fischer

System Catalogue.

FireStop
Façade
Installation
Cast-in Channel





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

Foreword

Dear Partners,

Dear partners,

the fischer Group of Companies has stood for the highest quality and innovative strength for 75 years. In addition to plastic plugs, steel anchors and chemical systems, our broad portfolio also includes a comprehensive assortment of screws. Our large screw assortment enables you to flexibly install wood in all its facets and to get everything out of the material. With our high-tech products and our very high-quality standards throughout the industry, we lead your applications and projects to success.
The benefits for you, our partners, always come first, since a high assembly speed guarantees efficient and economical work.

With our new generation of fully threaded screws Power-Full II we offer the optimal economic professional solution for a permanently secure connection and reinforcement of load-bearing timber constructions.

Another new addition to the assortment is our FAFS adjustment screw, which enables infinitely adjustable assembly of wooden substructures. And our new chipboard screw Power-Fast II is suitable for any wood-wood and wood-metal connections as well as with tested loads in fischer plastic plugs.

We are also broadly positioned with our range of partially and fully threaded screws (fischer Power-Fast and fischer Power-Full). Different drive, head, thread and material variants as well as sizes cover almost all applications of carpenters, joiners and woodworkers. Screw tips and thread geometries matched to the fastening project speed up and simplify assembly.

The European Technical Assessment (ETA) provides certainty about the load-bearing capacity, which also covers processing in softwood and hardwood without pre-drilling and the use of tangential impact drivers. Screwing close to the edge, without splitting or splintering, is also successful.

Dear partners, with our new screw catalogue you will find the right solution for your fixing tasks around building and working with wood even easier and faster. The illustrative material and the depth of information provide clarity for all application questions.

We hope you enjoy discovering and using our screws!



Andreas Voll
Chairman of the management board of the fischer group of companies



“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.

Continious improvement

The 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 1. place “Excellence in Operations” within the challenging contest “Factory of the Year”.

DIE FABRIK DES JAHRES
Global Excellence in Operations
Produktion ATKearney

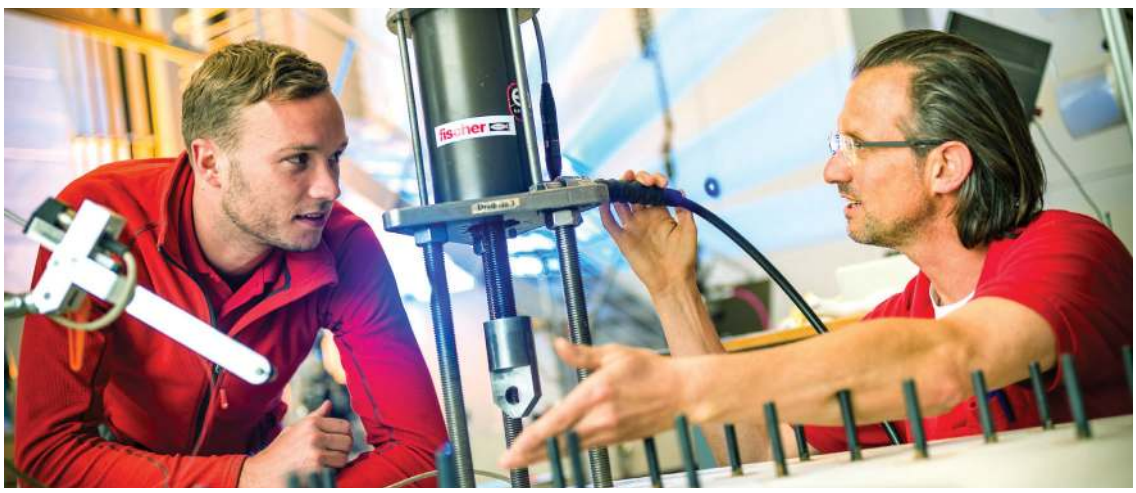
Award 2015
Exellence in Operations

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 awardwinning quality which continues to impress both professional clients and private customers with equal measure.

ICC ES ESR-1990 See ICC-ES Evaluation Report at www.icc-es.org
ETA CE

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 off ering 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%.



BIOBASED 50 - 85 %
DIN Geprüft
8C029

Greenline assortment based on 50% regrowing raw materials

Deutscher Nachhaltigkeitspreis 2020
SIEGER
Großunternehmen

German Sustainability Award

Content

Selection guide of products and applications	7	1
Firestop	12	2
Facade	66	3
Installation	138	4
Cast-in Channel System	330	5
Basic knowledge of fastening technology	354	6
Service	406	7

2 FireStop Assortment

Intumescent Acoustic Mastic FiAM	18	
Intumescent Acoustic Mastic FiAM US	21	
Fire Rated Silicone Sealant FFRS	23	
Rapid Fire Seal RFS 640	26	
Fire I Barr ElastoSeal FFB-ES	29	
Universal FireStopping Sealant UFS	31	
Intumescent Graphite Mastic FiGM	34	
Foam Barrier System PLUS	37	
Intumescent Pipe Wraps FiPW	40	
Intumescent Wrap Strip FiWS	42	
Fire Collar FFC	45	
Cast-in Device FCID Plus	47	
Intumescent Pillows FiP	49	
Intumescent Putty Pad FiPP	51	
Coated Panel System FCPS	53	
FireStop Compound FFSC	55	
VentiStop Cavity Barrier - FFB-VS	57	
Cavity FireStop Clad FCFcl	60	
FireStop Foam	62	
Thermal Defense Wrap TDW	64	

3 Facade

3a Zykon-Panel anchor FZP II

ZYKON-PANEL ANCHOR FOR NATURAL STONE

Zykon-Panel anchor FZP II A4	70	
Zykon-Panel anchor FZP II Carbon	72	
Zykon-Panel anchor FZP II SO AL	74	
Zykon-Panel anchor FZP II SO Carbon	76	
Zykon-Panel anchor FZP II VS	78	
Zykon-Panel anchor FZP II SH	80	
Zykon-Panel anchor FZP II M8i	82	
Zykon-Panel anchor FZP II M6i	84	

ZYKON PANEL ANCHOR FOR THIN FAÇADE PANELS

Zykon-Panel anchor FZP II-T Tergo+	86	
Zykon-Panel anchor FZP II-T PA	88	
Zykon-Panel anchor FZP II-T D40	90	

ZYKON-PANEL ANCHOR FOR SAFETY GLASS

Zykon-Glas point fixing FZP G-Z ESG	92	
Zykon-Glas point fixing FZP G-Z VSG	94	

3b
Machine technology and drill bits

1

DRILLING MACHINES

Drill rig SBN 502	101	
Mobile drilling equipment LBT 80	102	
Manual drill head MB 2	103	
Mobile drilling equipment BSN 100	104	
Mobile drilling equipment BSN 101T	105	
Side table BST	106	

DRILL BITS

Undercut drill bits	109	
Undercut drill bits CNC	110	
Undercut drill bits glass	111	

TESTING AND MEASURING EQUIPMENT

Measuring equipment	113	

SETTING TOOLS

Setting tools	117	

3c
SystemOne subframe system

Chair bracket	126	
Horizontal profiles	127	
Agraffe	128	
Vertical profiles	129	
Wall holder	130	
Accessories	132	

4
Installation

4a
Pipe clamps

TWO SCREW PIPE CLAMPS

Pipe clamp FRSR	140	
Pipe clamp FRSR HDG & SS 316	142	
Pipe clamp FRS	144	
Pipe clamp FRSRN	146	
Silicone pipe clamp FRSH	148	

HEAVY DUTY PIPE CLAMPS

Heavy duty pipe clamp FRSM - metric	150	

SPRINKLER PIPE CLAMPS

Sprinkler clamp FRSPC	152	
Clevis Hanger FCH	154	
Riser clamp RCWR	156	

OTHERS

U-Bolt	157	
Rubber lined U-bolt	159	

Rubber Lined U-strap 161 
U-Strap USP 162 
Riser clamp Rubber Lined 164 
Rubber Lined Clevis hanger RLFCH 165 
Clevis hanger FCH CHW 166 
Rubber Support Insert FRSI 168 

4b Channel system universal

Channel FUS 172 
Slotted U channel 178 
Slotted L channel 180 
Channel connector FDCC 181 
Cantilever arm FCA 183 
Large cantilever arm FCAM 188 
Cover cap FEC 189 
Connector FCN Clix P and FCN Clix M 190 
T-head bolt FHS Clix S 192 
T-head bolt FCSN 194
Channel nut FCN/FCN-L 196 
Channel washer HK 41 197 
Saddle flange SF L 198 
Mounting bracket UWS 199 

Angle bracket WK 200 
Bracket FFF 202 
Bracket FAF 203 
Flanges FZF 204 
Flanges FUF 205 
Variable bracket VB 206 
Universal mounting UHRS 207 
Universal hinge FUH 208 
Swivel clamp 210 
Threaded rod bracket FSB 45° 211 
Beam clamp TKR 212 
Push-through connector PFCN 214 
Saddle flange PSF 216 
Universal bracket PUWS 217 
Angle bracket PWK 218 
Variable bracket PVB 219 
Bracing elements PSAE 220 
Channel connector FUF OC and PFUF OC 222 
Bracket PFFF 223 
Bracket PFAF 224 
Bracket PFUF 226 
Bracket PFUF D 227

4c

Seismic bracing assortment

PIPE CLAMPS

Seismic pipe clamp FSSC 230

CHANNEL BRACING ELEMENTS

Channel clamp FUSF 231

Sway brace bracket FSF 232

Shaped reinforcement strut SAE 233

Threaded rod brace connector S-VA 234

Channel brace connector S-VB 235

90° angle connector S-FAF 236

ACCESSORIES

Threaded rod connector S-ROD 237

Rod stiffener FTRC M12 gvz 238

Torque bolt SKS M12x30 239

4d

Accessories

Clamp hanger TKL 242

Beam Clamp Steel TKLS Steel Bite 244

Threaded rod G 246

Threaded rod G / Threaded stud GS 248

Threaded rod TRSL 250

Base plate GPL 251

Stud screw STST with TX star recess 252

Support hanger AHB 254

Multi connector MW 255

Parallel connector PV 256

Double connector plate DPP, DPF 257

Bolt connector SBB 258

Turnbuckle SPS, Bolt BLR 258

Hexagonal screw SKS 259

Hexagonal Bolt SKS 259

Hexagonal Bolt SKSL 260

Washer U 262

Washer MW 262

Hexagonal nut MU 263

Hexagonal nut HN 263

Hexagonal connector VM 264

Eyebolt AG 265

Thread hanger RAH 265

Reduction piece RD 266

Reduction socket RDM and GRD 266

Flat eye screw LLS 267

Textile web strapping GWB 268

Perforated steel banding LBV / LBK	269	
Impact nail ED	271	
Beam clamp FHBC	273	
Wire System FWI	274	

4e

Massive channel system FMS

Massive profile FMP	278	
Channel connector FMPC	282	
Cantilever FMC	284	
End cap FMEC	287	
Hammer-head push connector FMHB	288	
Connecting element FMCE-L short	290	
Connecting element FMCE	292	
Base plate FMSF BP	293	
Saddle flange FMSF	294	
Variable bracket FMVB	296	
Beam clamp FMBC	298	
Beam clamp FMBC M12 and M16	300	
Flat fitting FMFF 90°	302	
Mounting angle FMA 3 and FMA 4	304	
Mounting angle FMA	306	
Connecting element FMUF	308	

Fix point U-bolt FMFS UB	310	
Pipe shoe sliding element FMFS	312	
Fix-point U-bolt FMFS S and M	314	
Pipe shoe FMPS	316	
Massive pipe clamp FMFSC	320	
Massive U-bolt FMPSU	322	

4f

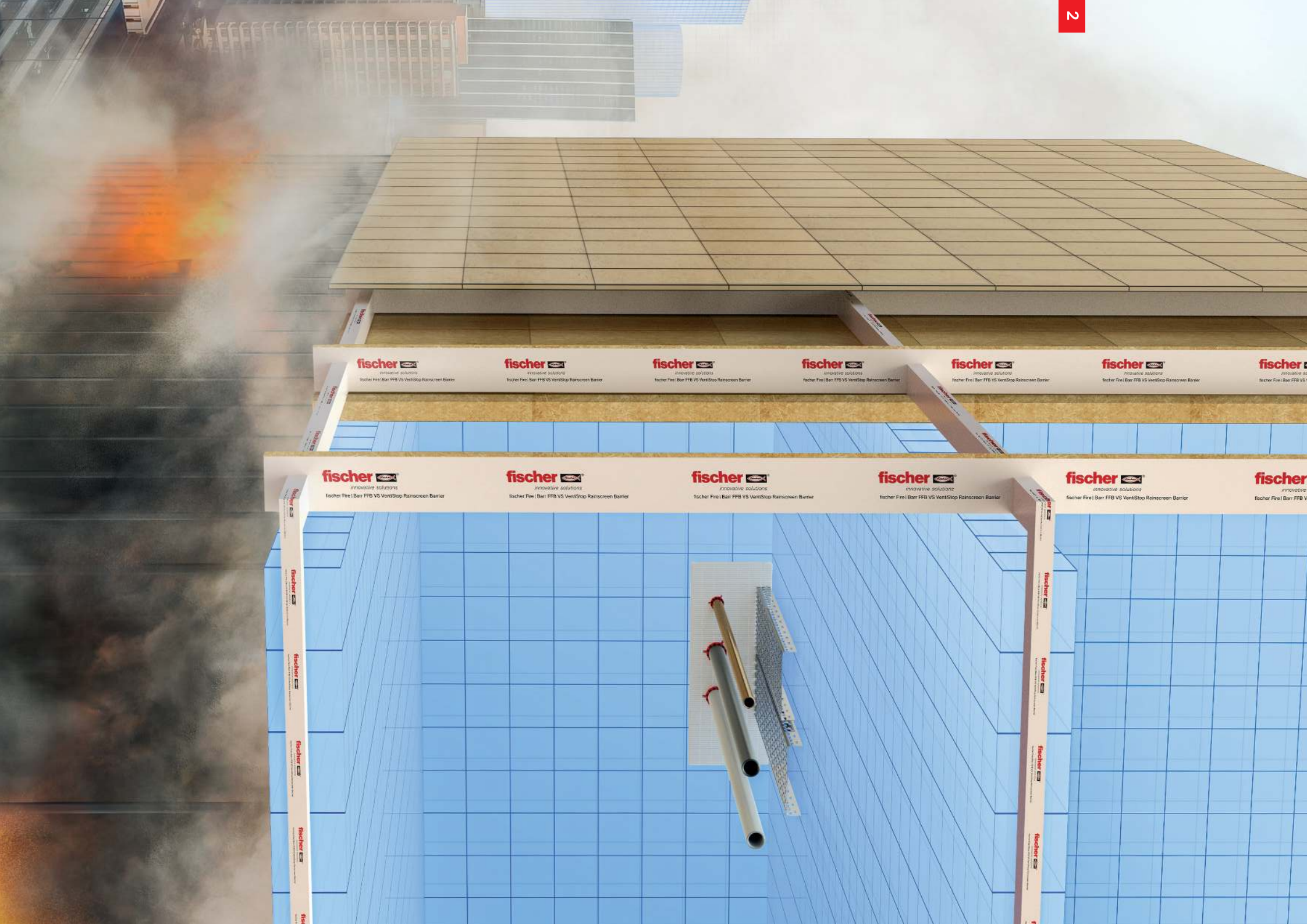
Air conditioner fixings

Air conditioner fixing MCE	326	
Air conditioner fixing KSU	328	

5

Cast-in Channel System

Cast-in Channel FES-C	335	
Cast-in Channel FES-H	338	
Cast-in Channel FES-H-S	342	
Channel bolt FBC	344	
Channel bolt FBC-N	348	
Channel bolt FBC-S	350	

