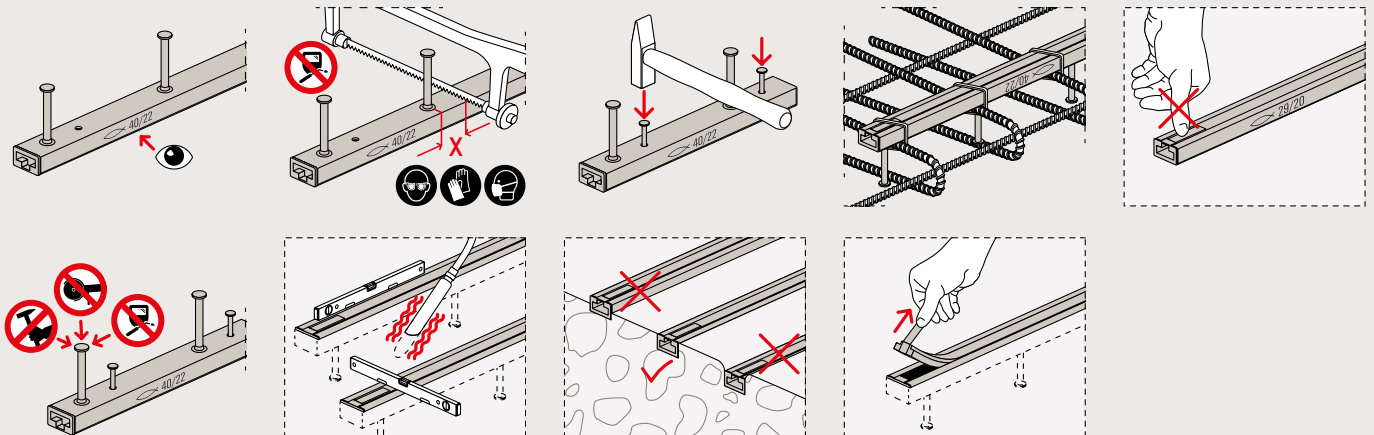
Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

Functioning

Suitable for use in combination with serrated channel bolts FBC-S.

Installation FES



Technical data

Profile FES-H-S-29/20



FES-H-S

Item	Item no.	Approval	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
		ETA								
FES-H-S-29/20-150-HDG	552446	●	150	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	65
FES-H-S-29/20-200-HDG	552447	●	200	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	60
FES-H-S-29/20-250-HDG	552448	●	250	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	40
FES-H-S-29/20-300-HDG	552449	●	300	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	30
FES-H-S-29/20-350-HDG	552450	●	350	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	30
FES-H-S-29/20-400-HDG	552451	●	400	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	20
FES-H-S-29/20-500-HDG	552452	●	500	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	15
FES-H-S-29/20-850-HDG	552453	●	850	4	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-1050-HDG	552454	●	1050	5	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-3050-HDG	552455	●	3050	13	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-6070-HDG	552456	●	6070	25	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1

2

Technical data

Profile FES-H-S-38/23



FES-H-S

Item	Item no.	Approval	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
		ETA								
FES-H-S-38/23-150-HDG	552457	●	150	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	45
FES-H-S-38/23-200-HDG	552458	●	200	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	30
FES-H-S-38/23-250-HDG	552459	●	250	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	30
FES-H-S-38/23-300-HDG	552460	●	300	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	25
FES-H-S-38/23-350-HDG	552461	●	350	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	20
FES-H-S-38/23-400-HDG	552462	●	400	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	15
FES-H-S-38/23-550-HDG	552463	●	550	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	11
FES-H-S-38/23-850-HDG	552464	●	850	5	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-1050-HDG	552465	●	1050	5	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-3050-HDG	552466	●	3050	13	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-6070-HDG	552467	●	6070	25	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1

Installation instruction – Minimum edge distances and minimum bolt spacing

- For the installation of the Cast-in Channels the required edge distances, anchor and channel bolt spacings must be respected.
- ETA values always have to be considered.
- fischer recommends the design software FiXperience CHANNEL-FIX for a safe and economical evaluation of load and on-site conditions.

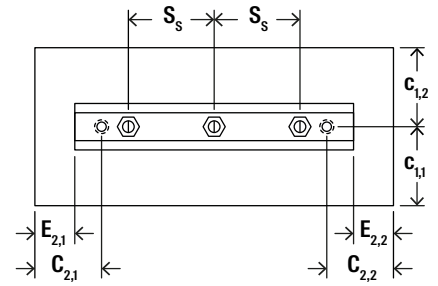
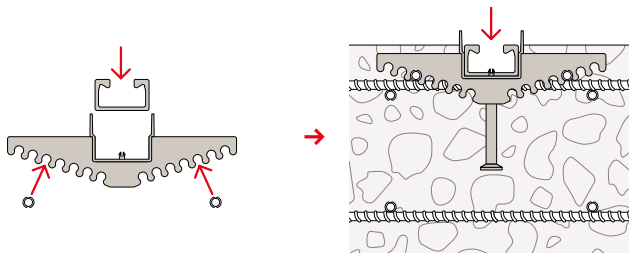


Figure: Minimum edge and bolt spacings

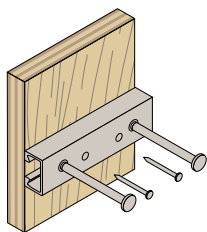
Profile	Thread M	Min. spacing $S_{s,min}$ [mm]	Min. edge spacing		Min. end spacing E_{min} [mm]
			$C_{1,min}$ [mm]	$C_{2,min}$ [mm]	
28/15	M8	40	40	40	15
28/15	M10	50	40	40	15
28/15	M12	60	40	40	15
38/17	M10	50	50	50	25
38/17	M12	60	50	50	25
38/17	M16	80	50	50	25
40/25	M12	60	50	50	25
40/25	M16	80	50	50	25
49/30	M12	60	75	75	50
49/30	M16	80	75	75	50
49/30	M20	100	75	75	50
54/33	M12	60	100	100	75
54/33	M16	80	100	100	75
54/33	M20	100	100	100	75

Channel inward installation options.

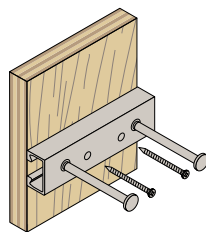


Attach the Cast-in Channel to the plastic clip

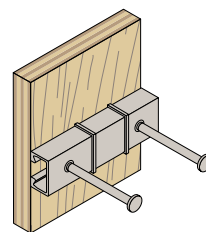
Attach the clip to the rebar



1. Nail fixing



2. Self-drilling screw fixing



3. Clamp fixing

Cast-in Channel InnoLock FES-RS-S

Rollshaped and serrated channel. The new benchmark in anchor channels.

2



Airports



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- Rollshaped anchor channels combine maximum load capacity and installation convenience, setting new standards in safety.
- All directional load capacity. Excellent loading capacity in longitudinal direction in combination with channel bolt InnoLock FBC-S due to the full serration of the system.
- To ensure a high level of safety, the entire InnoLock system is always provided with serration.
- Ideal pre-positioned fixing solution which can cover on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Approvals



ETA-22/0035, FES-RS-S with special screw FBC-S



Fire resistance classification R120

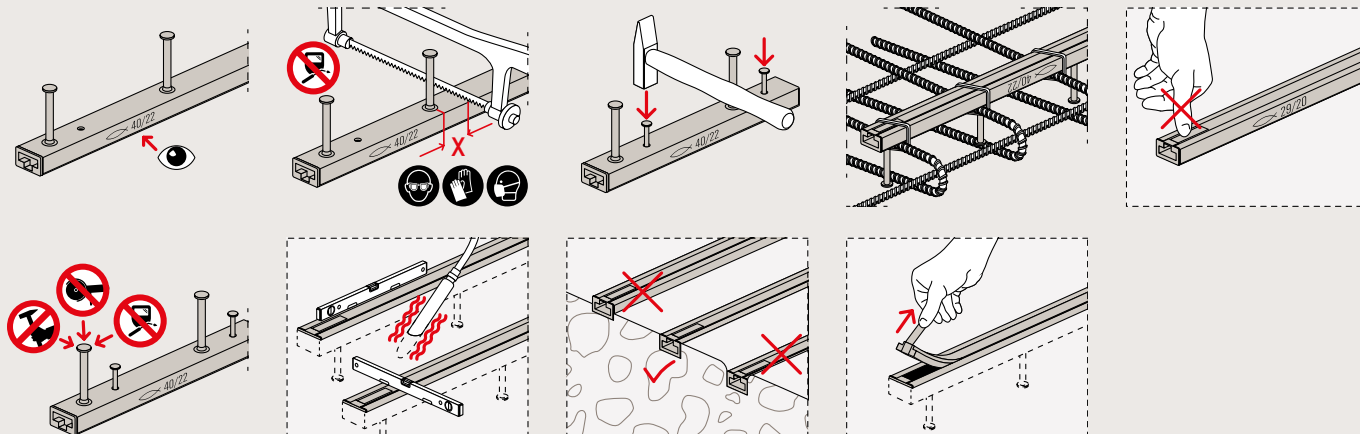
Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

Functioning

Only suitable for use in combination with serrated channel bolt InnoLock FBC-S.