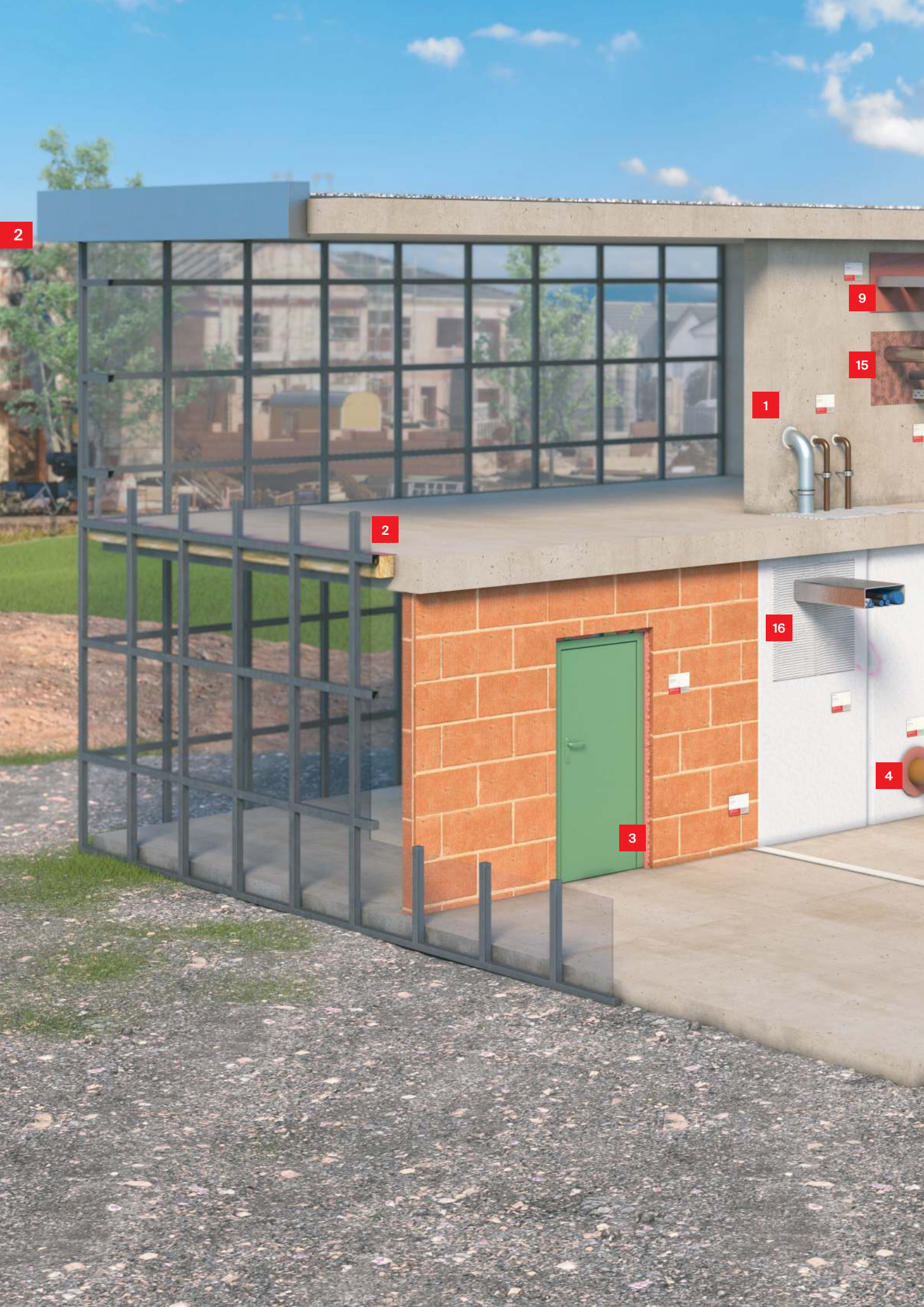

fischer
innovative solutions
fischer Fire | Barr FFB VS VentStop Rainscreen Barrier

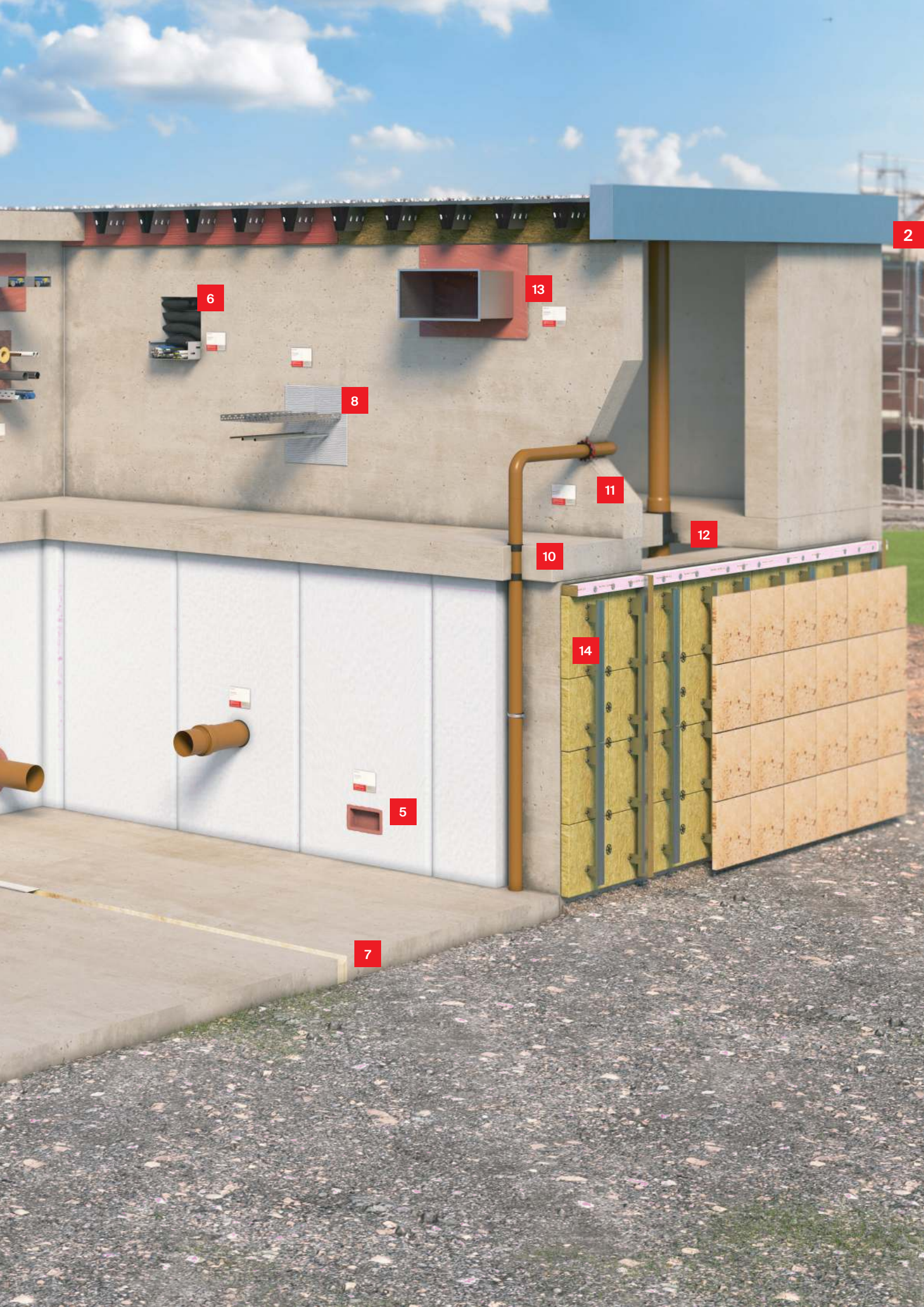
2

FireStop Assortment

Intumescent Acoustic Mastic FiAM	18	
Intumescent Acoustic Mastic FiAM US	21	
Fire Rated Silicone Sealant FFRS	23	
Rapid Fire Seal RFS 640	26	
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Universal FireStopping Sealant UFS	31	
Intumescent Graphite Mastic FiGM	34	
Foam Barrier System PLUS	37	
Intumescent Pipe Wraps FiPW	40	
Intumescent Wrap Strip FiWS	42	

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Intumescent Putty Pad FiPP	51	
Coated Panel System FCPS	53	
FireStop Compound FFSC	55	
VentiStop Cavity Barrier - FFB-VS	57	
Cavity FireStop Clad FCFcl	60	
FireStop Foam	62	
Thermal Defense Wrap TDW	64	


2
9
15
1
2
16
4
3


2
6
13
8
11
12
10
14
5
7

FireStop Applications.

1



FCPS/FPC/FiAM/FFC

2



RFS 640/FFB-ES

3



FireStop Foam

5



FiPP/UFS 310/FiGM

6



FiP

7



FiAM (US)/FFRS/FFB-ES/RFS 640/FireStop Foam

9



RFS 640/UFS 310/FiGM/FCPS

10



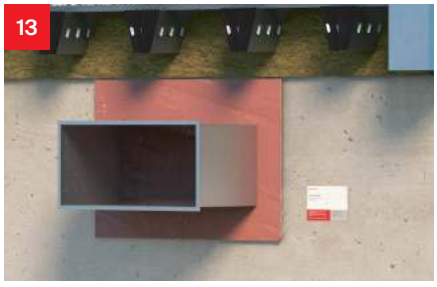
FiWS/FiPW/FFSC/FiAM

11



FiWS/FFC

13



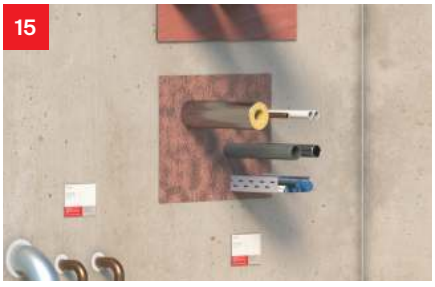
RFS 640/UFS 310/FiGM/FCPS

14

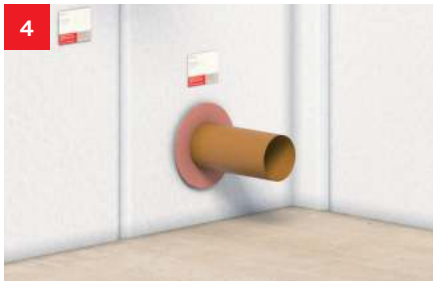


FFB VS/FCFcL

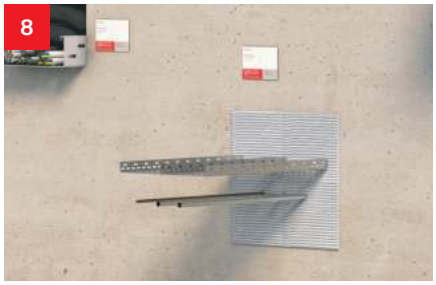
15



FBS/FBB



UFS 310/FiAM (US)/FiGM



FFSC/FCPS



FCID



FCPS/FiAM/TDW

FiAM (US) Intumescent Acoustic Mastic	18,21
FFRS Fire Rated Silicone Sealant	23
RFS 640 Rapid Fire Seal	26
FFB-ES Fire | Barr ElastoSeal	29
UFS Universal FireStopping Sealant	31
FiGM Intumescent Graphite Mastic	34
FBS/FBB Foam Barrier System PLUS	37
FiPW Intumescent Pipe Wrap	40
FiWS Intumescent Wrap Strip	42
FFC Fire Collar	45
FCID Plus Cast in Device	47
FiP Intumescent Pillows	49
FiPP Intumescent Putty Pad	51
FCPS Coated Panel System	53
FFSC FireStop Compound	55
FFB-VS VentiStop Cavity Barrier	57
FCFcl Cavity FireStop Clad	60
FireStop Foam	62
TDW Thermal Defense Wrap	64

Intumescent Acoustic Mastic FiAM

Flexible fire resistant acoustic mastic





Construction joint application



Non combustible pipe application

Applications

- Metallic pipes: 13“ (325 mm)
- Cable trays: 18“ x 2“ (450 x 50 mm)
- Cable bunches: 4“ (100 mm)
- Linear joints: flexible and rigid construction elements
- Joints between FCPS coated panel system

Advantages

- Water based
- Low VOC
- Movement capability ± 25 %
- Excellent acoustic properties
- Approved for infinite linear gap length
- Halogen and solvent free
- Paintable and excellent slump characteristics

Certificates

ETA-20/1065
ETA-20/1064

EU

EN ISO 10140
EN 1026
EN 1366-3
EN 1366-4
ASTM E 84 (UL 723)
ASTM E 1966 (UL 2079)

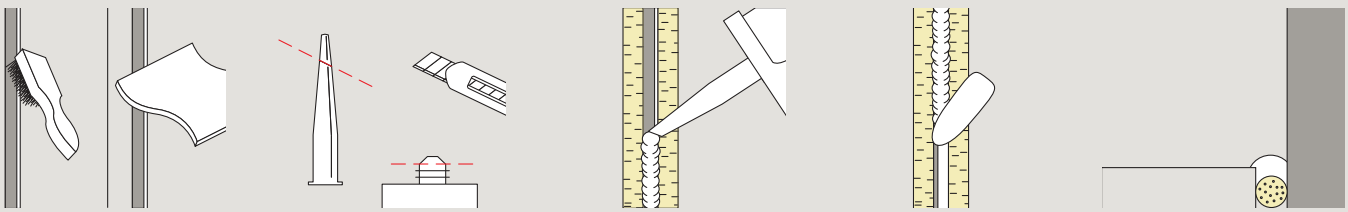
Building materials

- Flexible wall constructions
- Rigid floor and wall constructions
- Masonry
- Concrete
- Timber
- Steel
- FCPS System

Functioning

- FiAM is a one-part water-based acrylic emulsion.
- It has a fire resistance of up to 5 hours when used in construction joints and services in both vertical and horizontal applications.
- When exposed to fire, it reacts to form a highly insulative char that slows down heat transfer and provides a barrier to fire.
- It is suitably compatible in a variety of materials, and is utilised within the FCPS which is designed to seal large openings in fire rated floors and walls.

Installation FiAM



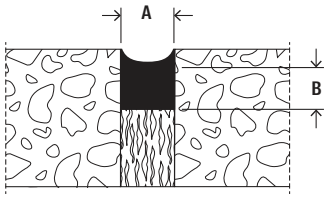
Intumescent Acoustic Mastic FiAM

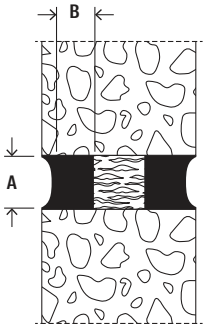
Item	Item no.	Approval ETA	Languages on the cartridge	Contents [ml]	Adapted for	Sales unit [pcs]
FiAM 310	**053011**	●	DE, FR, EN, IT	310	–	1
FiAM 310	**538152**	●	DK, FI, SE, NO	310	–	1
FiAM 310	**538150**	●	TR, PT, ES, NL	310	–	1
FiAM 310	**538151**	●	PL, SK, CZ, HU	310	–	1
FiAM 600	**056006**	●	–	600	–	1
KPM 2 Plus	**053117**	–	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1
Applicator gun 600 ml	**097967**	–	–	–	FIAM 600 ml	1

Technical data

Base material	Water-based acrylic
Relative gravity	approx. 1.6 g/cm³
Skin-forming time	approx. 10 min at 23 °C RH
Curing rate	approx. 1.5 mm per 24 hours
Storage temperature	+ 5 °C to + 25 °C
Movement capability	±25 %
Shelf life	18 month
pH Value	8 - 9.5
Accoustic performance	63 dB
Yield per l/m	depending on application
Colour	white (grey on request)
European Technical Assessment	ETA-20/1064, ETA-20/1065
CE marking	2531-CPR-CX010321
Surface burning Charachteristics	FSI 25 SDI B0

*Curing rate is dependent on substrate, air humidity and weather conditions.





Application data

Joint width A [mm]	Joint depth B [mm]	ml per linear metres*
60	5	300
50	5	250
30	5	150
15	5	75
5	5	25

*The consumption of the product depends on the application.

Substrate	Max. joint width [mm]	Fire ratings	
		Integrity rating [min]	Insulation rating [min]
Concrete/masonry	60	240	240
Concrete or masonry/steel	60	240	60
Concrete or masonry/timber	60	60	60
Concrete/masonry/head detail	60	240	240

For detailed information please refer to listed system.

2

Service type size		Fire ratings	
		Integrity rating [min]	Insulation rating [min]
Copper/steel/metal pipes	35 - 159 mm diameter	up to 240	up to 240
Loaded cable try	450 x 50 (tray) cables to 21 mm	up to 120	up to 90
Single/bunched cables	21 - 100 mm diameter cables	up to 120	up to 120

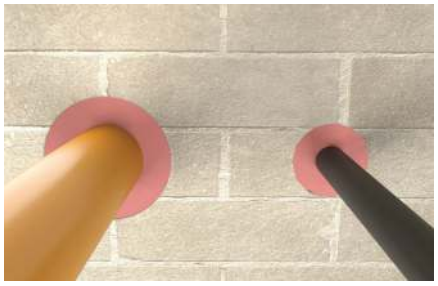
Intumescent Acoustic Mastic FiAM US

General purpose fire resistant sealant designed for UL specific applications





Construction joint application



Non combustible pipe application

Applications

- Linear joints: flexible and rigid construction elements with dynamic movement
- Metallic pipes and ducts
- Insulated metallic pipes
- Conduits
- Cable and cable bunches
- Cable trays / Bustams
- Non-metalic pipes

Advantages

- Water based
- Excellent acoustic properties
- Low VOC
- Halogen and solvent free
- Various applications with two products only
- Age resistant
- Smoke resistant
- Excellent adhesion
- F-rating up to 3 hrs
- T-rating up to 3 hrs

Certificates

CLASSIFIED C UL US

FBC SYSTEM COMPATIBLE

ASTM E 84 (UL 723)
ASTM E 814 (UL 1479)
ASTM E 1966 (UL 2079)

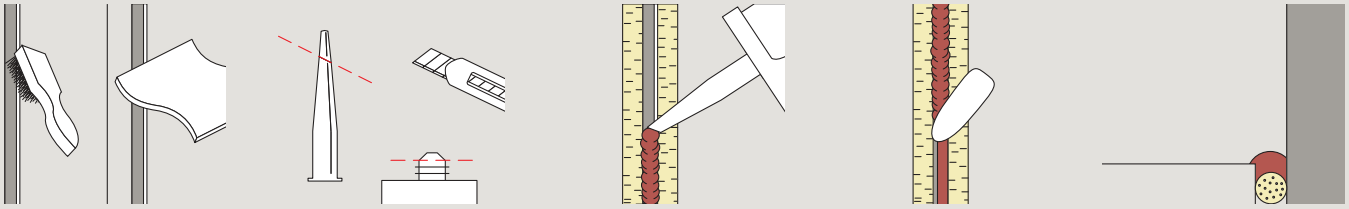
Building materials

- Flexible wall constructions
- Rigid floor and wall constructions
- Masonry
- Concrete
- Steel

Functioning

- The FiAM US is a one-part water based fire resistant sealant designed for a wide range of UL listed applications.
- The FiAM US can be used in construction joint and service penetration applications.
- The FiAM US can be used in both vertical and horizontal orientation and can be used in conjunction with the FiWS for a wide range of combustible services.

Installation FiAM US



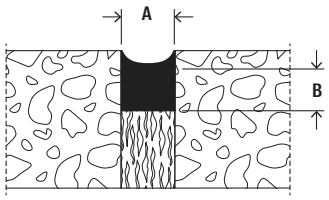
Technical data

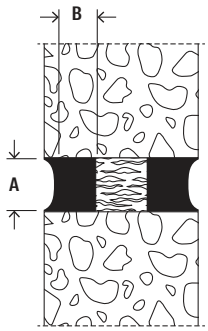
Item	Item no.	Languages on the cartridge	Contents [ml]	Adapted for	Sales unit [pcs]
FiAM US	**546487**	DE, EN, ES, TR	310	–	12
FiAM US 19 liter bucket	**554934**	–	–	–	12
KPM 2 Plus	**053117**	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1

2

Technical data

Base material	Water-based elastomeric
Skin-forming time	approx. 20 - 30 min
Curing rate	3 to 4 weeks at 25 °C
Storage temperature	+ 2 °C to + 49 °C
Movement capability	up to 33 %
Shelf life	up to 36 month
pH Value	7 - 8
Accoustic performance	65 dB (ASTM E90)
Surface burning characteristics	Flame spread: 10 - (ASTM E84)
Colour	red





Application data

Joint width A [mm]	Joint depth B [mm]	ml per linear metres*
1“ (25 mm)	5/8“ (16 mm)	400
1“ (25 mm)	1/2“ (13 mm)	325
2“ (50 mm)	1/4“ (6 mm)	300
3-1/2“ (90 mm)	1/4“ (6 mm)	540
3/4“ (20 mm)	5/8“ (16 mm)	320

*The consumption of the product depends on the application.

Fire Rated Silicone Sealant FFRS

Elastomeric fire resistant sealant





Construction joint application



Vertical construction joint application

Applications

- General construction joints in floor to floor, wall to wall, floor to wall and head of wall up to 2.36“ (60 mm)
- Internal and external applications

Advantages

- Excellent acoustic properties
- Primerless adhesion to most substrates
- Approved for infinite linear gap length
- Halogen and solvent free
- Excellent slump characteristics
- Movement capability ± 7.5 %

Certificates

CE

EN ISO 10140
EN 1026
EN 1366-4

ETA-20/1102

UL EU

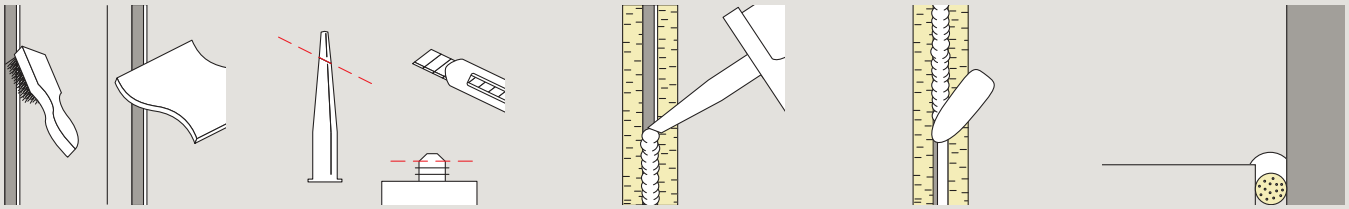
Building materials

- Concrete
- Masonry
- Steel
- Timber

Functioning

- FFRS is a one part silicone based sealant that can provide up to 5 hours fire resistance when used in construction joints.
- It provides primerless adhesion to a wide range of porous and non-porous substrates.

Installation FFRS



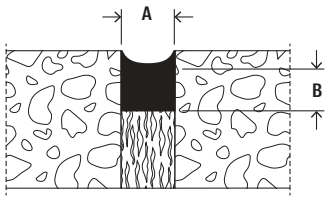
Technical data

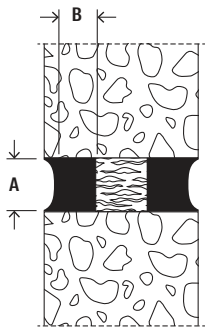
Item	Item no.	Approval ETA	Languages on the cartridge	Contents [ml]	Adapted for	Sales unit [pcs]
FFRS White 310 ml	**512374**	●	DE, FR, EN, IT	310	–	1
FFRS White 310 ml	**538140**	●	DK, FI, SE, NO	310	–	1
FFRS White 310 ml	**538138**	●	TR, PT, ES, NL	310	–	1
FFRS White 310 ml	**538139**	●	PL, SK, CZ, HU	310	–	1
KPM 2 Plus	**053117**	–	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1

Technical data

Curing system	Alcoxy
Relative gravity	1.17 kg/m^3
Skin-forming time	approx. 5 - 10 min (at 25 °C and 50% relative humidity)
Tack free after	approx. 20 min
Curing rate	approx. 2 to 3 mm per 24 hours (at 25 °C and 50 % relative humidity)
Shore A hardness	25
Extrudability	55 (standard MNRPS 495A 3 mm/3 bars)
Movement capability	±7.5 %
Shelf life	up to 12 month
European Technical Assessment	ETA-20/1102
Colour	white (grey and black on request)
Elastic recovery	> 90 %
Accoustic performance	38 dB

The cured sealant is unaffected by water, dilute acids and alkalis, soap and household detergents. Certain solvents may soften and swell the cured rubber on prolonged contact.





Application data

Joint width A [mm]	Joint depth B [mm]	ml per linear metres*
60	5	300
50	5	250
30	5	150
15	5	75
5	5	25

*The consumption of the product depends on the application.

Substrate	Max. joint width [mm]	Depth of sealing [mm]	Fire ratings	
			Integrity rating [min]	Insulation rating [min]
Masonry/masonry	60	5	240	60
Masonry/masonry	12	6	240	120
Masonry/masonry	60	30	240	90
Masonry/masonry	60	5	240	240
Masonry/masonry	50	25	240	240
Masonry/plasterboard	25	20	120	120
Steel/masonry	60	5	240	60
Wood/masonry	60	5	180	180

For detailed information please refer to listed system.

Rapid Fire Seal RFS 640

Rapid fire resistant sealant





Curtain wall application



Head of wall application

Applications

- Curtain wall/slab edge: 8“ (200 mm)
- Head of wall: 4“ (100 mm)
- General construction joints: 8“ (200 mm)
- Cable tray: 24“ x 4“ (600 mm x 100 mm)
- Steel pipes: 8“ (200 mm)
- Ducts

Advantages

- Water based
- Flexible set
- Contains mould growth inhibitor
- Freeze - thaw capabilities
- Paintable
- Accelerated age and humidity tested
- Low VOC
- Spray or brush applied
- Excellent smoke seal
- Water resistant
- Asbestos and solvent free
- Can be used for internal applications and for conditions where dynamic movement may occur.

Certificates

ASTM E 84 (UL 723)
ASTM E 814 (UL 1479)
ASTM E 1966 (UL 2079)
ASTM E 2307

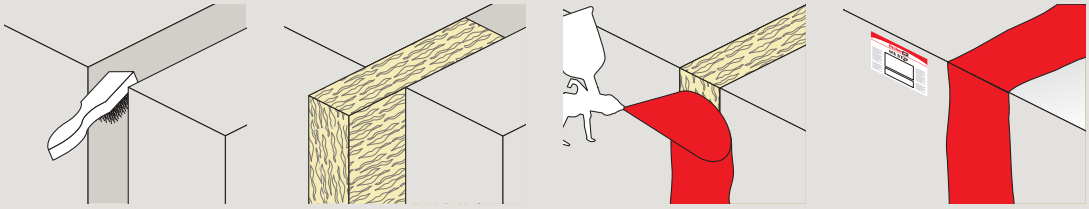
Building materials

- Flexible wall constructions
- Rigid floor and wall constructions
- Flexible wall
- Masonry
- Concrete

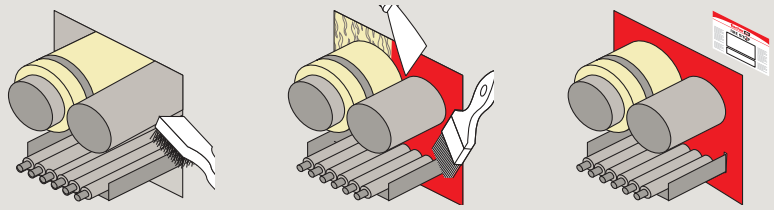
Functioning

- RFS 640 is a spray grade one-part water-based, fire rated sealant, which has been designed to provide smoke and fire protection on construction joints and service penetrations in both vertical and horizontal applications.
- Provides up to 3 hours fire rating (also in accordance with ASTM E 2307).
- Meeting the new requirements of ASTM E 1399, RFS 640 has been cycled tested up to 500 times.
- Can be used for internal applications and for conditions where dynamic movement may occur.
- RFS 640 has also been tested at positive pressure with a minimum 0.01in. (2.5 mPa) water i.a.w UL 2079 test standards.

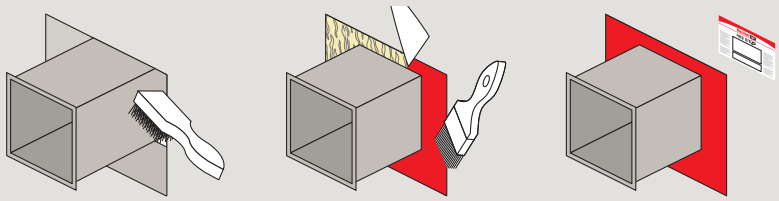
Installation RFS 640 - Joint application



Installation RFS 640 - Penetration application



Installation RFS 640 - Air duct application



Technical data

	Item no.	Contents [l]	Colour	Sales unit [pcs]
Item				
RFS 640	**516539**	19	red	1

Technical data

Base material	Water-based
Density	approx. 1.25 g/cm³
Skin-forming time	approx. 30 - 45 min
Curing time	approx. 5 - 7 days
Storage temperature	+ 2 °C to + 49 °C
Movement capability	up to 50 %
Water resistant	depending on individual system
Shelf life	36 months month
pH Value	7 - 8
Accoustic performance	65 dB
Surface burning characteristics	Flame spread: 0 - Smoke: 0

Skin-forming and curing time is dependant on substrate, air humidity and weather conditions.
Movement capability depends on UL listed system and configuration.
Water resistant in accordance with UL 2079.