Installation FES



Technical data

Profile FES-RS-S-600



FES-RS-S

Item	Item no.	Approval	Length	Number of anchors	Serrated	Coating	Match	Thread	Sales unit
		ETA	l [mm]					M	
FES-RS-S-600-150-HDG	571730	●	160	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	18
FES-RS-S-600-200-HDG	571731	●	210	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	14
FES-RS-S-600-250-HDG	571732	●	260	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	12
FES-RS-S-600-300-HDG	571733	●	310	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	12
FES-RS-S-600-350-HDG	571734	●	360	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	7
FES-RS-S-600-400-HDG	571735	●	410	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	7
FES-RS-S-600-550-HDG	571736	●	560	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	6

Technical data

Profile FES-RS-S-700



FES-RS-S





Item	Item no.	Approval	Length	Number of anchors	Serrated	Coating	Match	Thread	Sales unit
		ETA	l [mm]					M	
FES-RS-S-700-150-HDG	564777	●	160	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	18
FES-RS-S-700-200-HDG	564778	●	210	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	12
FES-RS-S-700-250-HDG	564779	●	260	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	9
FES-RS-S-700-300-HDG	564780	●	310	2	Yes	hot-dip galvanised	FBC-S-225	M12-M20	8
FES-RS-S-700-350-HDG	564781	●	360	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	7
FES-RS-S-700-400-HDG	564782	●	410	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	6
FES-RS-S-700-550-HDG	564783	●	560	3	Yes	hot-dip galvanised	FBC-S-225	M12-M20	6



3

Channel bolts

Content

Channel bolt FBC	36	
Channel bolt notched FBC-N	41	
Channel bolt serrated FBC-S	44	
Channel bolt serrated InnoLock FBC-S	48	

Channel bolt FBC

Standard channel bolt strong, safe and flexible.

3



Pre-cast elements



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- FBC bolts with smooth underside fitting to Cast-in Channels with smooth channel lips.
- High load bearing capacity combined with flexibility.
- Two directional load capacity.
- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

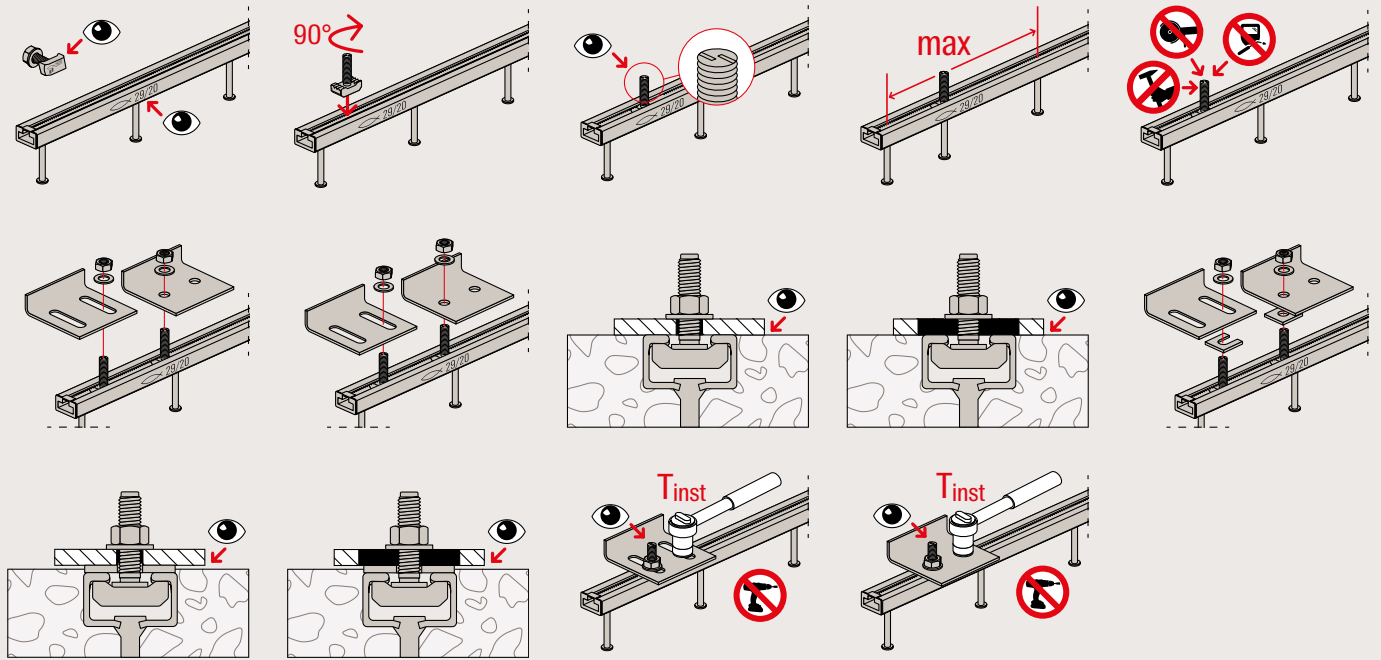
Types

- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009
- Steel grade 8.8 as per EN ISO 898-1:2013
- Hexagon nut as per EN ISO 4032:2012

Functioning

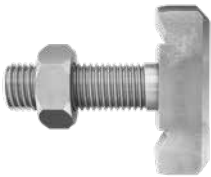
- FBC channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them clockwise and then applying the specified torque moment.
- Suitable for use in combination with hot-rolled and cold-formed fischer Cast-in Channels FES-C, FES-H and FES-H-S.

Installation FBC



Technical data

Channel bolt FBC-28/15



Bolt FBC

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-28/15-M8x40-8.8-HDG	572672	M8	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	200
FBC-28/15-M10x40-8.8-HDG	572680	M10	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	200
FBC-28/15-M12x30-8.8-HDG	572687	M12	30	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	100
FBC-28/15-M12x40-8.8-HDG	572688	M12	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	100
FBC-28/15-M12x60-8.8-HDG	572690	M12	60	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	100
FBC-28/15-M12x80-8.8-HDG	572692	M12	80	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	100

*other lengths on request

Technical data

Channel bolt FBC-38/17



Bolt FBC

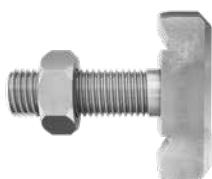
Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-38/17-M10x30-8.8-HDG	572703	M10	30	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M10x40-8.8-HDG	572704	M10	40	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M10x60-8.8-HDG	572706	M10	60	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M10x80-8.8-HDG	572708	M10	80	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M12x40-8.8-HDG	572712	M12	40	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M12x60-8.8-HDG	572714	M12	60	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M12x80-8.8-HDG	572716	M12	80	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M16x50-8.8-HDG	572721	M16	50**	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75
FBC-38/17-M16x80-8.8-HDG	572722	M16	80**	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	75

*other lengths on request

** not included in ETA (M16)

Technical data

Channel bolt FBC-40/22



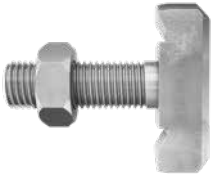
Bolt FBC

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating/Material	Match	Sales unit [pcs]
FBC-40/22-M12x40-8.8-HDG	572736	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x50-8.8-HDG	572737	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x60-8.8-HDG	572738	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x80-8.8-HDG	572740	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x100-8.8-HDG	572742	M12	100	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	25
FBC-40/22-M16x50-8.8-HDG	572745	M16	50	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M16x60-8.8-HDG	572746	M16	60	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M16x80-8.8-HDG	572748	M16	80	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	25
FBC-40/22-M16x100-8.8-HDG	572750	M16	100	Steel grade 8.8	hot-dip galvanised	FES-H-40/22; FES-C-40/25	25
FBC-40/22-M12x40-A4	568045	M12	40	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x50-A4	568046	M12	50	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x60-A4	568047	M12	60	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x80-A4	568049	M12	80	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M12x100-A4	568051	M12	100	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	25
FBC-40/22-M16x50-A4	568054	M16	50	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M16x60-A4	568055	M16	60	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	50
FBC-40/22-M16x80-A4	568057	M16	80	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	25
FBC-40/22-M16x100-A4	568059	M16	100	Steel grade A4-70	A4 stainless steel	FES-H-40/22; FES-C-40/25	25

*other lengths on request

Technical data

Channel bolt FBC-50/30



Bolt FBC

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating/Material	Match	Sales unit [pcs]
FBC-50/30-M12x40-8.8-HDG	572761	M12	40	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x50-8.8-HDG	572762	M12	50	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x60-8.8-HDG	572763	M12	60	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x80-8.8-HDG	572765	M12	80	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M12x100-8.8-HDG	572767	M12	100	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x50-8.8-HDG	572771	M16	50	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M16x60-8.8-HDG	572772	M16	60	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x80-8.8-HDG	572774	M16	80	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x100-8.8-HDG	572776	M16	100	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x125-8.8-HDG	572777	M16	125	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x60-8.8-HDG	572781	M20	60	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x80-8.8-HDG	572783	M20	80	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x100-8.8-HDG	572785	M20	100	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	20
FBC-50/30-M20x125-8.8-HDG	572786	M20	125	Steel grade 8.8	hot-dip galvanised	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	20
FBC-50/30-M12x40-A4	568070	M12	40	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x50-A4	568071	M12	50	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x60-A4	568072	M12	60	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M12x80-A4	568074	M12	80	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M12x100-A4	568076	M12	100	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x50-A4	568080	M16	50	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	50
FBC-50/30-M16x60-A4	568081	M16	60	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x80-A4	568083	M16	80	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x100-A4	568085	M16	100	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M16x125-A4	568086	M16	125	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x40-A4	568088	M20	40	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x50-A4	568089	M20	50	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x60-A4	568090	M20	60	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	25
FBC-50/30-M20x100-A4	568094	M20	100	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	20
FBC-50/30-M20x125-A4	568095	M20	125	Steel grade A4-70	A4 stainless steel	FES-C-49/30; FES-H-50/30; FES-H-52/34; FES-C-54/33	20