Application data

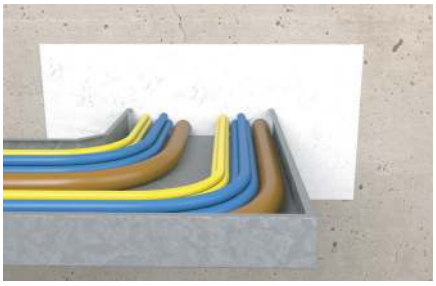
Joint width [inch]	Joint width [mm]	Ft/gallon	Ft/pail	LM/gallon [mm]	LM/pail
0.25	6	198	1,325	89	404
0.50	13	164	1,099	74	335
0.75	19	141	941	63	287
1.00	25	124	830	56	253
1.25	32	109	731	49	223
2.00	51	82	548	37	167
4.00	102	49	328	22	100
6.00	152	35	233	16	71
8.00	203	27	180	12	55

The above table provides an approx. yield for a coverage of 1/16“ (1.5 mm) Wet Film Thickness (WFT) with a 1/2“ (12.5 mm) overlap. Application shall be as per listed system.

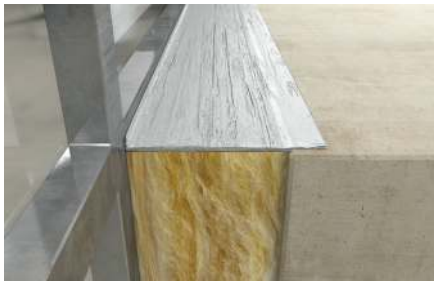
Fire I Barr ElastoSeal FFB-ES

Elastomeric fire resistant coating for construction joint and assemblies





Elecrtical application



Curtain wall application

Applications

- Linear joints in construction elements up to 20“ (500 mm) wide
- Floor to floor
- Wall to wall
- Head of wall
- Bottom of wall
- Curtain wall
- Cabel / cabel trays
- Metallic pipes

Advantages

- Openings up to 20“ (500 mm) wide
- Movement capabilities of 25 %
- Working temperature between -10 °C and 95 °C
- Can be spray or brush applied
- Air permability
- Acoustic performance
- 80 kg/m³ stone wool base
- 2.5 mm WFT required

Certificates

ETA-20/1103
ETA-20/1101
EN ISO 10140
EN 1026
EN 1027
EN 1364-4
EN 1366-3
EN 1366-4

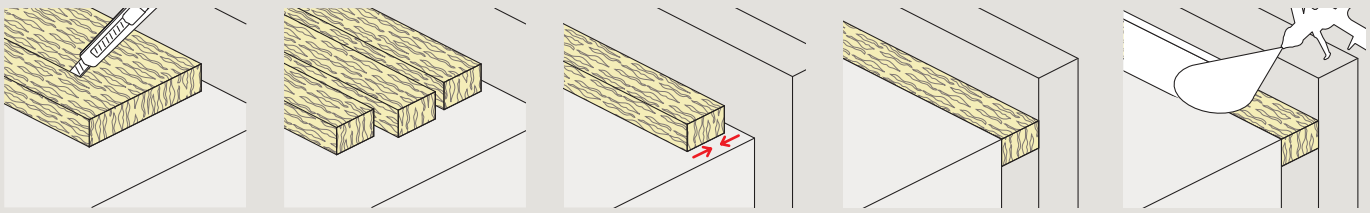
Building materials

- Flexible wall constructions
- Rigid floor and wall constructions
- Concrete
- Masonry

Functioning

- FFB-ES is a one-part water-based acrylic coating, which has been designed to provide smoke and fire protection on construction joints in both vertical and horizontal applications.
- Developed for use on 80 kg/m³ stone wool base.
- Once applied, it prevents the passage of fire and smoke and can contribute to the acoustic value of a structure between fire rated compartments giving a fire resistance for up to EI 240.

Installation FFB-ES



Technical data

Item	Item no.	Approval ETA	Content [kg]	Sales unit [pcs]
FFB-ES/White	**520753**	●	20	1
FFB-ES/Grey	**520755**	●	20	1
FFB-ES/Red	**520756**	●	20	1

2

Technical data

Description	Water-based, flexible acrylic coating
Density	1.25 - 1.3 g/cm^3
Coating thickness	2.5 mm nominal, wet film thickness
Sealant coverage	2.8 kg/m^2, 2.24 l/m^2
Fire resistance	EN1366-4:2006 120 EI
Air permeability	600 PA positive and negative pressure and tested to EN1026
Water permeability	450 PA positive pressure and tested to EN1027
Storage temperature	- 5 °C to +25 °C
Colour	White/Red/Gray
Shelf life	from date of manufacture 18 month
European Technical Assessment	ETA-20/1101, ETA-20/1103
CE marking	2531-CPR-CX010324

Application data

Joint width [inch]	Joint width [mm]	Ft/gallon	Ft/pail	LM/gallon [mm]	LM/pail
0.25	6	119	800	54	244
0.50	13	99	683	44	202
0.75	19	85	567	38	173
1.00	25	73	492	33	150
1.25	32	66	443	30	135
2.00	51	49	328	22	100
4.00	102	31	207	14	63
6.00	152	22	148	10	45
8.00	203	16	108	7	33

The above table provides an approx. yield for a coverage of 2.5 mm Wet Film Thickness (WFT) with a 12.5 mm overlap. Application shall be as per listed system.

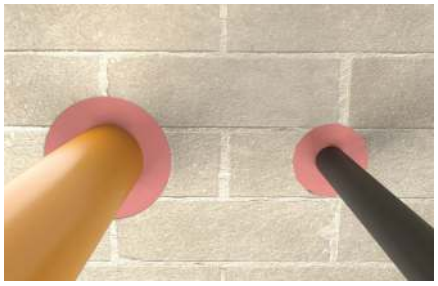
Universal FireStopping Sealant UFS

Universal firestopping sealant which is suitable for metallic, non-metallic services and construction joints





Electrical application



Combustible and non combustible pipes application

Applications

- Metallic services: steel and cast iron 20“ (500 mm) - copper 6“ (150 mm)
- Non metallic service: PVC 2“ (51 mm open) 3“ (75 mm closed)
- Insulated service: 20“ (500 mm)
- Construction joints: 4“ (100 mm)
- HVAC 100“ (2500 mm)
- Cable bunches 4“ (100 mm): busway 27“ (686)

Advantages

- Water based
- Flexible set
- Contains mould growth inhibitor
- Freeze - thaw capabilities
- Paintable
- Accelerated age and humidity tested
- Low VOC
- Excellent acoustic properties

Certificates

CLASSIFIED C UL US

FBC SYSTEM COMPATIBLE

FM APPROVED

ASTM E 84 (UL 723)
ASTM E 814 (UL 1479)
ASTM E 1966 (UL 2079)

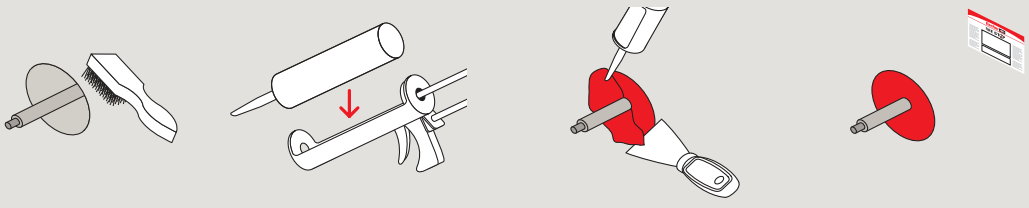
Building materials

- Wall constructions - linear joints
- Floor constructions - linear joints
- Flexible wall
- Masonry
- Concrete

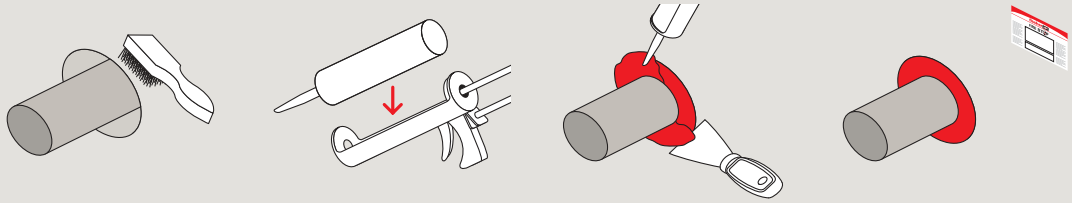
Functioning

- UFS is a one-part water-based intumescent sealant which is used for sealing construction joints and service penetration in both vertical and horizontal applications.
- Up to 4 hours of fire rating can be provided.
- It exhibits excellent slump characteristics, is easy to apply and cures to a flexible set. It is suitable for internal applications and conditions where dynamic movement may occur.
- UFS can be used for most application properties.

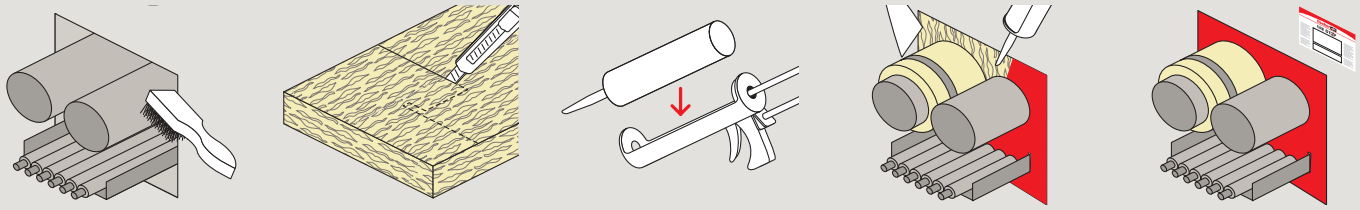
Installation UFS - Cabel application



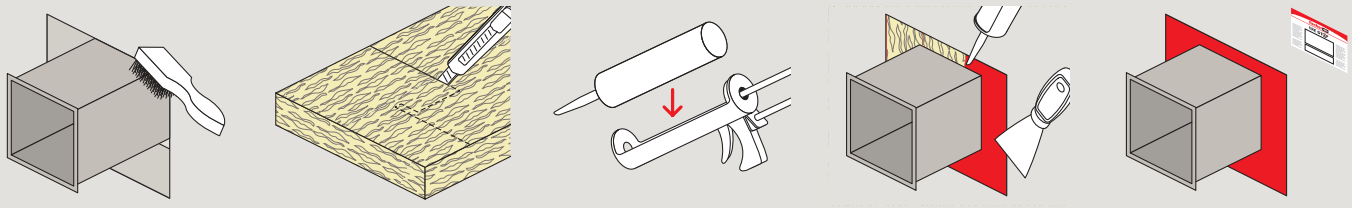
Installation UFS - Pipe application



Installation UFS - Penetration application



Installation UFS - Air duct application



Technical data

	Item no.	Languages on the cartridge	Contents [ml]	Contents [l]	Adapted for	Sales unit [pcs]
Item						
UFS 310	**516538**[1)]	DE, FR, EN, NL	310	–	–	12
UFS 19 liter bucket	**533889**	–	–	19	–	1
KPM 2 Plus	**053117**	–	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1

[1)] Curing rate is dependant on substrate, air humidity and weather conditions.Movement capability depends on UL listed system and configuration.

Technical data

Base material	Water-based elastomeric
Density	approx. 1.31 g/cm^3
Skin-forming time	approx. 20 - 30 min
Curing rate	approx. 4 mm in 72 hours
Storage temperature	+ 2 °C to + 49 °C
Movement capability	up to 30 %
Intumescent activation	190 °C to 593 °C °C
Shelf life	up to 36 month
pH Value	6.5 - 7
Surface burning characteristics	Flame spread: 0 - Smoke: 0
Colour	red

*Curing rate is dependant on substrate, air humidity and weather conditions.
Movement capability depends on UL listed system and configuration.

Application data

Services		Fire ratings (minutes)	
Types	**Sizes**	**Integrated rating**	**Insulation rating**
PVC/CPVC closed pipe systems	3" (75 mm)	120	120
PVC/CPVC open pipe systems	2" (50 mm)	120	120
Steel and cast iron pipes	20" (508 mm)	180	0
Copper pipes	6" (152 mm)	180	0
Insulated services	20" (508 mm)	120	120
Construction joints	4" (100 mm)	120	120
HVAC	100" (2,500 mm)	120	120
Cable bunches	4" (100 mm)	120	120
Cable tray/ladder	24" (600 mm)	120	45
Bus tar	27" (686 mm)	120	45

For detailed information please refer to listed system.

Intumescent Graphite Mastic FiGM

High performance intumescent graphite fire resistant mastic

2





Electrical application



Application of metallic pipes

Applications

- Metallic pipes: 6“ (159 mm)
- Non-metallic pipes: 5“ (125 mm)
- Cable bunches: 1“ (21 mm)
- Insulated service: 6“ (159 mm)
- Construction joints: 1“ (25 mm)
- Mixed services

Advantages

- Low VOC
- Excellent acoustic properties
- Halogen and solvent free
- Excellent slump characteristics

Certificates

ETA-20/1105

EN ISO 10140
EN 1026
EN 1366-3

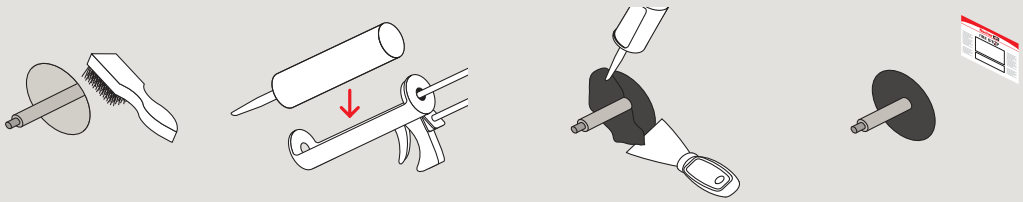
Building materials

- Concrete
- Masonry
- Steel
- Timber
- Dry wall

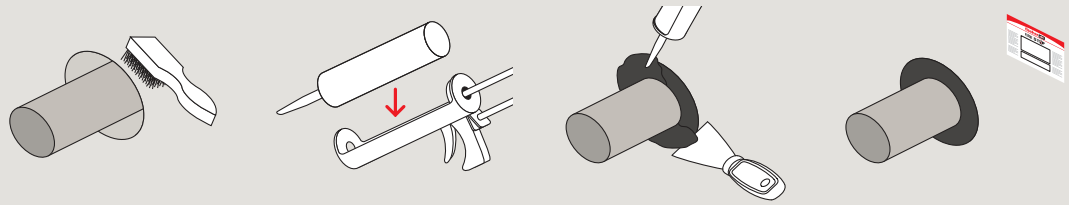
Functioning

- FiGM is a one-part water-based flexible acrylic emulsion containing a high pressure intumescent graphite, which is used to seal service penetrations in both vertical and horizontal applications.
- It can expand up to 20 times its own volume and cures to form a resilient, flexible fire seal.

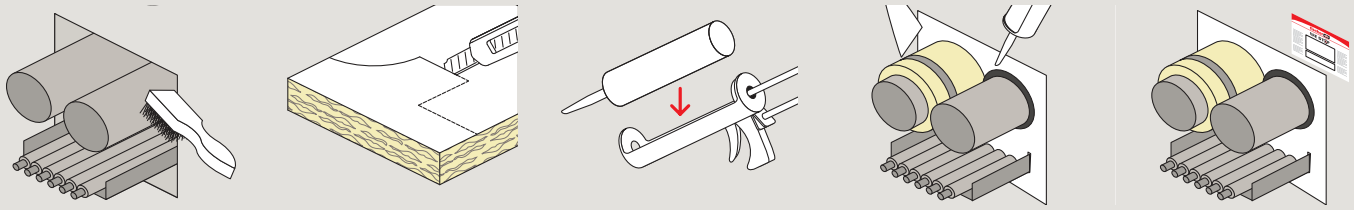
Installation FiGM - Cabel application



Installation FIGM - Pipe application



Installation FIGM - Penetration application



Technical data

Item	Item no.	Approval ETA	Languages on the cartridge	Contents [ml]	Adapted for	Sales unit [pcs]
FiGM 310 ml	**508765**	●	DE, FR, EN, IT	310	–	1
FIGM 310 ml	**538147**	●	TR, PT, ES, NL	310	–	1
FiGM 310 ml	**538148**	●	PL, SK, CZ, HU	310	–	1
FiGM 310 ml	**538149**	●	DK, FI, SE, NO	310	–	1
FiGM 600 ml	**558176**	–	–	600	–	12
KPM 2 Plus	**053117**	–	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1

Technical data

Base material	Aqueous thixotropic paste
Density	approx. 1.3 g/cm³
Curing rate	1.7 mm per 24 hours dependent on conditions
Storage temperature	+ 5 °C to + 30 °C
Tack free after	30 min
Curing system	Water-based
Expansion	up to 20 times
Skin-forming time	15 min (at 25 °C and 50% relative humidity)
Accoustic performance	64 dB
Shelf life	up to 18 month
European Technical Assessment	ETA-20/1105
CE marking	2531-CPR-CX010327
Colour	black

Application data

Services		Fire ratings (minutes)	
Types	**Sizes**	**Integrated rating**	**Insulation rating**
PVC pipe	Up to 125 mm diameter	120	120
HDPE pipe	Up to 90 mm diameter	120	120
ABS pipe	Up to 90 mm diameter	120	120
Insulated copper pipe	Up to 159 mm diameter + up to 32 mm insulation	120	120
Cables	Up to 21 mm diameter x bunches 10 max.	120	120
Mixed	Up to 63 mm diameter HDPE + 21 mm diameter cables x 10	120	120

For detailed information please refer to listed system.

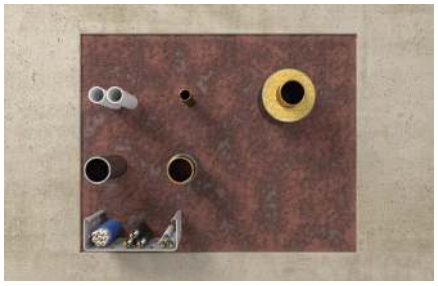
Foam Barrier System PLUS

FireStop Foam and FireStop Block for use in a System. Or individually. ETA approved and UL listed applications.





Electrical application



Mixed penetration application

Applications

- Metallic pipes up to 8“ (203 mm)
- Insulated metallic pipes
- Conduits
- Cable and cable bunches
- Cable trays
- Mixed multiple penetrations

Advantages

- Easy access for difficult to reach openings
- Low VOC
- Various applications with two products only
- Age resistant
- Smoke resistant
- Resistant to damp
- Re-enterable and repairable
- Excellent adhesion
- No backing material required
- F-rating / E-Integrity rating up to 2 hours
- T-rating / EI-Insulation rating up to 2 hours

Certificates

ETA-17/0845

EN 1366-3
ASTM E 84 (UL 723)
ASTM E 814 (UL 1479)
EN 13501-1

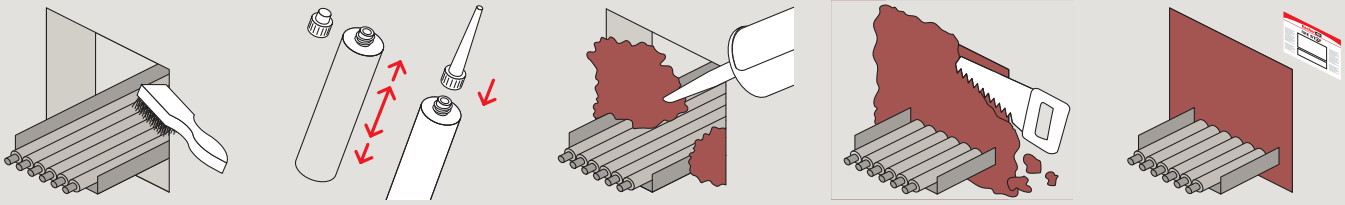
Building materials

- Concrete (wall and floors)
- Masonry
- Flexible wall

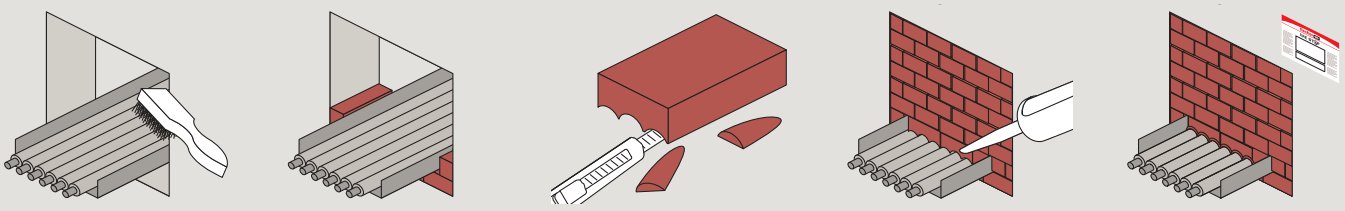
Functioning

- FBS is a two component polyurethane expanding sound, smoke and firestopping seal for hard to reach locations which expands to up to 5 times of its volume.
- FBB are highly elastic mouldable blocks.
- FIB is a glass fiber reinforced intumescent wrap to enhance the insulation value of ETA applications.
- Tested in accordance with ASTM E 814 (UL 1479), ASTM E84 (UL 723) as well as EN 1366-3, EN 13501 the Barrier System PLUS allows an easy application which saves time and costs on site.

Installation FBS



Installation FBB



Technical data

Item	Item no.	Approval ETA	Languages on the cartridge	Contents [ml]	Dimensions [mm]	Sales unit [pcs]
FBS-UL	**544079**	–	–	380	–	6
FBB-UL FireStop Block	**544083**	–	–	–	200 x 130 x 60	12
FBS-EN	**544084**	●	DE, FR, EN, IT	380	–	6
FBS-EN	**544085**	●	DK, FI, SE, NO	380	–	1
FBS-EN	**544086**	●	PL, SK, CZ, HU	380	–	1
FBS-EN	**544087**	●	TR, PT, ES, NL	380	–	1
FBB-EN FireStop Block	**544088**	●	–	–	200 x 144 x 60	4
FIB Insulating Bandage	**544089**	–	–	–	5000 x 150	1
FFBD Foam Barrier Dispenser	**544090**	–	–	–	–	1

Technical data FBS-UL

Temperature resistance	≤ 80 °C
Yield	≤ 1.9 l
Curing time	approx. 90 s
Shelf life	12 month
Storage temperature	+ 5 °C to + 30 °C
Colour	reddish brown

Technical data FBS-EN

Density	≥ 215 kg/m³
Temperature resistance	≤ 80 °C
Construction material class	B2 as per DIN 4102
Yield	≤ 2.1 l
Curing time	approx. 90 s
Shelf life	12 month
Storage temperature	+ 5 °C to + 30 °C
Accoustic performance	43.5 - 66 dB
Colour	reddish brown

Technical data FBB-EN

Temperature resistance	≤ 80 °C
Construction material class	B2 as per DIN 4102
Accoustic performance	45.5 - 68
Colour	reddish brown

Technical data FBB-UL

Temperature resistance	≤ 80 °C
Colour	reddish brown

Application data - UL

	Blank opening	Metallic pipes and conduits	Cables/Cable trays	Insulated metall pipes	Mixed penetrations
Max. possible sizes of penetrations	Max 32 x 32 inch (813 x 813 mm)	Max 8 inch (203 mm) diameter	Max 24 inch (610 mm) wide by max. 6 inch (152 mm) deep cable tray	Max 8 inch (203 mm) diameter with 1 inch (25 mm) insulation	see listed system
Barrier System PLUS UL	C-AJ-0158, W-L-0052	C-AJ-1669	C-AJ-3341, C-AJ-4110, W-L-4091	C-AJ-5383	C-AJ-8260, C-AJ-8261

Application data - ETA

		Seal thickness 144 mm	Seal thickness 200 mm
Cable / Cable Trays and Ladders	Sheated electrical cables up t o 80 mm	Wall: E120/EI60 - Floor: EI60	Wall/Floor: E120/EI90
	Tied cable bundles up t o 100mm	Wall: E120/EI60 - Floor: EI60	Wall/Floor: E120/EI90
	Non-sheated electrical cables	Wall: E120/EI45 - Floor: E60/EI30	Wall/Floor: E120/EI60
Condiuts	Conduits/pipes of plas tic up to a max. diameter of 40 mm	Wall: E120/EI60 - Floor: E60/EI30	Wall/Floor: EI120
Pipes	Insulated metal pipes with max. diameter of 54 mm	Wall: E120/EI90 - Floor: EI60	Wall/Floor: E120/EI90
	Non-insulated metal pipes with max. diameter of 28 mm	Wall: E120/EI60 - Floor: EI60	Wall/Floor: E120/EI90
	Insulated metal pipes with AF/Armaflex insulation up to 88.9 mm diameter	Wall: E120/EI90 - Floor: EI60	Wall/Floor: EI120
	Combustible pipes with max. 50 mm diameter	Wall: EI120 - Floor: EI60	Wall/Floor: EI120

For detailled information please refer to ETA 17/0845. Remaining space around penetrants can be filled with FBB FireStop Block.

Intumescent Pipe Wraps FiPW

An intumescent single or endless wrap for sealing flammable pipes





Combustible pipes floor application



Combustible pipe wall application

Applications

- Non-metallic pipes
- Polyvinyl Chloride PVC
- Chlorinated Polyvinyl Chloride cPVC
- Medium-density Polyethylene MDPE
- High-density Polyethylene HDPE
- Acrylonitrile Butadiene ABS

Advantages

- Efficient and effective for sealing of pipe openings in floors and walls
- Easy to fit
- Moisture resistant
- No mechanical fixing required
- Economical solution
- Up to 2 hours fire resistance
- Asbestos and halogen free
- Available on a roll for more flexibility in pipe diameters

Certificates

ETA-21/1061

BS 476-20
EN 1366-3

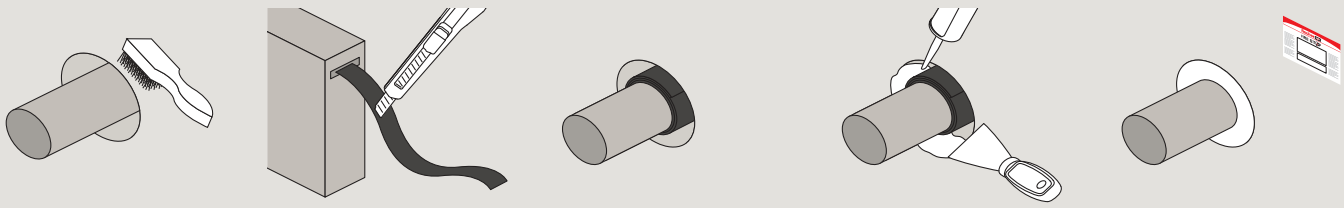
Building materials

Test Building Materials Print

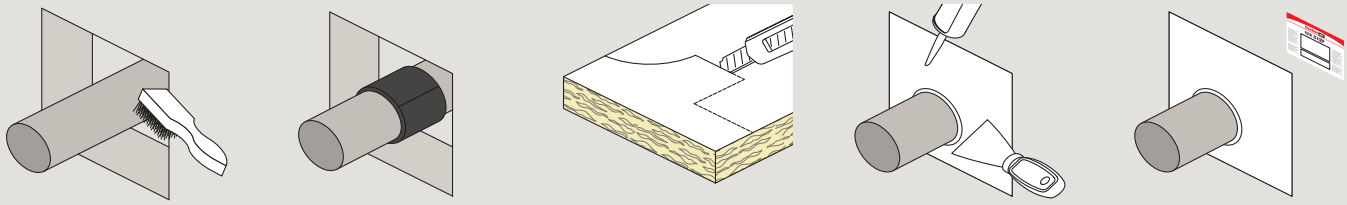
Functioning

- FiPW is a flexible composite strip, which is composed of thermoplastic component containing intumescent graphite in a synthetic compound and enclosed in an outer polyethylene cover.
- Can also be used as a cast-in solution. For large openings, use in conjunction with FCPS or FFSC.

Installation FiPW



Installation FiPW with FCPS

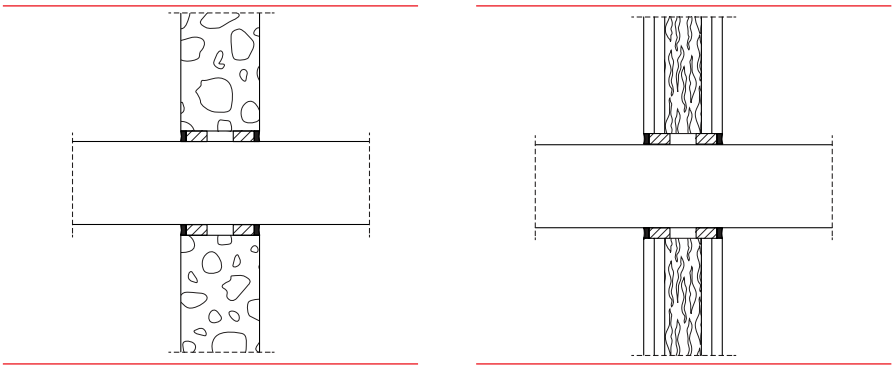


Technical data

	Item no.	Approval ETA	Fits pipe-Ø [mm]	Fire rating [hours]	Sales unit [pcs]
Item					
FiPW E / 2 mm (25 meter roll)	**539608**	●	30 - 250	up to 2	1

Technical data

State	solid
Colour	black inner component in outer foil carrier
Odour	odourless
Density	1.3 kg/m³
Expansion ratio	1 : 25
Significant expansion occurs at temperature	> 180 °C
Storage temperature	+ 5 °C to + 35 °C
Thickness	2 mm
European Technical Assessment	ETA-21/1061
CE marking	2531-CPR-CX010326



Application data

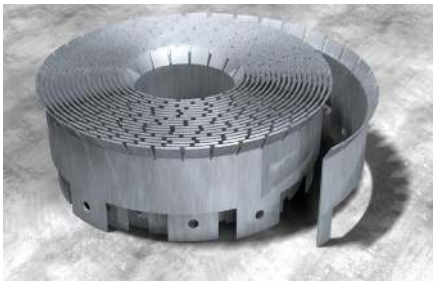
Configuration for up to 120 min. Outer pipe diameter [mm]	No. wraps	Thickness	Length per stacks [mm]
40	1	2	138
55	2	4	383
63	2	4	434
75	2	4	509
82	2	4	553
90	3	6	923
110	3	6	1112
125	4	8	1696
160	4	8	2136
200	5	10	3331
250	7	14	5846