*other lengths on request

Channel bolt design resistance

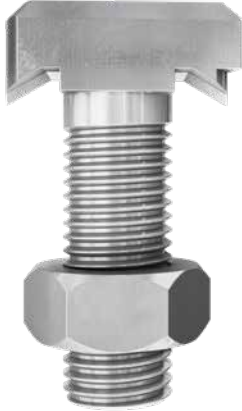
Standard channel bolt FBC													
Profile	Strength class Steel grade	Load capacity M10			Load capacity M12			Load capacity M16			Load capacity M20		
		$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]
FBC-28/15	8.8	22.0	18.6	47.8	30.1	27.0	83.8	-	-	-	-	-	-
FBC-38/17	8.8	37.6	18.6	47.8	44.9	27.0	83.8	-	-	-	-	-	-
FBC-40/22	8.8	30.9	18.6	47.8	36.7	27.0	83.8	54.8	50.2	213.1	-	-	-
	R-70	-	-	-	29.4	22.7	58.7	55.0	35.2	149.4	-	-	-
FBC-50/30	8.8	30.9	18.6	47.8	44.9	27.0	83.8	64.3	50.2	213.1	84.8	78.8	415.4
	R-70	-	-	-	31.6	22.7	58.7	44.3	35.2	149.4	87.2	66.0	291.3

Required installation torque T_{inst}

Standard channel bolt FBC					
Profile	Thread M	General (A)		Steel – steel contact (B)	
		$T_{inst,g}$ [Nm]		$T_{inst,s}$ [Nm]	
		Steel grade 8.8	Steel grade A4-70	Steel grade 8.8	Steel grade A4-70
FBC-28/15	M8	7	-	15	-
	M10	10	-	30	-
	M12	13	-	45	-
FBC-38/17	M10	15	-	30	-
	M12	20	-	45	-
FBC-40/22	M10	15	-	30	-
	M12	24	24	45	45
	M16	32	32	100	100
FBC-50/30	M10	15	-	30	-
	M12	25	25	45	45
	M16	60	60	100	100
	M20	75	75	230	230

Channel bolt FBC-N

Notched channel bolt for excellent strength and safety.



Railway tunnels



Unitised curtain wall

3

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- FBC-N bolts with notched underside perfectly fitting to hot-rolled Cast-in channel lips.
- Thus giving excellent load capacity with high safety.
- All directional load capacity.
- Plus fundamental load capacity in longitudinal direction.

- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

Types

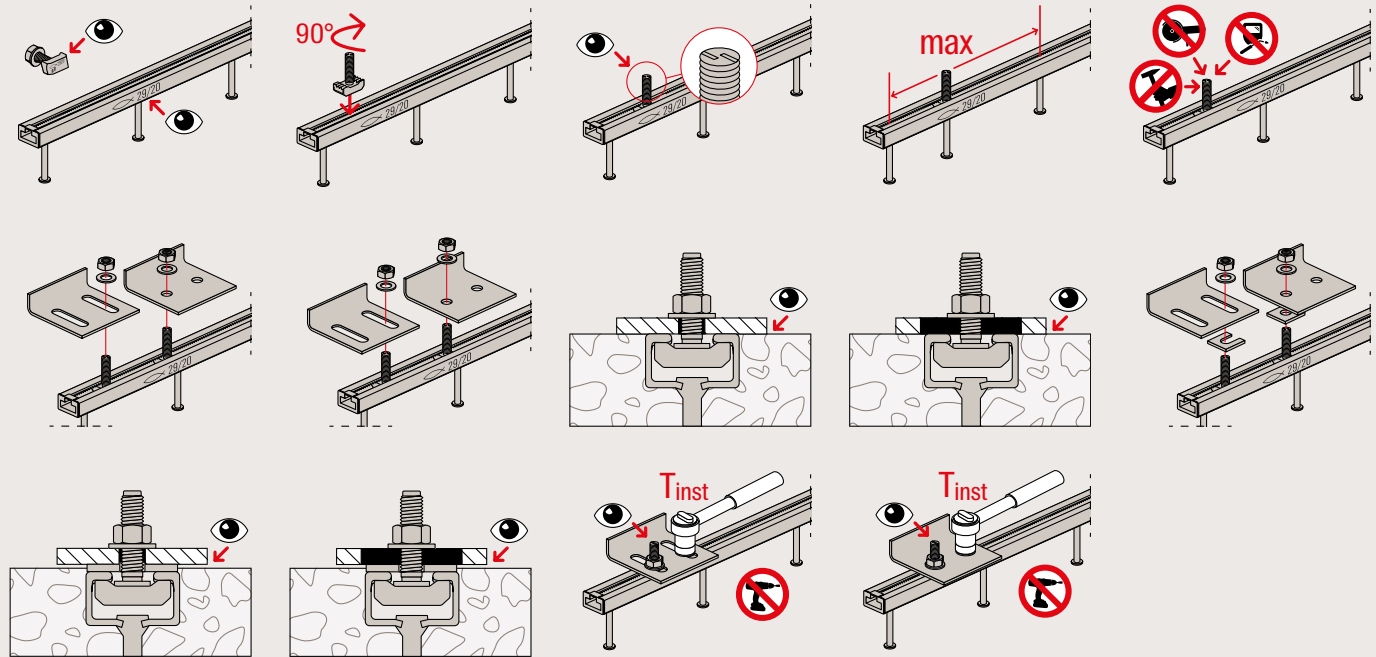
- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009
- Steel grade 8.8 as per EN ISO 898-1:2013
- Hexagon nut as per EN ISO 4032:2012

Functioning

- FBC-N channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them clockwise and then applying the specified torque moment.
- Suitable for use in combination with hot-rolled Cast-in Channels fischer FES-H.

Installation FBC

3



Technical data

Channel bolt notched FBC-N-40/22



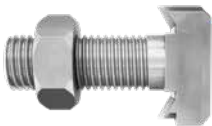
Bolt FBC-N

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-N-40/22-M16x40-8.8-HDG	569361	M16	40	Steel grade 8.8	hot-dip galvanised	FES-H-40/22	50
FBC-N-40/22-M16x50-8.8-HDG	569362	M16	50	Steel grade 8.8	hot-dip galvanised	FES-H-40/22	50
FBC-N-40/22-M16x60-8.8-HDG	569363	M16	60	Steel grade 8.8	hot-dip galvanised	FES-H-40/22	50
FBC-N-40/22-M16x80-8.8-HDG	569366	M16	80	Steel grade 8.8	hot-dip galvanised	FES-H-40/22	25
FBC-N-40/22-M16x100-8.8-HDG	569368	M16	100	Steel grade 8.8	hot-dip galvanised	FES-H-40/22	25

*other lengths on request

Technical data

Channel bolt notched FBC-N-50/30



Bolt FBC-N

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-N-50/30-M16x40-8.8-HDG	559562	M16	40	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	50
FBC-N-50/30-M16x50-8.8-HDG	559563	M16	50	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	50
FBC-N-50/30-M16x70-8.8-HDG	559564	M16	70	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	25
FBC-N-50/30-M16x80-8.8-HDG	559565	M16	80	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	25
FBC-N-50/30-M20x40-8.8-HDG	559570	M20	40	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	25
FBC-N-50/30-M20x50-8.8-HDG	559571	M20	50	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	25
FBC-N-50/30-M20x70-8.8-HDG	559572	M20	70	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	25
FBC-N-50/30-M20x100-8.8-HDG	559574	M20	100	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	20
FBC-N-50/30-M20x125-8.8-HDG	559575	M20	125	Steel grade 8.8	hot-dip galvanised	FES-H-50/30; FES-H-52/34	20

*other lengths on request

Channel bolt design resistance

Channel bolt FBC-N

Profile	Strength class Steel grade	Load capacity M10			Load capacity M12			Load capacity M16			Load capacity M20		
		$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]
FBC-40/22	8.8	-	-	-	-	-	-	67.3	50.2	213.1	-	-	-
FBC-50/30	8.8	-	-	-	-	-	-	75.6	50.2	213.1	95.0	78.4	415.4

Required installation torque T_{inst}

Channel bolt FBC-N

Profile	Thread M	General (A)		Steel – steel contact (B)	
		$T_{inst,g}$ [Nm]		$T_{inst,s}$ [Nm]	
		Steel grade 8.8	Steel grade A4-70	Steel grade 8.8	Steel grade A4-70
FBC-40/22	M16	-	-	200	-
FBC-50/30	M16	-	-	200	-
	M20	-	-	400	-

Channel bolt FBC-S

Serrated channel bolt for optimum strength and safety.

3



Pre-cast elements



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- FBC-S bolts with serrated underside perfectly interlock with channels with serrated lips.
- Thus giving optimum load capacity with high safety.
- All directional load capacity.
- Plus optimum load capacity in longitudinal direction in combination with FES-H-S due to the full serration of the system.

- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution.

Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

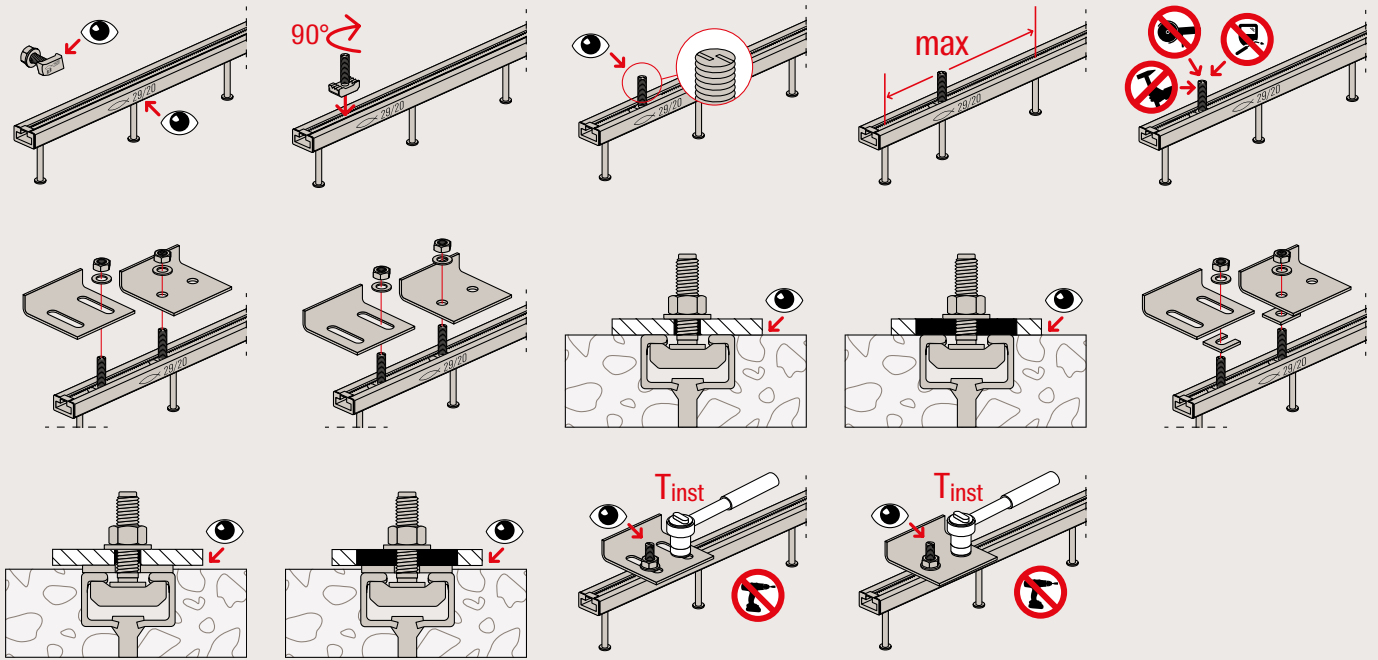
Types

- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009
- Steel grade 8.8 as per EN ISO 898-1:2013
- Hexagon nut as per EN ISO 4032:2012

Functioning

- FBC-S channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them clockwise and then applying the specified torque moment.
- Suitable for use in combination with hot-rolled and serrated Cast-in Channels fischer FES-H-S.

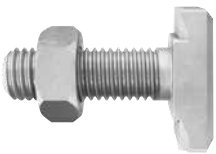
Installation FBC



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Technical data

Channel bolt serrated FBC-S-29/20



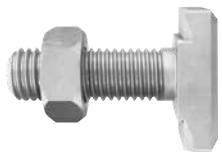
Bolt FBC-S

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-S-29/20-M12x40-8.8-HDG	572814	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	100
FBC-S-29/20-M12x50-8.8-HDG	572815	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	100
FBC-S-29/20-M12x60-8.8-HDG	572816	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	100
FBC-S-29/20-M12x80-8.8-HDG	572817	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	100

*other lengths on request

Technical data

Channel bolt serrated FBC-S-38/23



Bolt FBC-S

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-S-38/23-M12x40-8.8-HDG	572820	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	75
FBC-S-38/23-M12x50-8.8-HDG	572821	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	75
FBC-S-38/23-M12x60-8.8-HDG	572822	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	75
FBC-S-38/23-M12x80-8.8-HDG	572823	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	50
FBC-S-38/23-M16x40-8.8-HDG	572826	M16	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	50
FBC-S-38/23-M16x60-8.8-HDG	572828	M16	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	50
FBC-S-38/23-M16x100-8.8-HDG	572830	M16	100	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	25

*other lengths on request

Channel bolt design resistance

Channel bolt serrated FBC-S													
Profile	Strength class Steel grade	Load capacity M10			Load capacity M12			Load capacity M16			Load capacity M20		
		$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]
FBC-S-29/20	8.8	-	-	-	32.3	27.0	83.8	-	-	-	-	-	-
FBC-S-38/23	8.8	-	-	-	44.9	27.0	83.8	47.7	50.2	213.1	-	-	-

Required installation torque T_{inst}

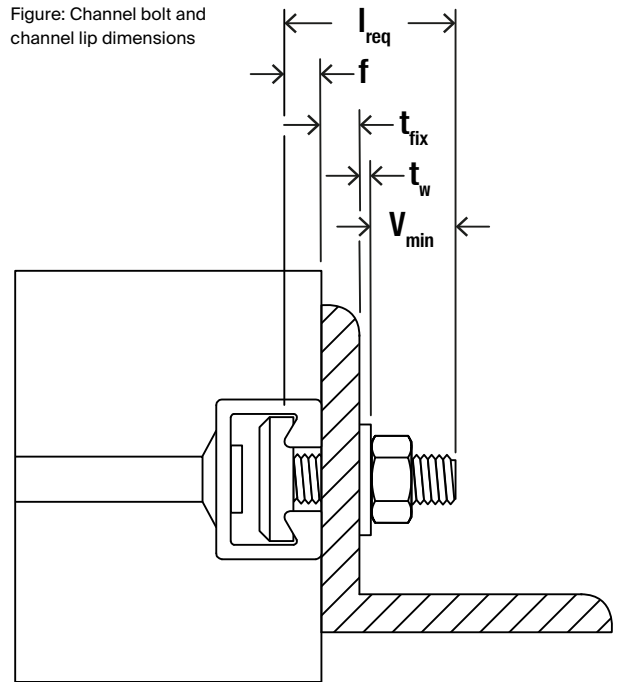
Channel bolt serrated FBC-S			
Profile	Thread M	General (A)	Steel – steel contact (B)
		$T_{inst,g}$ [Nm]	$T_{inst,s}$ [Nm]
FBC-S-29/20	M12	80	80
FBC-S-38/23	M12	80	80
	M16	100	100

Channel bolt installation parameter

V_{min} /size	
Channel bolt thread	V_{min} [mm]
M10	14
M12	16
M16	20
M20	25

Cast-in Channel system lip thickness f	
Profile	Thickness [mm]
H-S-29/20	5.2
H-S-38/23	6
H-(I)-40/22-(P)	6.2
H-(I)-50/30-(P)	8.1
H-(I)-52/34	11.5
C-28/15	2.3
C-38/17	3.0
C-40/25	6.0
C-49/30	7.0
C-54/33	8.5
RS-S-600	6.0
RS-S-700	7.0

Figure: Channel bolt and channel lip dimensions



l_{req} = required bolt length
 t_{fix} = thickness of clamped component
 f = profile lip thickness
 t_w = washer thickness
 v_{min} = nut height EN ISO 4032 + overhang approximately 5 mm (for M20: 7 mm)

Channel bolt InnoLock FBC-S

Serrated channel bolt specifically for InnoLock channels.



3



Pre-cast elements



Unitised curtain wall

Applications

- Suitable for all types of buildings or structures
- Façades
- Prefabricated elements
- Railways
- Metro tunnels and stations
- Industrial applications

Advantages

- Unique InnoLock FBC-S with specially designed channel bolt geometry that perfectly interlocks in the InnoLock channel with serrated lips.
- Thus giving optimum load capacity with high safety.
- All directional load capacity.
- Plus optimum load capacity in longitudinal direction in combination with

InnoLock FES-RS-S due to the full serration of the system.

- Ideal prepositioned fixing solution, capable of covering on-site tolerances.
- Suitable for applications in cracked and non-cracked concrete.
- Permanently adjustable fixing solution

Building materials

Concrete C12/15 to C90/105, cracked and non-cracked.

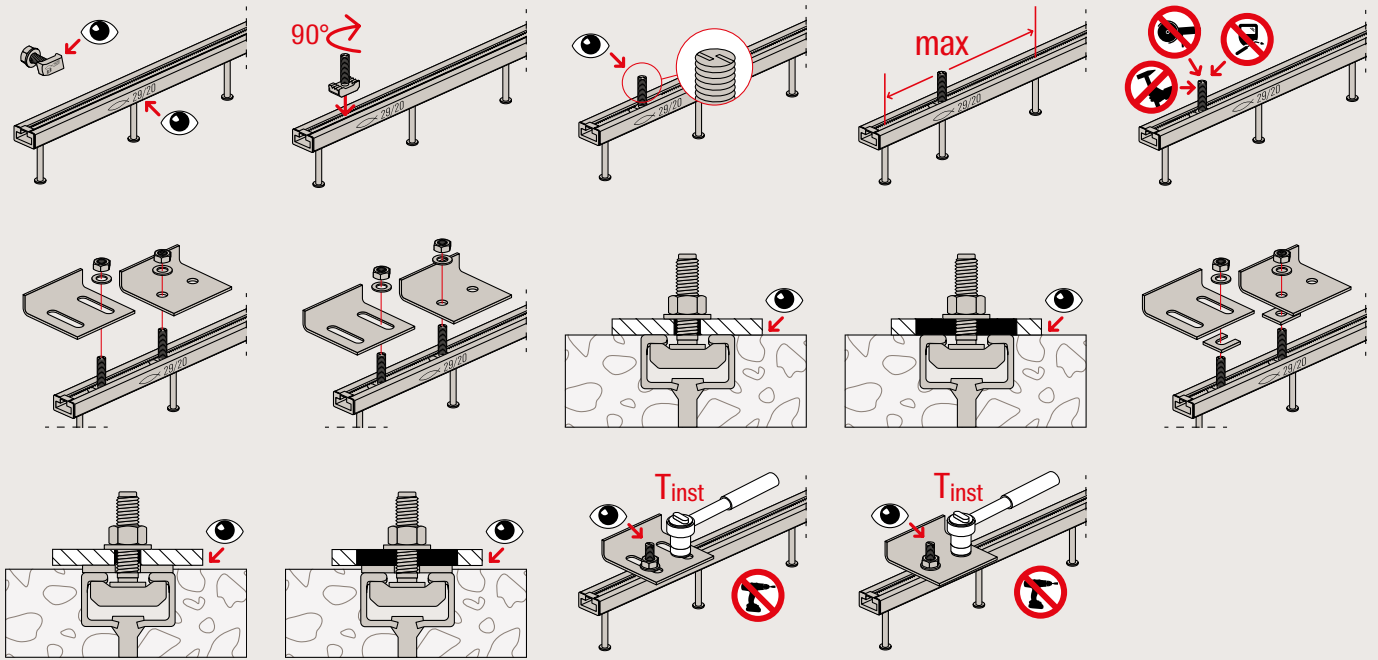
Types

- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009
- Steel grade 8.8 as per EN ISO 898-1:2013
- Hexagon nut as per EN ISO 4032:2012

Functioning

- InnoLock FBC-S channel bolts can be variably set in the planned position of InnoLock Cast-In Channels.
- They are easily fixed by turning them clockwise until final position is reached and then applying the specified torque moment.
- Suitable for use in combination with InnoLock Cast-In Channels FES-RS-S.