Intumescent Wrap Strip FiWS

Universal intumescent wrap strip for sealing combustible services

2





Universal Collar 2



Combustible pipe application

Applications

- Non-metallic service: PVC 14“ (355 mm), cPVC 8“ (203 mm), ABS 6“ (152 mm), FRPP 4“ (102 mm)
- Insulated service: Steel 10“ (254 mm), Iron 10“ (254 mm), Copper 4“ (102 mm), Glass fibre 3“ (75 mm), AB/PVC flexible foam 1“ (25 mm)
- Cable bunches: 3“ (76 mm)

Advantages

- Efficient and effective for sealing of pipe openings in floors and walls
- Easy to fit
- Moisture resistant
- Freeze-thaw characteristics
- No mechanical fixing required
- Economical solution
- Up to 4 hours fire resistance
- Asbestos and halogen free

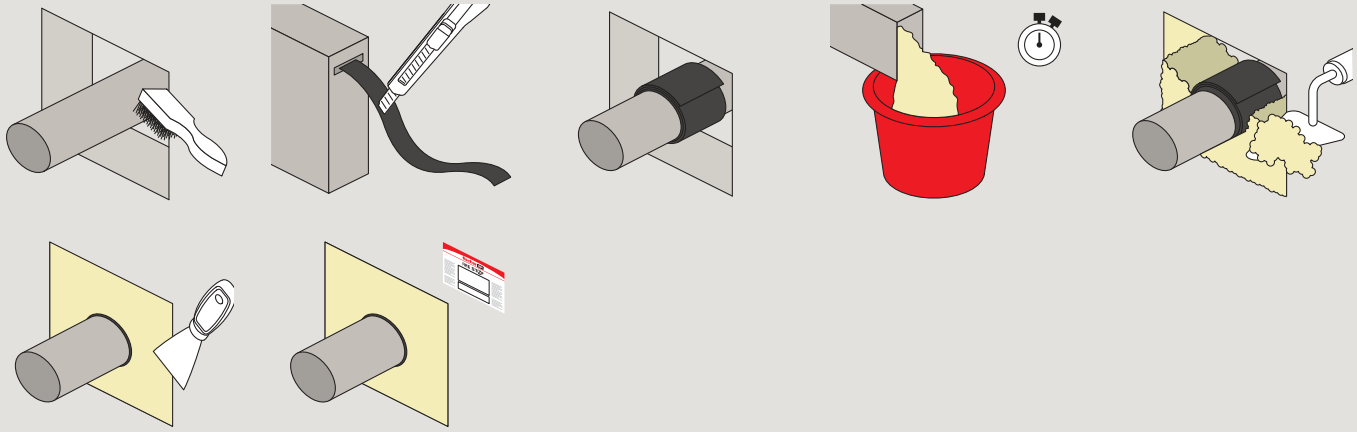
Certificates

ASTM E 814 (UL 1479)
ASTM E 84 (UL 723)

Functioning

- FiWS is a flexible, intumescent graphite-based synthetic compound strip, which has been designed to be installed in both vertical and horizontal applications.
- FiWS has been developed as a PRE or cast-in FireStop solution, and has been designed to work with the fischer Universal Collar for retro fitting or surface mounted applications.
- For large openings, the FiWS can be used in conjunction with the FFSC.

Installation FiWS with FFSC

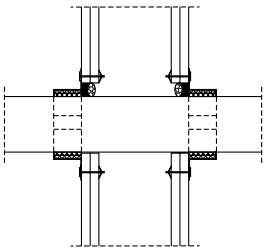


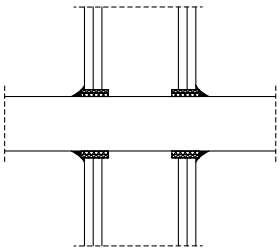
Technical data

Item	Item no.	Dimensions B x L x H	Sales unit [pcs]
FiWS-2	**531397**	50 mm x 6 mm x 5.48 m / 2˝x 1/4˝ x 18˝	1
Universal Collar 2	**536053**	51 mm x 15 m / 2“ x 50 ft	1

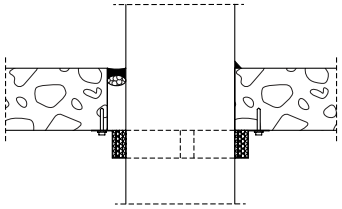
Technical data

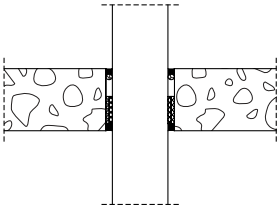
State	solid
Odour	odourless
Density	approx. 1.3 kg/m³
Expansion ratio	1 : 40
Significant expansion occurs at temperature	> 190 °C
Max. recom. pipe-Ø	< 355 mm
Flame spread (ASTM E 84 - UL723)	5
Smoke index (ASTM E 84 - UL723)	5
Colour	black





Both sides of the wall





Botttom of floor

Application data

FiWS - typical configuration		
Pipe diameter [mm]	**No. of layers**	**Length per stacks [mm]**
50	1	200
75	2	580
100	2	740
150	3	1640
200	4	2890
305	4	4210

Fire Collar FFC

Collar for sealing a wide range of combustible pipes where passing through fire rated walls and floors





Combustible pipe floor application



Combustible pipe wall application

Applications

- Non-metallic pipes like PVC, HDPE, MDPE, ABS of various sizes through fire rated walls and floor assemblies

Advantages

- Easy retrofit at any time
- Water resistant
- No minimum annular service required
- Pre-fixed attachment lugs
- Fold back tag for secure fixture around pipe

Certificates

ETA-20/1066

EN 1366-3

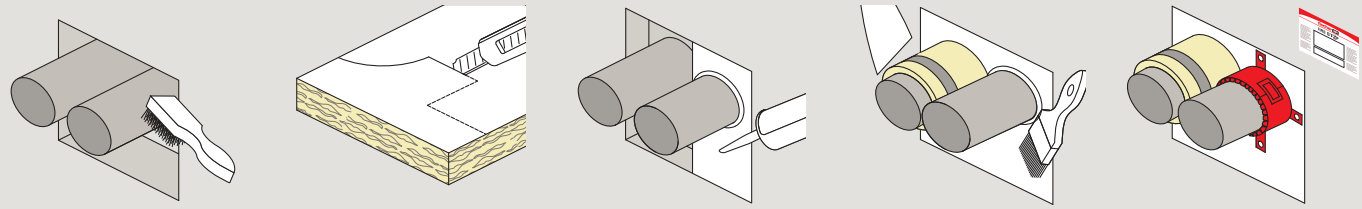
Building materials

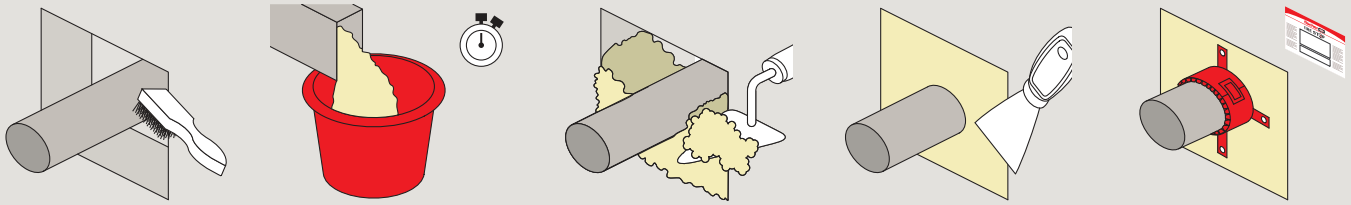
- Flexible and rigid wall constructions
- Solid concrete floors
- Hollow precast floors

Functioning

- FFC is a powder coated cylindrical steel sleeve, which contains a heat reactive graphite-based intumescent material that expands during fire.
- Designed to be securely fitted around the pipe and held in position with a retaining bolt.
- Any gaps up to 10 mm around FFC should be backfilled with FiAM or larger annular space should be closed with FCPS or FFSC.

Installation FFC with FCPS





2

Technical data

Item	Item no.	Approval ETA	Fits pipe-Ø [mm]	Sales unit [pcs]
FFC 2/30-32	**052456**	●	30 - 250	1
FFC 2/38-40	**052480**	●	38 - 40	1
FFC 2/55	**052481**	●	55	1
FFC 2/63	**052482**	●	63	1
FFC 2/75	**052483**	●	75	1
FFC 2/82	**052486**	●	82	1
FFC 2/90	**052487**	●	90	1
FFC 2/110	**052488**	●	110	1
FFC 2/125	**052489**	●	125	1
FFC 2/160	**052500**	●	160	1
FFC 2/200	**052501**	●	200	1

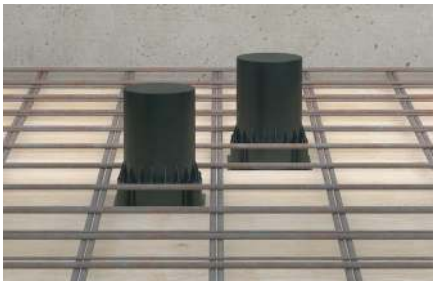
Technical data

State	solid
Odour	odourless
Fire resistance	up to 4 hours
Available sizes	> 30 mm and max up to 200 mm
Significant expansion occurs at temperature	> 180 °C
Storage temperature	N/a
Shelf life	N/a month
Colour	black inner component in outer foil carrier
European Technical Assessment	ETA-20/1063
CE marking	2531-CPR-CX010320

Cast-in Device FCID Plus

Fast and efficient solution for forming service penetrations through concrete floors





FCID Plus within reinforced concrete floor



Installed pipe through FCID Plus device

Applications

- Sealing and firestopping PVC and HDPE pipes up to 6˝ (150 mm)
- Forms holes up to 8˝ (200mm) thick concrete floors. In combination with extension pieces up to additional 4“ (100mm) possible.
- FCID Plus creates recesses in slabs for lower positioning of soil
- Manifold units in wet room applications

Advantages

- Quick installation
- Watertight seal
- Higher tolerance
- Easily extendable
- Wider base for further connections
- No further collars or wraps required
- Reduce working at heights
- Cost saving
- Reduced foot plate
- Eco-friendly extension tube
- Closer proximity positioning
- Free of asbestos, solvents and any hazardous ingredients.

Certificates

ASTM E 814 (UL 1479)

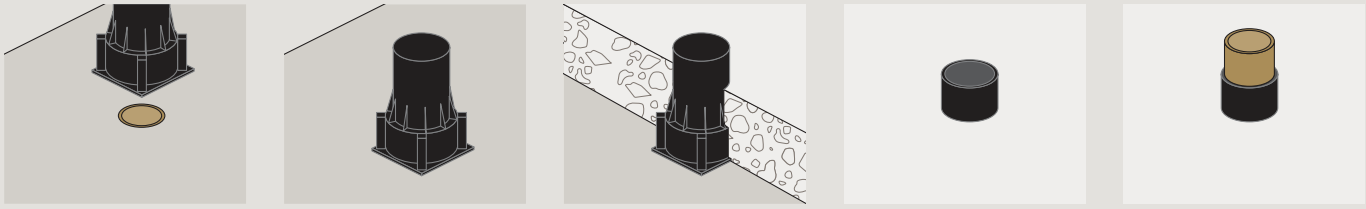
Building materials

- Reinforced cast concrete slabs
- Some prefabricated slab systems (subject to design)

Functioning

- FCID Plus is a pass through system, which is constructed from a highly resilient polypropylene material and contains a powerful intumescent graphite band.
- The FCID Plus is rugged enough to withstand the force and load of a concrete pour, yet lightweight enough to permit easy placement and handling.

Installation FCID Plus



Technical data

Item	Item no.	Fits pipe-Ø [mm]	Height H H [mm]	Sales unit [pcs]
FCiD Plus 50	**566285**	50/2“	200/8“	12
FCiD Plus 75	**566286**	75/3“	200/8“	12
FCiD Plus 100	**566287**	100/4“	200/8“	12
FICD Plus 150	**566288**	150/6“	200/8“	6
FCiD Plus 50 extension	**566289**	50/2“	100/4“	6
FCiD Plus 75 extension	**566290**	75/3“	100/4“	6
FCiD Plus 100 extension	**566291**	100/4“	100/4“	6
FCiD Plus 150 extension	**566292**	150/6“	100/4“	6
FCiD Plus 50 Deck adapter	**566293**	50/2“	–	6
FCiD Plus 75 Deck adapter	**566294**	75/3“	–	6
FCiD Plus 100 Deck adapter	**566295**	100/4“	–	6
FCiD Plus 150 Deck adapter	**566296**	150/6“	–	6

Technical data

State	solid
Odour	odourless
Shell material	Polyethylene
Fire resistance	up to 4 hours - BS 476: Part 20 and AS 1530: Part 4
Extension or reduction in height possible	Yes
Standard flange width	min 154 mm and max 254 mm
Significant expansion occurs at temperature	> 190 °C
Shelf life	N/a month
Colour	black

Intumescent Pillows FiP

FireStop solution for temporary and permanent service penetrations in vertical and horizontal applications





Electrical floor application



Electrical wall application

Applications

- Metal pipes
- Cables/cable trays
- Electrical trunking
- Electrical trunking: for conformance with the 17th Edition of the IEE Wiring Regulations (BS 7671:2008)

Advantages

- Approved as permanent fire barrier
- Reusable
- Dry installation
- Quick and easy installation
- No shelf life
- Moisture resistant
- Up to 2 hours fire protection

Certificates

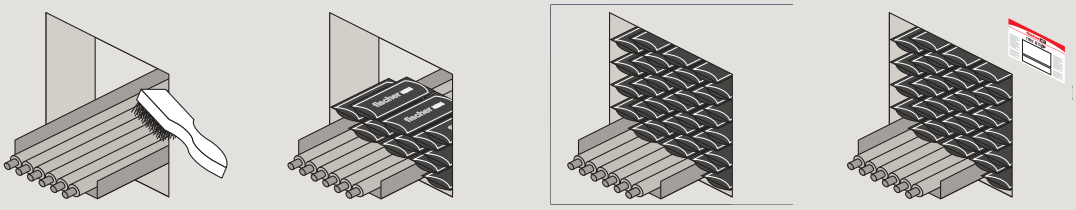
ETA-20/1063

EN 1366-3
EN ISO 10140-3:1995

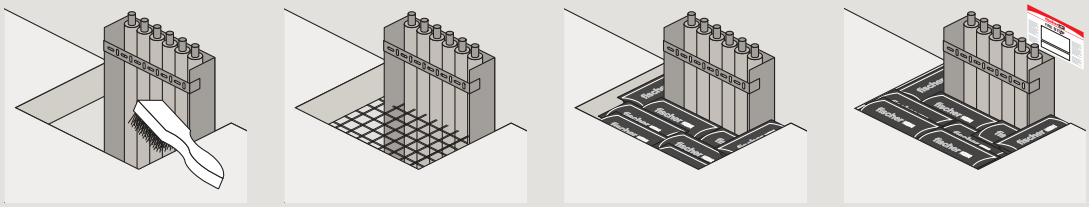
Functioning

- FiP is an intumescent graphite and mineral fibre blend covered in a glass fibre PVC coated cloth bag.
- FiP is suitable for applications where temporary and permanent fire barriers are required.