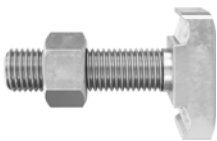
Installation FBC



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Technical data

Channel bolt InnoLock FBC-S-225

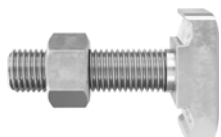


Bolt FBC-S

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-S-225-M12x40-8.8-HDG	561142	M12	40	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x50-8.8-HDG	561143	M12	50	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x60-8.8-HDG	561144	M12	60	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x70-8.8-HDG	561145	M12	70	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x80-8.8-HDG	561146	M12	80	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x90-8.8-HDG	561147	M12	90	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x100-8.8-HDG	561148	M12	100	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M12x125-8.8-HDG	561149	M12	125	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	20

*other lengths on request

Channel bolt InnoLock FBC-S-225



Bolt FBC-S

3

Item	Item no.	Thread M	Length* l [mm]	Steel grade	Coating	Match	Sales unit [pcs]
FBC-S-225-M16x40-8.8-HDG	561151	M16	40	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x50-8.8-HDG	561152	M16	50	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x60-8.8-HDG	561153	M16	60	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x70-8.8-HDG	561154	M16	70	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x80-8.8-HDG	561155	M16	80	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x90-8.8-HDG	561156	M16	90	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x100-8.8-HDG	561157	M16	100	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M16x125-8.8-HDG	561158	M16	125	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	20
FBC-S-225-M16x200-8.8-HDG	561159	M16	200	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	10
FBC-S-225-M20x40-8.8-HDG	561160	M20	40	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x50-8.8-HDG	561161	M20	50	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x60-8.8-HDG	561162	M20	60	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x70-8.8-HDG	561163	M20	70	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x80-8.8-HDG	561164	M20	80	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x90-8.8-HDG	561165	M20	90	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x100-8.8-HDG	561166	M20	100	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	25
FBC-S-225-M20x125-8.8-HDG	561167	M20	125	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	20
FBC-S-225-M20x200-8.8-HDG	561168	M20	200	Steel grade 8.8	hot-dip galvanised	FES-RS-S-600; FES-RS-S-700	10

*other lengths on request

Channel bolt design resistance

Profile	Strength class Steel grade	Load capacity M12			Load capacity M16			Load capacity M20		
		$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]
FBC-S-225	8.8	44.9	26.9	83.8	83.7	50.2	213.1	113.3	78.4	415.4

Required installation torque T_{inst}

Profile	Thread M	General (A)	Steel – steel contact (B)
		$T_{inst,g}$ [Nm]	$T_{inst,s}$ [Nm]
FBC-S-225	M12	80	100
	M16	100	200
	M20	120	360



4

Accessories

Content

Washer

54



Washer

Technical data



Properties

- Material: steel acc. to EN ISO 7089:2000 and EN ISO 7093-1:2000
- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009

HDG

Item	Item no.*	Thickness	Hole-Ø	External-Ø	Coating	Sales unit
		S [mm]	D [mm]	d [mm]		
U 8 x 16		1.6	8.4	16.0	hot-dip galvanised	200
U 10 x 20		2.0	10.5	20.0	hot-dip galvanised	150
U 12 x 24		2.5	13.0	24.0	hot-dip galvanised	100
U 16 x 30		3.0	17.0	30.0	hot-dip galvanised	50
U 20 x 37		3.0	21.0	37.0	hot-dip galvanised	25

*Local versions available. Please contact your local sales organisation.

A4

Item	Item no.*	Thickness	Hole-Ø	External-Ø	Material	Sales unit
		S [mm]	D [mm]	d [mm]		
U 12 x 24 A4		2.5	13.0	24.0	A4 stainless steel	100
U 16 x 30 A4		3.0	17.0	30.0	A4 stainless steel	50
U 20 x 37 A4		3.0	21.0	37.0	A4 stainless steel	25

*Local versions available. Please contact your local sales organisation.

Technical data



Properties

- Material: steel acc. to EN ISO 7093-1:2000 and EN ISO 7093-1:2000
- Hot-dip galvanised $\geq 50 \mu\text{m}$ as per EN ISO 10684:2004+AC:2009

4

HDG

	Item no.*	Thickness S [mm]	Hole-Ø D [mm]	External-Ø d [mm]	Coating	Sales unit [pcs]
Item						
U 16 x 50		3.0	17.0	50.0	hot-dip galvanised	50

*Local versions available. Please contact your local sales organisation.



5

Basics – good to know.

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Design method and approval.



- European Technical Assessment
ETA 18/0862 for FES-H and FES-C
anchor channel systems
- European Technical Assessment
ETA 22/0035 for InnoLock FES-RS-S
anchor channel system

The whole product portfolio is developed strictly following

- EN 1992-4 "Design of concrete structures - Part 4: Design of fastenings for use in concrete"
- EOTA TR047: Technical Report "Design of anchor channels" and combining with fischer renowned expertise in fastening technology

5

Fire resistance.



In accordance with the European Norm DIN EN 13501-1

- Fire resistance of components has been tested in Germany in accordance with the European Norm DIN EN 1363 or DIN EN 1365 since 2000.
- The fire duration is then labelled with the letter R for "Resistance".

Anti-corrosion protection.



Hot-dip galvanised zinc coating

- Dipping the product in molten zinc pool to apply a metal zinc coating.
- The usual approach of Cast-in Channel for corrosion protection.



A4 stainless steel

- Corrosion resistant alloyed steel.
- Often used for applications with increased corrosivity.

Customised solutions.

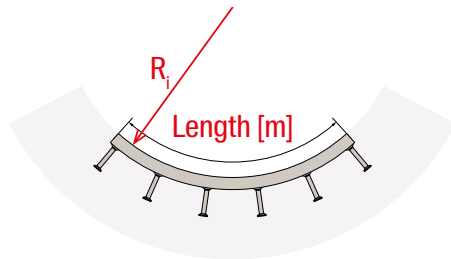
Curved Cast-in Channel Systems

For those high-demanding applications like tunnel construction, reinforced concrete utility tunnels, curved walls or sewage plants, fischer also provides curved Cast-in Channel System products as customised

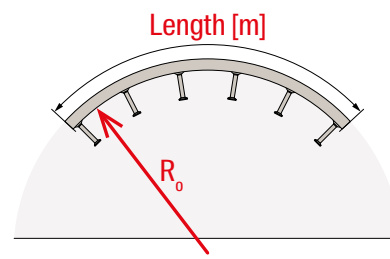
solution to meet your specific requirements, as well as customised solution to meet you tailored needs in specific applications. These type of special products include curved channel, channel with rebar and others.

5

Channel inward installation



Channel outward installation

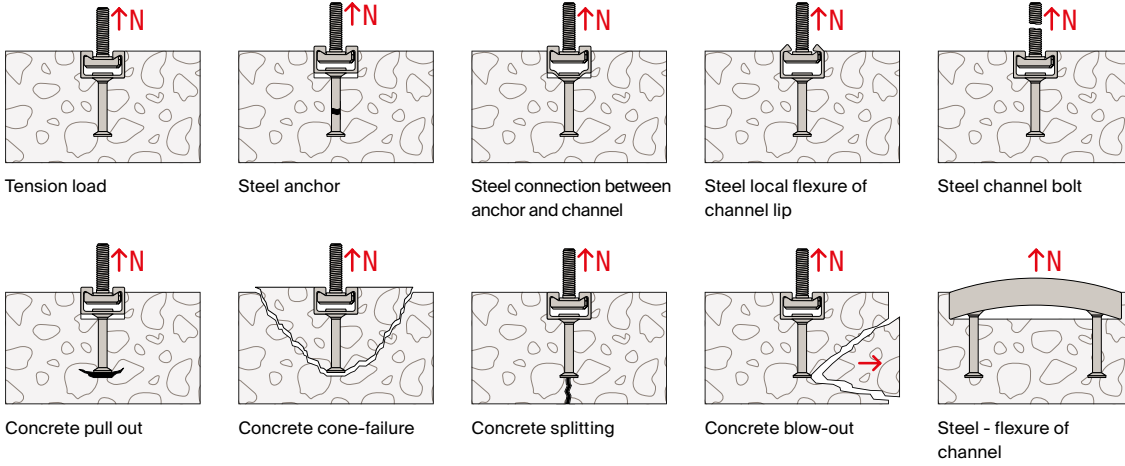


Minimum recommended bending radius for all materials

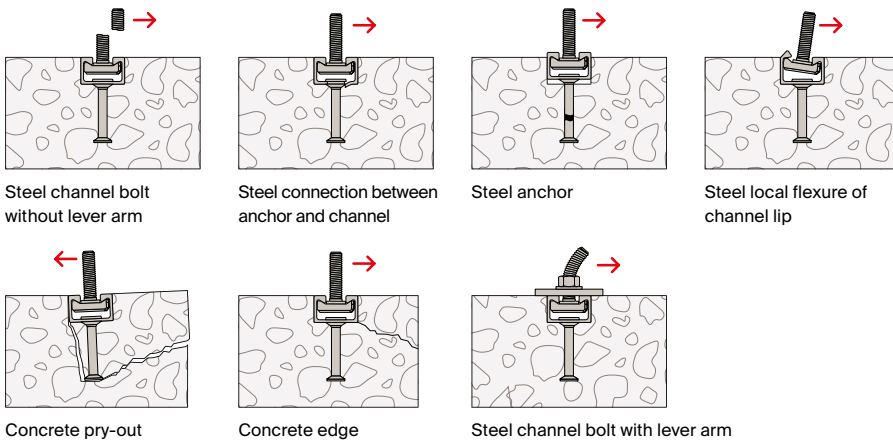
Minimum recommended bending radius for all materials					
Type	Profile	R _i min [m]	R _o min [m]	Length min [m]	Length max [m]
Non-serrated hot-rolled	40/22	0.80	2.10	1.50	5.80
	50/30	0.80	2.10	1.50	5.80
	52/34	0.80	3.60	1.50	5.80
Serrated hot-rolled	29/20	0.55	1.80	0.50	5.80
	38/23	0.70	2.10	0.50	5.80

Failure modes.