Installation FIP - Wall application



Installation FIP - Floor application



2

Technical data

Item	Item no.	Approval ETA	Dimensions [mm]	Weight per pillow [g]	Sales unit [pcs]
FiP/S	**516960**	●	330 x 50 x 20	80	1
FiP/Std	**533890**	●	330 x 100 x 20	120	1
FiP/M	**516959**	●	330 x 200 x 25	230	1
FiP/L	**516958**	●	330 x 200 x 45	420	1

Technical data

State	solid
Odour	-
Expansion	-
Significant expansion occurs at temperature	> 140
European Technical Assessment	ETA-20/1063
CE marking	2531-CPR-CX010320
Colour	black

Estimation quantities

Width	Length [mm]												
	Size	Large	Medium	Large	Medium	Large	Medium	Large	Medium	Large	Medium	Large	Medium
[mm]	Seal type	100	100	300	300	500	500	700	700	900	900	1,000	1,000
200	**Wall**	3	5	7	13	12	22	17	31	21	39	24	47
	Floor	2	3	4	7	6	12	9	17	11	22	12	27
400	**Wall**	5	9	14	26	24	44	33	61	42	78	47	95
	Floor	3	5	7	15	12	24	17	34	22	43	24	52
600	**Wall**	7	13	21	39	35	65	49	91	63	117	70	143
	Floor	4	7	11	22	18	36	25	51	33	65	36	79
800	**Wall**	9	18	28	52	47	87	66	122	84	157	94	192
	Floor	5	10	15	29	24	48	34	67	33	87	48	107
1000	**Wall**	10	22	35	65	59	109	82	152	105	196	117	217
	Floor	6	12	18	36	30	60	42	84	54	108	60	120

Intumescent Putty Pad FiPP

Intumescent Putty Pad FiPP





Internal application



External application

Applications

- Most flexible partition assemblies
- Fire and insulation resistance
- Acoustic sealing
- Air permeability
- Plastic and metal electrical outlets

Advantages

- Excellent acoustic properties
- Internal and external versions available
- Primerless adhesion to most substrates
- Robust detail part E handbook accepted
- No electrical conductivity
- Air permeability
- Quick and simple installation

Certificates

EN ISO 10140
EN 1026
EN 1366-3

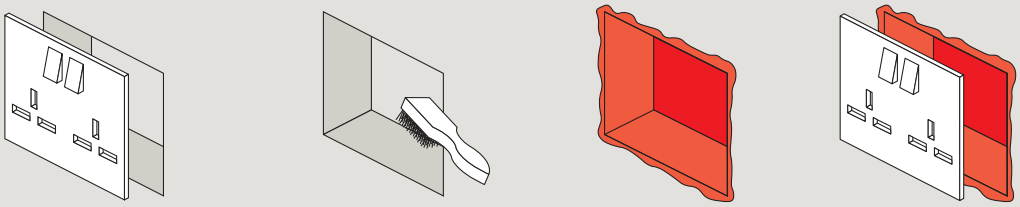
Building materials

- Most flexible wall partitions constructed from plasterboard/gypsum board, timber and steel studs

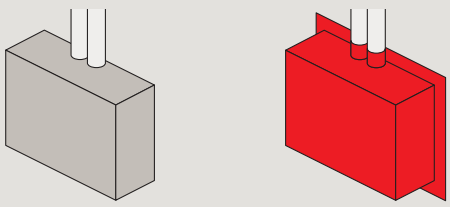
Functioning

- Can maintain the fire resistance and insulation of flexible wall partitions, where they are penetrated by plastic or metal electrical outlets and cables.
- FiPP can also be used for upgrading the acoustic performance of flexible partitions.

Installation FiPP - Internal application



Installation FiPP - External application



Technical data

Item	Item no.	Dimensions [mm]	Fire rating [hours]	Sales unit [pcs]
FiPP/I-S	**053578**	170 x 170	2	1
FiPP/I-D	**054757**	230 x 170	2	1
FiPP/E-S	**506261**	155 x 155	2	1
FiPP/E-D	**506262**	210 x 180	2	1

Technical data

Base material	Drywall
Specific grafity	1.55 kg/m^3
Accoustic performance	66 dB
Colour	red

Coated Panel System FCPS

FireStop coated panel system for multiple service penetrations





Mixed penetration through the floor



Mixed penetration through the wall

Applications

- Small and large openings
- Cables/cable trays
- Air ducts with dampers
- Metallic or non-metallic pipes

Advantages

- Approved for light partition walls
- Can be installed dry
- No coatback required for services
- Excellent acoustic properties
- Asbestos and halogen free

Certificates

ISO 10140
EN 1366-3

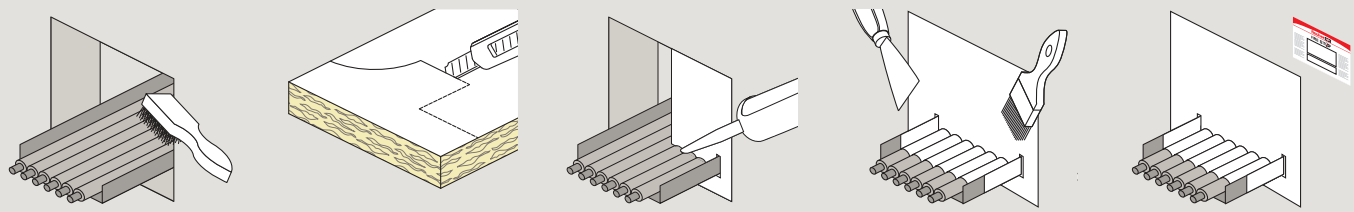
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ETA-20/1067

EU

Functioning

- FCPS is a rock fibre core coated with ablative sealant FPC for use in both vertical and horizontal applications.
- It maintains the sound reduction index of a structure.
- The FCPS will allow additional services to be added or removed and will accommodate thermal and mechanical movement of services.
- FPC can be used to adhere sections of FCPS board when jigsaw assembly is required and can also be used to enhances smoke and acoustic performance.

Installation FCPS



Technical data

Item	Item no.	Approval ETA	Dimensions [mm]	Content [kg]	Contents [ml]	Adapted for	Sales unit [pcs]
FCPS/50	**053252**	●	1200 x 600 x 50	–	–	–	1
FPC/5kg	**053253**	●	–	5	–	–	1
FiAM 310	**053011**	●	–	–	310	–	1
FiAM 600	**56006**	–	–	–	–	–	12
KPM 2 Plus	**053117**	–	–	–	–	FiAM 310, FFRS 310, UFS 310, FiGM 310	1

Technical data

Density	140 kg/m^3
Coating thickness	1 mm WTF
Fire resistance	depending on application
Accoustic performance	RW (c;ctr)=24(-2;-3)
Thermal conductivity	0,034 W/mK at 10 °C
Maximum size of seal	Wall 6,76 m^2, floor 1,65 m^2
Maximum size unsupported	1.2 x 1.2 m
Density of panel coating FPC	1.25 - 1.375 g/cm^3
Panel coating FPC coverage	ca. 1,6 kg/m^2 l/m^2
Shelf life of panel coating FPC Art.-No. 53253	12 month
European Technical Assessment	ETA-20/1062, ETA-20/1067
CE marking	2531-CPR-CX010319, 2531-CPR-CX010329

Application data

Services	Rigid partition walls [Fire rating - hours]	Flexible partition walls [Fire rating - hours]	Concrete floors [Fire rating - hours]
Cable ladder/tray/basket	Up to 2	Up to 2	Up to 2
Cables up to 26 mm diameter	Up to 2	Up to 2	Up to 2
Cables up to 80 mm diameter	Up to 2	Up to 2	Up to 2
Steel/Copper pipes up to 159 mm diameter	Up to 2	Up to 2	Up to 2
PVC pipes* up to 110 mm diameter	Up to 2	Up to 2	Up to 2
Blank seals	Up to 2	Up to 2	Up to 2

* PVC Pipes must be protected in conjunction wit h FiPW&FFC Collar, which must be securely sealed in place wit hin the FCPS.

FireStop Compound FFSC

Structural fire resistant seal for floors and walls





Mixed penetration through the floor



Mixed penetration through the floor

Applications

- Metallic services with steel and cast iron pipes
- Non-metallic services with FiPW intumescent pipe wrap or FFC pipe collar
- Voids or cavities in floors or walls
- Cable bunches

Advantages

- Water based
- Low VOC
- Load bearing
- Excellent acoustic proper-ties
- Both vertical and horizontal applications
- Halogen and asbestos free

Certificates

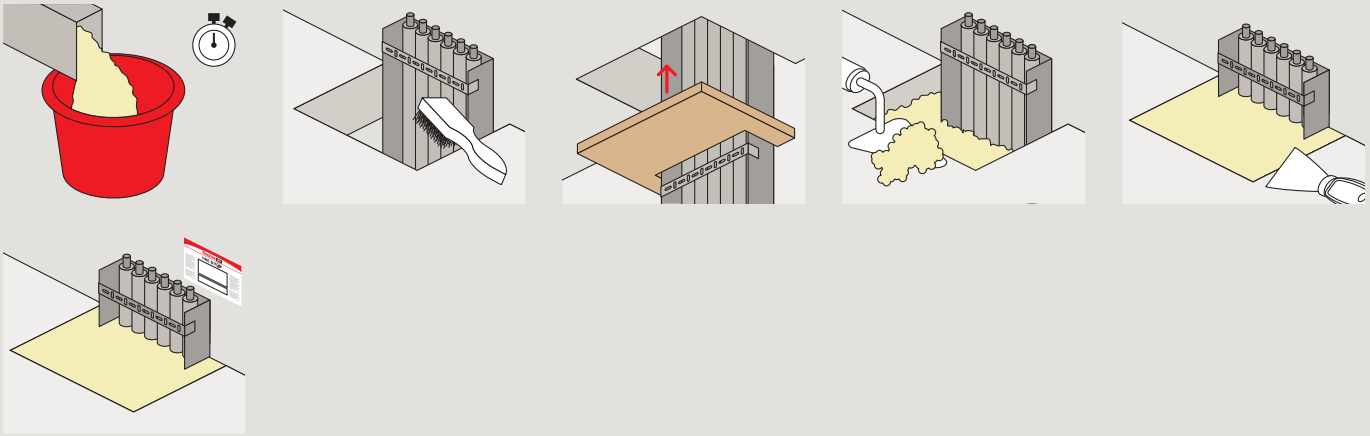
ETA-21/0678

EN ISO 10140
EN 1366-3
ASTM E 814 (UL 1479)

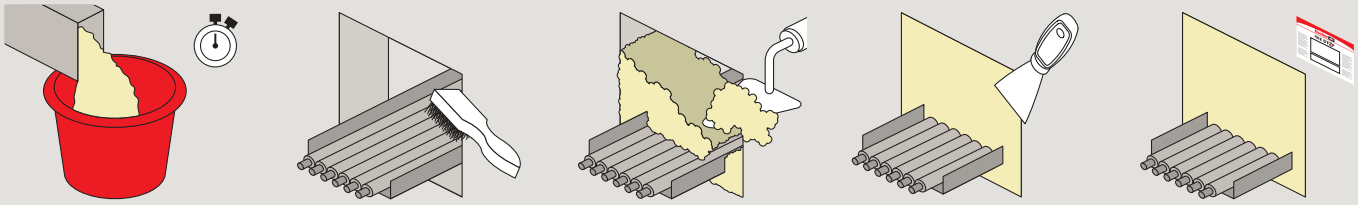
Functioning

- FFSC is a specially formulated gypsum based compound, which when mixed with water can be trowelled or poured.
- FFSC can provide up to 4 hours integrity and insulation.
- Set within 45 min depending on ambient temperature.
- Capable of accommodating foot traffic within 72 hours.

Installation FFSC - Floor application



Installation FFSC - Wall application



Technical data

	Item no.	Approval ETA	Content [kg]	Sales unit [pcs]
Item				
FFSC/20 kg	**533247**	●	20	1

Technical data

Base material	Gypsum
Bulk density	950 kg/m³
Wet density	1850
Setting time	20 min
Storage temperature	+ 5 °C to + 25 °C
Accoustic performance	59 dB
Reaction to fire (EN13501-1)	Class F
Shelf life	12 months month
European Technical Assessment	ETA-21/0678
Tensile strength	30 N/mm²
Thermal conductivity	0.57 W/mK at 50 %, 0.65 W/mK at 90 %
Colour	off white

Application data

	By volume Powder to water ratio
Pourable grade	2.5 : 1
Trowelable grade	3 : 1

* These are approximate calculations based on 20 kg bags. The coverage does not take into account the percentage of the hole filled with services.

** As a further safety margin, we would recommend that all floor seals with clear areas greater than 1,100 mm x 1,100 mm mus t be reinforced.

Load bearing note: the open area free of services: Thickness of seal ratios for non-reinforced seals given above allow an ample safety margin for normal foot traffic, e.g., loads of two men plus equipment with a combined weight up to 200 kg.

VentiStop Cavity Barrier - FFB-VS

Effective ventilated fire barrier designed to close the void between the inner and outer construction elements





FFB-VS Ventistop installed with Multi-Purpose Bracket



FFB-VS Ventistop installed with DHM Anchor

Applications

- Horizontal cavities between the inner and outer construction elements

Advantages

- Tested up to 120 minutes integrity and 90 minutes insulation (120 min insulation with FFB-VS HP80) utilising the heating and pressure conditions of EN 1363-1: 2017 and ASFP TGD19: 2014 - Open State Cavity Barriers.
- Suitable to close 25 & 50 mm ventilation gap
- Voids up to 450 mm wide
- Free of halogens, asbestos, fi bres and silica and is non-toxic
- Long life expectancy
- Contributes to green building

Certificates

BS 8414
EN 1363-1-TGD19
NFPA 285

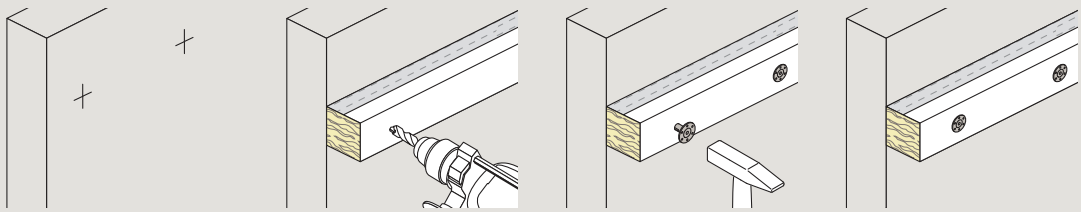
Building materials

- Concrete slabs, columns and walls

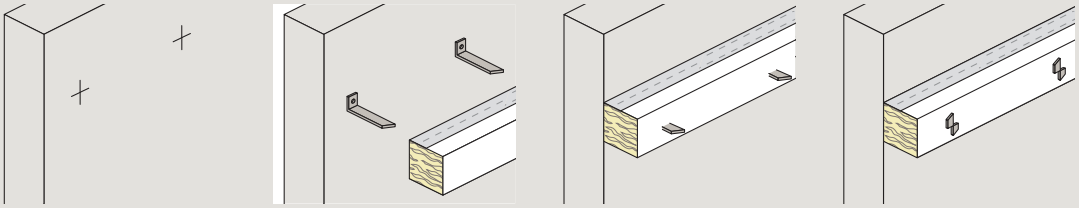
Functioning

- FFB-VS a foil-faced stone wool pre-cut unit, which has a powerful intumescent graphite strip bonded to the exposed face. The intumescent graphite strip is pre-wrapped with a durable polythene adhesive sheet to prevent water ingress.
- FFB-VS has been designed to provide a 25 & 50 mm ventilation gap, that allows air fl ow and moisture to pass down the back of the cladding. Under fire conditi-ons, the powerful intumescent along the front edge expands horizontally to close the gap and prevent the passage of fire.