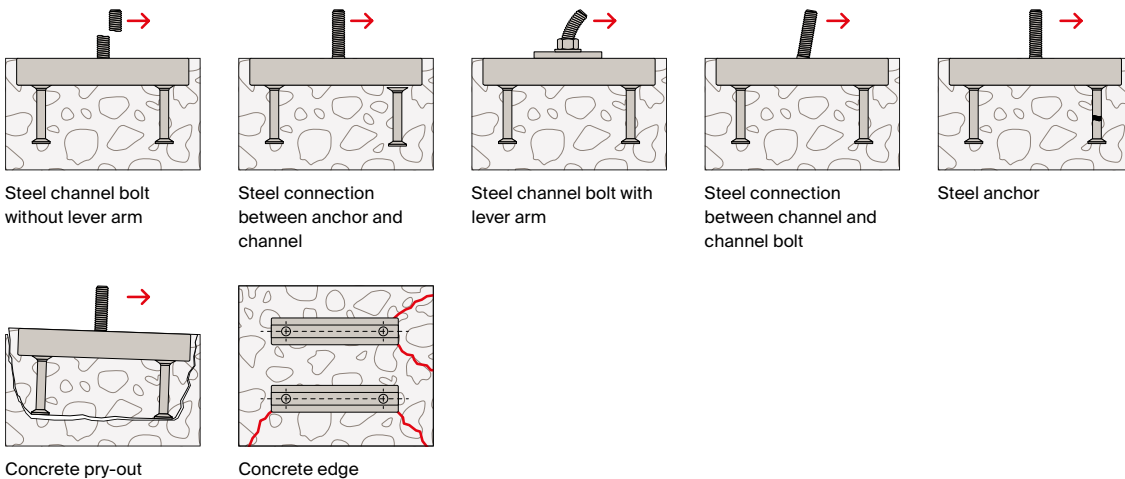
Under tension load



Under shear load acting transverse to the longitudinal channel axis



Under shear load acting parallel to the longitudinal channel axis

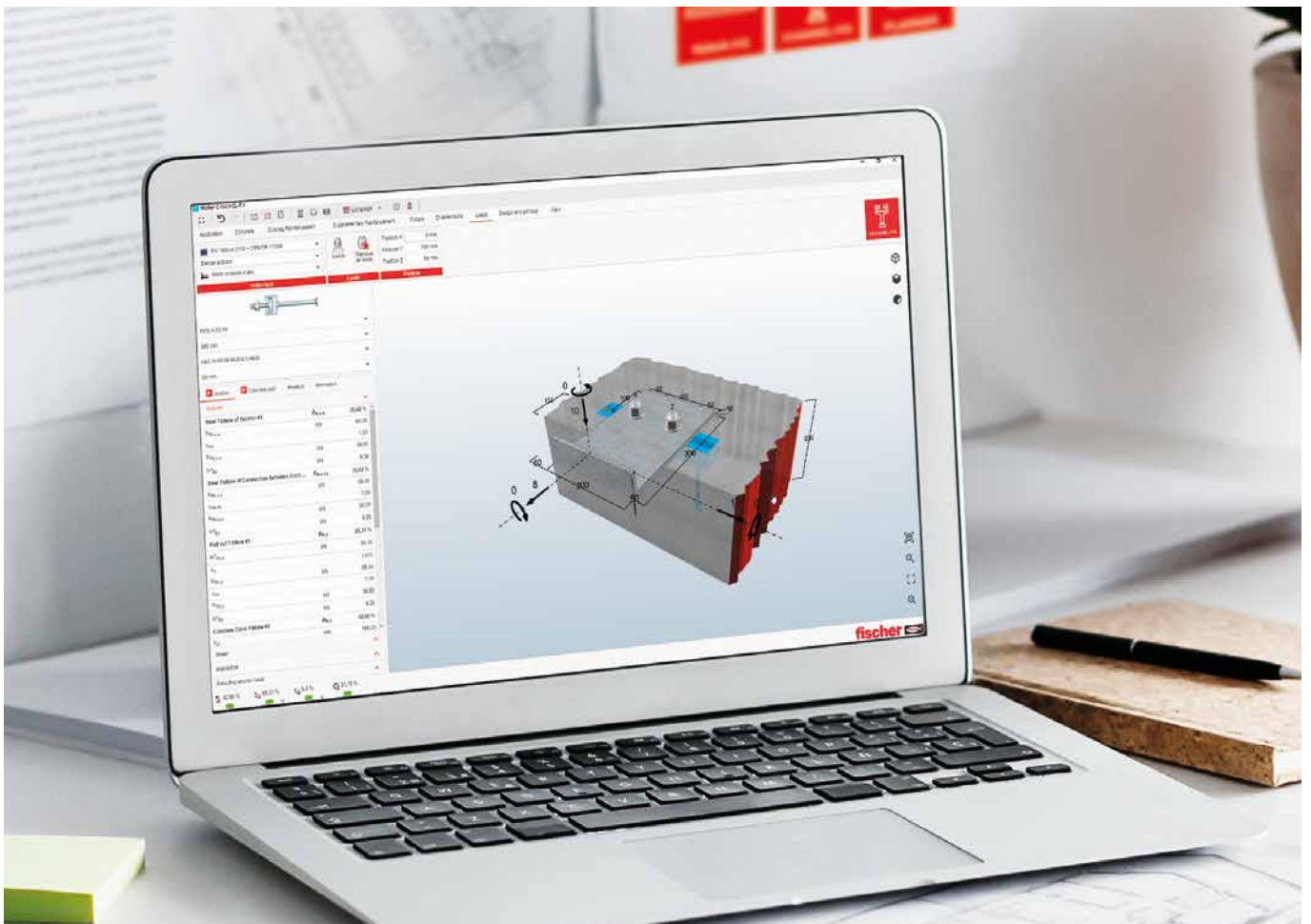


Software calculation process.

1. Channel system selection
2. Application
 - Top of slab
 - Front of slab
3. Concrete
 - Concrete grade
 - Concrete condition
 - Concrete thickness
 - Concrete cover
 - Concrete chamfer
4. Supplementary reinforcement
 - Area reinforcement
 - Tensile reinforcement
 - Shear reinforcement
 - Reinforcement to control splitting
5. Fixture
 - Simple fixture
 - Rectangular plate
 - Round plate
 - L-shaped plates
 - PI - shaped plate
6. Graphics

The 3D graphical interactive interface helps to simulate according to the parameter inputs. The display function supports rotation, zoom-in/out and other dynamic operation

- The fischer Cast-in Channel Systems software embedded with multiple application expertise features. Friendly and reliable execution of verification for anchor channel cast in concrete structure, allowing you to model accurately and optimise about your specific fastening scenario.
- A variety of base materials, supplementary reinforcement, and loads can be applied. Additionally, different types of base plates and pre-defined brackets can be modelled. Results can be easily optimised.
- PDF reports can be generated in detailed or brief form for easy to follow verification including design formulas.



Calculation examples for Cast-in Channel Systems in curtain walls.

5



CHANNEL-FIX
1.1.21.0
Database version
1.1.21.0
Date
17.02.2024



Design specifications

Anchor channel

Anchor channel FES-H-52/34-300-HDG
Article number 552499
Channel bolt FBC-N-50/30-M20x50-8.8-HDG
Article number Available on request

Design data

Date ETA-18/0862
16.06.2020

Input data

Design method EN 1992-4 + CEN/TR 17080
Application Top of slab
Concrete C20/25, Cracked
Concrete thickness = 200 mm
Concrete cover = 25 mm
h_{ef} = 155 mm
h_{inst} = 158 mm

Area reinforcement None
Tensile reinforcement None
Shear reinforcement y None
Shear reinforcement x None

Reinforcement to control splitting Yes

Fixture L-Shaped Plate Up
Width = 200 mm
Depth = 300 mm
Thickness = 10 mm
Height = 50 mm


Stand-off Distance = 0 mm
Degree of restraint = 2

Anchor channel FES-H-52/34, Length = 300 mm


Channel bolts

#	Position x
1	50 mm
2	150 mm

Sliding area None sliding area
Loads



CHANNEL-FIX
1.1.21.0
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1.1.21.0
Date
17.02.2024



Concrete Edge Failure - Channel Installed Parallel to the Edge - Anchor #1

$$V_{Ed,y} \leq \frac{V_{Rk,z,y}}{V_{Ed}} (V_{Rd,z,y})$$

$$V_{Rk,z,y} = \sqrt{R_{k,c}} \cdot \psi_{ch,s,V} \cdot \psi_{ch,c,V} \cdot \psi_{ch,h,V} \cdot \psi_{ch,90^\circ,V} \cdot \psi_{Rk,V} = 15,57 \text{ kN} \cdot 0,754 \cdot 1,000 \cdot 0,864 \cdot 1,000 \cdot 1,000 = 10,14 \text{ kN}$$

$$V_{Rd,c} = k_{12} \cdot \sqrt{f_{ctk}} \cdot c_1^{\frac{2}{3}} = 7,5 \cdot \sqrt{20 \text{ N/mm}^2} \cdot 100 \text{ mm}^{\frac{2}{3}} = 15,57 \text{ kN}$$

$$\psi_{ch,s,V} = \min \left(\frac{1}{1 + \sum_{i=1}^n \frac{s_i}{3c_{cr,V}} \cdot \sqrt{\frac{V_{Ed}}{V_{Rd,c}}}} \right) = \min \left(\frac{1}{1 + \frac{200}{3 \cdot 25} \cdot \sqrt{\frac{10,14}{15,57}}} \right) = 1,0$$

$$\psi_{ch,c,V} = \min \left(\frac{c_{cr,V}}{c_{cr,V} + 1} \right)^{0,5} = \min \left(\frac{25 \text{ mm}}{253 \text{ mm} + 1} \right)^{0,5} = 1,0$$

$$\psi_{ch,h,V} = \min \left(\frac{h}{h_{cr,V}} \right)^{0,5} = \min \left(\frac{200 \text{ mm}}{268 \text{ mm}} \right)^{0,5} = 0,81$$

$$\psi_{ch,90^\circ,V} = 1,000$$

$$\psi_{Rk,V} = 1,000$$

V _{Ed,y}	V _{Rk}	V _{Rd,y}
10,14 kN	1,50	6,76 kN

Anchor #	β _{N,y}
1	65,31 %
2	58,77 %

Acting Parallel to the Longitudinal Axis of the Channel

Proof


Steel Failure of Anchor - Anchor #1, #2
Steel Failure of Connection between Anchor and Channel - Anchor #1, #2
Concrete Pryout Failure in x-direction - Anchor #1, #2
Concrete Edge Failure - Channel Installed Parallel to the Edge - Anchor #1, #2

Steel Failure of Anchor - Anchor #1, #2


$$V_{Ed,x} \leq \frac{V_{Rk,s,x}}{V_{Ed}} (V_{Rd,s,x})$$

V _{Ed,x}	V _{Rk}	V _{Rd,s,x}
33 kN	1,80	18,33 kN

Anchor #	β _{N,x}
1	2,73 %
2	2,73 %



CHANNEL-FIX
1.1.21.0
Database version
1.1.21.0
Date
17.02.2024



Resistance to combined tensile and shear loads

Steel failure of anchor and connection between anchor and channel

β_N = 30,62% Anchor#1
β_{N,x} = 2,73% Anchor#1,#2
β_{N,y} = 7,95% Anchor#1
(β_N)^{1,00} + (β_{N,y})^{1,00} ≤ (1 - β_{N,x})^{1,00}; (0,31)^{1,00} + (0,08)^{1,00} = 0,39 ≤ (1 - 0,03)^{1,00} = 0,97 Anchor#1

Concrete failure modes

β_N = 42,69% Anchor#1
β_{N,x} = 3,00% Anchor#1
β_{N,y} = 65,31% Anchor#1
(β_N)^{1,50} + (β_{N,x})^{1,50} + (β_{N,y})^{1,50} = (0,43)^{1,50} + (0,03)^{1,50} + (0,65)^{1,50} = 0,81 ≤ 1 Anchor#1

Steel failure of channel bolts

β_N = 9,94% Channelbolt#1
β_N = 7,62% Channelbolt#1
(β_N)^{2,00} + (β_N)^{2,00} = (0,10)^{2,00} + (0,08)^{2,00} = 0,02 ≤ 1 Channelbolt#1

Steel failure of channel lips and flexural failure of channel

β_N = 24,19% Channelbolt#1
β_{N,x} = 6,90% Channelbolt#1,#2
β_{N,y} = 10,97% Channelbolt#1
(β_N)^{1,00} + (β_{N,y})^{1,00} ≤ (1 - β_{N,x})^{1,00}; (0,24)^{1,00} + (0,11)^{1,00} = 0,35 ≤ (1 - 0,07)^{1,00} = 0,93 Channelbolt#1

✔
Proof successful

Technical remarks

All data and information in the software is based on fischer products and common engineering knowledge. Please check all the proof results against local valid standards and approvals. As fischer is not the design office, the attached is no guarantee for incorrect input or assumptions. Any recommendations have to be approved by the building authority or project engineer. Results are valid only for anchor system calculated in the attached. If any part of the system is changed, it will invalidate this report and new calculations would be required.

The transmission of the loads to the supports of the concrete member shall be shown for the ultimate limit state and the serviceability limit state, for this purpose, the normal verifications shall be carried out under due consideration of the actions introduced by the anchors and bolts. For these verifications the additional provisions given in the current design method shall be taken into account.

As a pre-condition the anchor plate is assumed to be flat when subjected to the actions. Therefore, the plate must be sufficiently stiff. The proof of the necessary stiffness is not carried out by Channel-Fix.

The design for the shear forces acting parallel to the anchor channel are performed via CEN/TR 17080 as there is absence of any related part in EN1992-4.

The input values and the design results should be checked against local valid standards and approvals. Please respect the disclaimer of warranty in the license agreement of the Software.

The input values and the design results should be checked against local valid standards and approvals. Please respect the disclaimer of warranty in the license agreement of the Software.

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References



Central Bank Turkey · Istanbul · Turkey

1. Estrel Tower · Berlin · Germany
2. Victoria Apartments · Manchester · U.K.
3. SOBHA Tower · Dubai · U.A.E.
4. Guggenheim Museum · Abu-Dhabi · U.A.E.
5. LAM Research Laboratory · Seoul · South Korea
6. Taichung Marriott Hotel · Taiwan R.O.C.
7. Kaohsiung City · Taiwan R.O.C.
8. Cathay Riverside · Taipei · Taiwan
9. Changchun Longxiang – Business Center · Changchun · China
10. Guiyang Financial Center Building · Guiyang · China
11. Baoding Healthy City · Baoding · China
12. Hangzhou Xiasha Marriott Hotel · Hangzhou · China
13. Wuxi Hanglung Plaza · Wuxi · China
14. Dali East sea developing zone Utility Tunnel · Dali · China
15. Chengdu Global Foundrie · Chengdu · China
16. Shanghai Yoozoo Plaza · Shanghai · China
17. Zhengzhou Media Group Mansion · Zhengzhou · China
18. Tianjing Utility Tunnel · Tianjing · China
19. Central Bank Turkey · Istanbul · Turkey
20. Dubai Hills Mall Roller Coaster · Dubai · U.A.E.
21. Nest One · Tashkent · Uzbekistan
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6

Service

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6

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- We support our customers on site at the construction site. We advise and help to fasten everything professionally. Tensile tests and fastening tests on site provide additional safety.
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- The training offered for customers and their employees provides targeted support for daily applications and imparts specialised knowledge.

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- The same applies on the phone: the engineers and technicians who answer the questions have many years of practical experience and know-how to correctly assess the trade-specific requirements.
- We are reliable contacts for our customers on the phone when it comes to building materials, loads, anchor dimensions, anchoring topics, approvals or the design of connecting parts.
- Major projects require fastening know-how to a particularly high degree. On request, one of the fischer experts can become a permanent part of the construction site management team.

Your contact for technical advice

International Technical Support
intsupport@fischer.de



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- We support planners and structural engineers to effectively save time and costs which has an impact on all phases of construction.
- Ideally, cooperation begins in the preliminary phase, for example in the economic optimisation of anchoring constructions, in the dimensioning of special constructions and in sample dimensioning.
- The tried-and-tested fischer FIXperience software is a standard tool in many planning offices.

Solution competence for particularly difficult cases

- We provide effective help when existing anchorages have not been executed according to plan or regulations.
- Even if the anchoring base does not conform to the approval, we will find a safe and reliable solution.

Your contact for technical advice

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Products for use in fixing technology.

The fixing catalogue offers many facts and helps with quick and safe product selection, e.g.:

- Product descriptions and overview of benefits
- Tips for installation
- Application aids
- Detailed technical data and drawings
- Basics of fastening technology
- All you need to know about professional fixing

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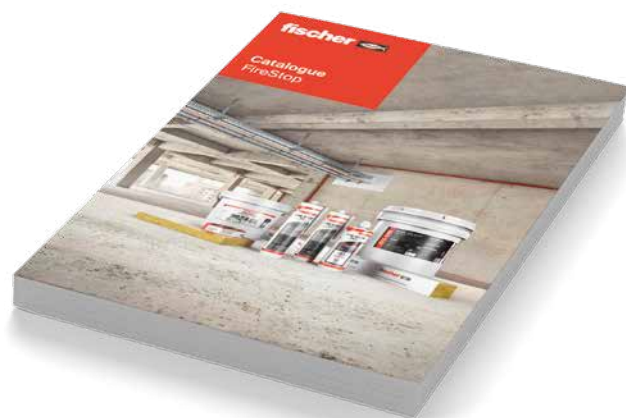
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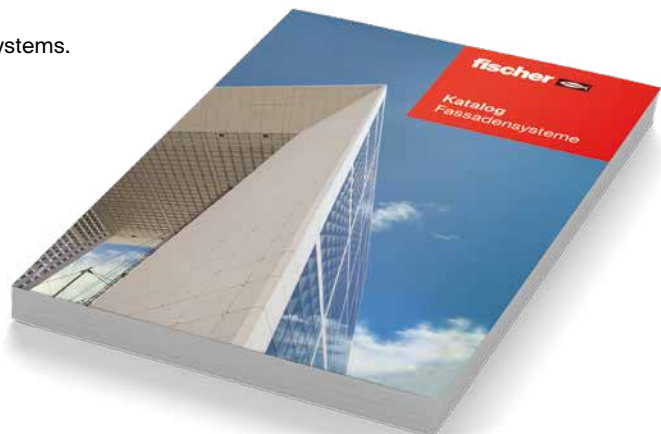
Main catalogue Façade Systems.

All facts about the fischer façade range and its applications.

The Façade Systems catalogue offers many facts and helps with quick and safe product selection, e.g.:

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- Basic knowledge about undercut anchors and subframe systems.
- Available design software

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Germany

fischer Deutschland Vertriebs GmbH

Klaus-Fischer-Straße 1

72178 Waldachtal

P +49 7443 12 - 6000

F +49 7443 12 - 4500

info@fischer.de

www.fischer.de

Argentina

fischer Argentina s.a.

Armenia 3044

1605 Munro Ra-PCIA Buenos Aires

P +54 1147 62 27 78

F +54 1147 56 13 11

asistenciatecnica@fischer.com.ar

www.fischer.com.ar

Austria

fischer Austria GmbH

Wiener Straße 95

2514 Traiskirchen

P +43 2252 53730 0

F +43 2252 53730 70

office@fischer.at

www.fischer.at

Belgium

fischer Cobemabel snc

Schaliënhoevedreef 20 D

2800 Mechelen

P +32 152 8 47 00

F +32 152 8 47 10

info@fischer.be

www.fischer.be

Brazil

fischer brasil Industria e Comercio Ltda.

Estrada do Dende, 300 Ilha do Governador

21920-001 Rio de Janeiro-RJ

P +55 21 2467 11 30

F +55 21 2467 01 44

fischer@fischerbrasil.com.br

www.fischerbrasil.com.br

China

fischer (Taicang) fixings Co. Ltd.

No. 17, Lane 166, Guchuan Road, 14th

Floor, Building 2, Zhongjun Tianyue Center

200333 Shanghai

P +86 21 51 00 16 68

F +86 21 65 97 96 22

ficn@fischer.com.cn

www.fischer.com.cn

Czech Republic

fischer international s.r.o.

Průmyslová 1833

25001 Brandýs nad Labem

P +42 03 26 90 46 01

F +42 03 26 90 46 00

info@fischer-cz.cz

www.fischer-cz.cz

Denmark

fischer a/s

Sandvadsvej 17 A

4600 Køge

P +45 46 32 02 20

F +45 46 32 50 52

fidk@fischerdenmark.dk

www.fischerdenmark.dk

Finland

fischer Finland Oy

Suomalaistentie 7 B

02270 Espoo

P +358 20 741 46 60

F +358 20 741 46 69

orders@fischerfinland.fi

www.fischerfinland.fi

France

fischer S. A. S.

12, rue Livio, P. O. Box 10182

67022 Strasbourg-Cedex 1

P +33 388 39 18 67

F +33 388 39 80 44

info@fischer.fr

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fischer Hellas

Kalavriton 2 & Kaiafa

14564 Kifissia, Athens

P +30 21 02 83 81 67

F +30 21 02 83 81 69

info@fischer.gr

www.fischer.gr

Hungary

fischer Hungária Bt.

Szerémi út 7/b

1117 Budapest

P +36 1 347 97 55

F +36 1 347 97 66

info@fischerhungary.hu

www.fischerhungary.hu

India

fischer BUILDING MATERIAL INDIA PVT LTD.

PRESTIGE GARNET UNIT NO- 401,

4TH FLOOR 36, ULSOOR ROAD

560042 Bangalore KARNATAKA

P +91 0804 1511 991 92 93

F +91 0804 1511 989

info@fischer.in

www.fischer.in

Italy

fischer italia S.R.L.

Corso Stati Uniti, 25, Casella Postale 391

35127 Padova Z.I. Sud

P +39 049 8 06 31 11

F +39 049 8 06 34 01

sercli@fischeritalia.it

www.fischeritalia.it

Japan

fischer Japan K.K.

Pronte Kudan Building 3rd Floor 3-4-15

Kudan Minami Chiyoda-ku, 102-0074 Tokyo

P +81 33 26 34 49 1

F +81 36 27 29 93 5

info@fischerjapan.co.jp

www.fischerjapan.co.jp

Korea, Republic

fischer Korea Co., Ltd (fikr)

Room 601/602, Kolon Digital Billant 30,

Digitalro 32-Gil, Guro-Gu, Seoul,

Korea 08390

P +82 1544 89 55

F +82 1544 89 03

info@fischerkorea.com

www.fischerkorea.com

Mexico

fischer Sistemas de Fijación, S.A. de C.V.

Blvd. Manuel Avila Camacho 3130-400B

54020 Col. Valle Dorado, Tlalnepantla

P +52 55 55 72 08 83

F +52 55 55 72 15 90

info@fischermex.com.mx

www.fischermex.com.mx

Netherlands

fischer Benelux B.V.

Gooimeer 14

1411 DE Naarden

P +31 35 6 95 66 66

F +31 35 6 95 66 99

info@fischer.nl

www.fischer.nl

Norway

fischer Norge AS
 Oluf Onsumsvei 9
 0680 Oslo
 P +47 23 24 27 10
 F +47 23 24 27 13
 ordre@fischernorge.no
 www.fischernorge.no

Philippines

fischer PH Asia, Inc.
 No 100 Congressional Avenue, Project 8
 1106 Quezon City
 P +63 2426 0888 217
 F +63 2880 3256
 joselito.ladlad@fischerph.com
 www.fischer.ph

Poland

fischerpolska Sp.z o.o
 ul. Albatrosow 2
 30-716 Kraków
 P +48 12 2 90 08 80
 F +48 12 2 90 08 88
 info@fischerpolska.pl
 www.fischerpolska.pl

Portugal

fischerwerke Portugal, Lda.
 Rua das Musas, Passeio dos Cruzados
 Lote 2.01 (Bloco3), Loja 8 (01.D), Parque das
 Nações, 1990-171 Lisboa
 P +351 218 954 180
 F +351 218 967 066
 fischerportugal.info@fischer.pt
 www.fischer.pt

Qatar

fischer fasteners QD Trading LLC
 HUB Business Center, Barwa Commercial
 Avenue, Arkan Building, Block No. 4, Office
 No. 56, Building No 115, Street 964, Zone
 56, P. O. Box – 35190 Doha
 enquiry@fischer.qa
 www.fischer.qa

Romania

fischer fixings Romania S.R.L.
 Strada Oradiei, Nr. 1-3-5-7
 400220 Cluj Napoca, Judetul Cluj
 P +40 264 455 166
 F +40 264 403 060
 zoltan.kovacs@fischer.com.ro
 www.fischer.com.ro

Russian Federation

OOO fischer Befestigungssysteme Rus
 Leningradskoe shosse, 47, Bldg. 2, 2nd
 floor, apt. VI, 125195 Moscow
 P +7 495 223 61 62
 F +7 495 223 03 34
 info@fischerfixing.ru
 www.fischerfixing.ru

Singapore

fischer systems Asia Pte. Ltd.
 4 Kaki Bukit Avenue 1, #01-06
 417939 Singapore
 P +65 6741 0480
 F +65 6741 0481
 sales@fischer.sg
 www.fischer.sg

Slovakia

fischer S.K. s.r.o.
 Nová Rožňavská 134 A
 831 04 Bratislava
 P +421 2 4920 60 46
 F +421 2 4920 60 44
 info@fischerwerke.sk
 www.fischer-sk.sk

Spain

fischer Ibérica S.A.U.
 Klaus Fischer 1
 43300 Mont-Roig del Camp Tarragona
 P +34 977 83 87 11
 F +34 977 83 87 70
 servicio.cliente@fischer.es
 www.fischer.es

Sweden

fischer Sverige AB
 Nygatan 93
 602 34 Norrköping
 P +46 11 31 44 50
 info@fischersverige.se
 www.fischersverige.se

Turkey

fischer Metal Sanayi Ve Ticaret Ltd Sti
 Cevizli Mahallesi, Mustafa Kemal Paşa Cad.
 Seyit Gazi Sok. No 66, Hukukçular Towers A
 Blok, 34865 Kartal İstanbul
 P +90 216 326 00 66
 F +90 216 326 00 18
 info@fischer.com.tr
 www.fischer.com.tr

United Arab Emirates

fischer FZE
 R/A 07, BA - 04, Jebel Ali Free Zone
 Dubai
 P +97 14 8 83 74 77
 F +97 14 8 83 74 76
 enquiry@fischer.ae
 www.fischer.ae

United Kingdom

fischer fixings UK Ltd.
 Whitely Road
 Oxon OX10 9AT Wallingford
 P +44 1491 82 79 00
 F +44 1491 82 79 53
 info@fischer.co.uk
 www.fischer.co.uk

United States

fischer fixings LLC (fius)
 205 US HWY 46, Suite 4 07512 Totowa,
 New Jersey
 P +1 973 256 30 45
 F +1 845 625 26 66
 sales@fischerus.net
 www.fischerfixings.com

Vietnam

**fischer production Company Limited –
 Tay Ninh Branch**
 Lot 36-23-B, 36-24, D14A Road, Phuoc
 Dong Industrial Park, Phuoc Dong
 Commune, Go Dau District, Tay Ninh
 Province
 info@fischer.vn

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fischerwerke GmbH & Co. KG
72178 Waldachtal
Germany

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Fixing Systems
Automotive
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fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1 · 72178 Waldachtal
Germany
P +49 7443 12 - 0 · F +49 7443 12 - 8297
www.fischer-international.com · intsupport@fischer.de