Installation FFB-VS with DHM



Installation FFB-VS with Multi Purpose Bracket



2

Technical data

Item	Item no.	To suit cavity void width [mm]	Sales unit [pcs]
FFB-VS/25-50	521520	25 - 50	1
FFB-VS/51-100	521521	51 - 100	1
FFB-VS/101-150	521522	101 - 150	1
FFB-VS/151-200	521523	151 - 200	1
FFB-VS/201-250	521524	201 - 250	1
FFB-VS/251-300	521525	251 - 300	1
FFB-VS/301-350	521526	301 - 350	1
FFB-VS/351-400	521527	351 - 400	1
FFB-VS/401-450	521528	401 - 450	1

IMPORTANT: Please provide TOTAL cavity width for your application, excluding an y insulation there might be.

Technical data

Item	Item no.	To suit cavity void width [mm]	Sales unit [pcs]
FFB-VS50/51-100	545628	51 - 100	1
FFB-VS50/101-150	545629	101 - 150	1
FFB-VS50/151-200	545630	151 - 200	1
FFB-VS50/201-250	545631	201 - 250	1
FFB-VS50/251-300	545632	251 - 300	1
FFB-VS50/301-350	545633	301 - 350	1
FFB-VS50/351-400	545634	351 - 400	1
FFB-VS50/401-450	545635	401 - 450	1

IMPORTANT: Please provide TOTAL cavity width for your application, excluding an y insulation there might be.

Technical data

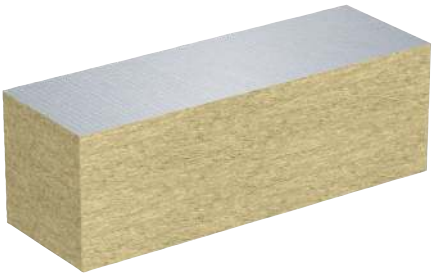
Description	Foil faced stone wool with a black intumescent leading edge
Fire resistance	up to 120 min
Closure time - FFB-VS	< 5 min
Activation	approx. 180 °C
Expansion pressure	approx. 7 N/mm^2
Density	Stone wool - 90 kg/m^3, intumescent 1.3 g/cm ^{3}
Weather resistance	Yes
Sag	0 %
Open void size	25 - 50 mm
Dimensions	80 mm thick, 1000 mm long mm
Width	30 - 450 mm
Fixing points (brackets or anchor DHM)	300 mm
Colour	White/red/silver/black

Technical data

Item	Item no.	To suit cavity void width [mm]	Colour	Fire rating [hours]	Sales unit [pcs]
Multi Purpose Bracket	**563201**	230 x 25 x 1 (A2)	silver	N/a	250
Multi Purpose Bracket	**551868**	390 x 25 x 1 (A2)	silver	N/a	1
Multi Purpose Bracket	**551954**	500 x 25 x 1 (A2)	silver	N/a	1
FCI Cassette tray cavity barrier	**554125**	1200 x 100 x 50	silver	N/a	1

Cavity FireStop Clad FCFcl

Designed to protect the building void between the inner and outer construction elements





FCFcl Cavity Clad - Vertical application



FCFcl Cavity Clad - Horizontal application

Applications

- Horizontal and vertical cavities between the inner and outer construction elements
- Ceiling Cavity Barriers
- Under Floor Cavity Barriers
- Slab Edge Barriers

Advantages

- Tested to EN 1366-4 & BS 476
- Classification to EN 13501-2, EN 13501-1
- Air Permeability to EN 1026 to 600Pa
- Acoustic Isolation to EN 10140 to 31dB
- Superior Level of Sustainability
- Encased Fibre Migration for Air Plenum Use
- Floor & Wall voids up to 590 mm wide

Certificates

CE

BS 8414
EN ISO 10140
EN 1026
EN 1366-4
NFPA 285

ETA-21/1062

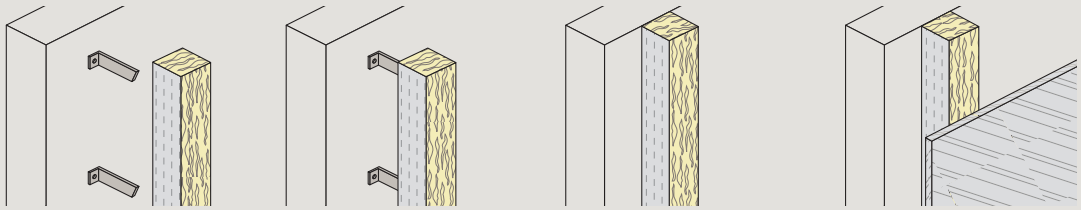
Building materials

- Concrete slabs, columns and walls
- Curtain wall assemblies

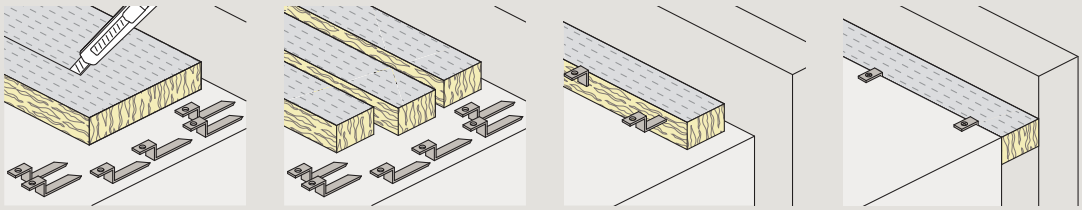
Functioning

- FCFcl Cavity Clad comprises of a one piece closed dimension stone wool core.
- The product is encased with an aluminum foil face which provides class ‚O' rating and exhibits excellent resistance to smoke.
- The FCFcl Cavity Clad provides a resilient lateral compression which is required to ensure a tight fit.

Installation FCFcl



Installation FCFcl



Technical data

Item	Item no.	Approval ETA	To suit cavity void width [mm]	Sales unit [pcs]
FCFcl 75	**546210**	●	1200 x 600 x 75	1
FCFcl 100	**053046**	●	1200 x 1000 x 100	1
FCFcl 1200	**546209**	●	1200 x 1200 x 100	1

IMPORTANT: Please provide TOTAL cavity width for your application, excluding any insulation there might be. FCFcl Cavity Clad shall be cut 5 mm (1/5 in.) or 10 mm (3/8 in.) oversize. * Depending on design & configuration of the FCFcl Cavity Clad.

Technical data

Item	Item no.	To suit cavity void width [mm]	Fire rating [hours]	Sales unit [pcs]
Multi Purpose Bracket	**563201**	230 x 25 x 1 (A2)	N/a	250
Multi Purpose Bracket	**551868**	390 x 25 x 1 (A2)	N/a	1
Multi Purpose Bracket	**551954**	500 x 25 x 1 (A2)	N/a	1

Technical data

Description	Foil faced structural stone wool composite
Fire resistance	EN1366-4 up t o 120 minutes
Thermal conductivity	0.35 bis 0.36 W/mK
Density	80 kg/m^3
Base material	Stone wool
Accoustic performance	31 dB
Air permeability	600 pa - 100 pa 2.6/4.2 m ^{3}/h/m^2
Thickness	75 and 100 mm
Bracket	Required cavity ≥ 150 mm (2 per meter)
Compression	5 or 10 mm
Colour	inside yellow, outside silver
European Technical Assessment	ETA-21/1062
CE marking	2531-CPR-CX010328

FireStop Foam

A single component filler foam with effective fire resistance





Back filling material



Construction joint application

Applications

- Construction joints in walls and floors
- Insulating and sealing doors and windows: non-fire rated application
- Backfilling material only for service penetrations
- Filling general voids and cavities: nonfire rated application

Advantages

- High foam yield
- No post shrinkage or expansion
- CFC free propellant
- Effective seal against smoke
- Rendered, cut, painted or sanded
- High bond strength
- Good adhesion to most building materials
- Excellant acoustic and thermal properties

Certificates

CE ETA

EN ISO 10140
EN 1366-4

ETA-20/0770

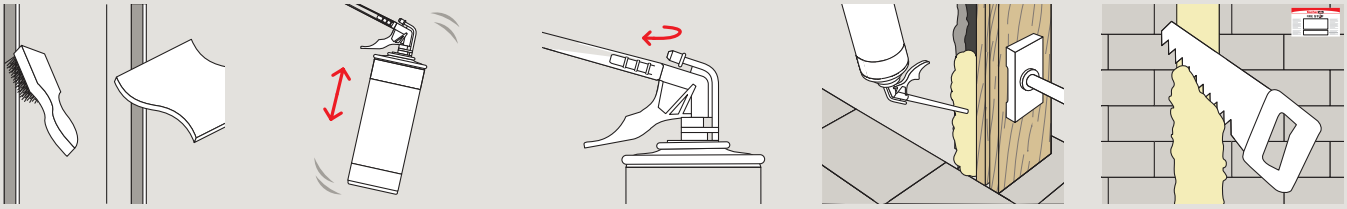
Building materials

- Concrete
- Masonry
- Steel as backing material
- Timber as backing material

Functioning

- FireStop Foam is a single component, self expanding polyurethane foam, which has been designed to be self curing via the absorption of moisture from the atmosphere.
- The foam has excellent adhesion properties and can adhere to most building materials. When the foam sets it cures to a semi-rigid structure, which accommodates low movement and vibration.

Installation FireStop Foam



Technical data

Item	Item no.	Approval ETA	Contents [ml]	Sales unit [pcs]
FireStop Foam Hand	**042757**	●	750	1
FireStop Foam Gun	**043712**	●	750	1

Technical data

Base material	Polyurethane
Consistency	stabile foam
Curing system	Moisture-cure
Yield	1,000 ml yields 35 - 40 l cured foam when extruded in beads
Specific grafity	extruded, fully cured approx. 27 kg/m^3
Skin-forming time	10 min (at 23 °C and 65% relative humidity)
Drying time	Non tacky after approx. 8 min
Shrinkage	No
Storage temperature	+ 5 °C to + 25 °C
Shelf life	up to 12 months when stored in unopened cartridges under cool, dry conditions month
Construction material class	B1 as per DIN 4102
STC rating	56 dB
Colour	red
European Technical Assessment	ETA-20/0770

Thermal Defense Wrap TDW

Thermal defense wrap for high insulation and temperature stability





Electrical floor application



Electrical wall application

Applications

- Metallic services with steel and cast iron pipes
- General construction joints: wall to floor to head of wall
- Drywall partitions, connections
- FCPS joints

Advantages

- Remains flexible -10 to +160
- Low VOC
- High insulation and temperature stability
- Pre-formed 300 mm roll
- Fast and efficient installation
- Remains flexible without aging

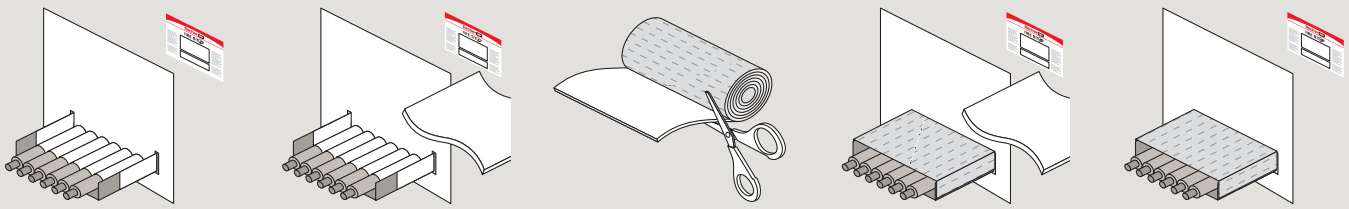
Certificates

EN ISO 10140
EN 1366-3

Functioning

- TDW is ceramic-based technology of bio-soluble vitreous fibres and flexible organic builders, and has been designed to maintain the compartmentalisation of a fire-rated assembly.
- The unique design of the TDW allows for movement of services, maintain the necessary insulation of the services and prevents temperature, rise of the services at the cold face. At normal temperature the TDW remains flexible and permits thermal and mechanical movement.
- It provides up to 2 hours integrity and insulation.

Installation TDW with FCPS



Technical data

Item	Item no.	Dimensions [mm]	Sales unit [pcs]
TDW 1	531398	300 x 1000	1

Technical data

Apperarance	white, fibrous material with aluminium foil face
Base material	Calcium magnesium silicate fibres
Water solubility	N/a
Alufoil thickness	0.25 mm
Storage temperature	+ 5 °C to + 25 °C



Downtown - Auckland - New Zealand

3
Façade Systems

3a
Zykon-Panel anchor FZP II

ZYKON-PANEL ANCHOR FOR NATURAL STONE

Zykon-Panel anchor FZP II A4	70	
Zykon-Panel anchor FZP II Carbon	72	
Zykon-Panel anchor FZP II SO AL	74	
Zykon-Panel anchor FZP II SO Carbon	76	
Zykon-Panel anchor FZP II VS	78	
Zykon-Panel anchor FZP II SH	80	
Zykon-Panel anchor FZP II M8i	82	
Zykon-Panel anchor FZP II M6i	84	

ZYKON PANEL ANCHOR FOR THIN FAÇADE PANELS

Zykon-Panel anchor FZP II-T Tergo+	86	
Zykon-Panel anchor FZP II-T PA	88	
Zykon-Panel anchor FZP II-T D40	90	

ZYKON-PANEL ANCHOR FOR SAFETY GLASS

Zykon-Glas point fixing FZP G-Z ESG	92	
Zykon-Glas point fixing FZP G-Z VSG	94	

3a

Differences in materiality.

Naturally Stone.

Natural stone is a very sustainable building material as stones are natural materials, which may be sourced globally. The façade panel thicknesses range from 20 mm to 60 mm. fischer Zykon panel anchors can be used from a panel thickness of 20 mm. In addition, tolerances in panel flatness can be accommodated with our stand-off anchors. With 35 years of experience, fischer provides support with material testing for the assessment of design resistances.



The fischer natural stone anchors:

- FZP II A4
- FZP II Carbon
- FZP II SO AL
- FZP II SO Carbon
- FZP II VS
- FZP II SH
- FZP II M8i
- FZP II M6i

Artificial ceramics.

Ceramic tiles are artificial materials. Typical for this type of cladding material is a wide range of colours and surface textures.
The thickness of the façade panels range from 8 mm to 20 mm. The fischer Zykon panel anchors can be used from a thickness of 10 mm. The large disc of the anchor prevents a misalignment of the anchor when the ceramic panel has ribs on the back face.

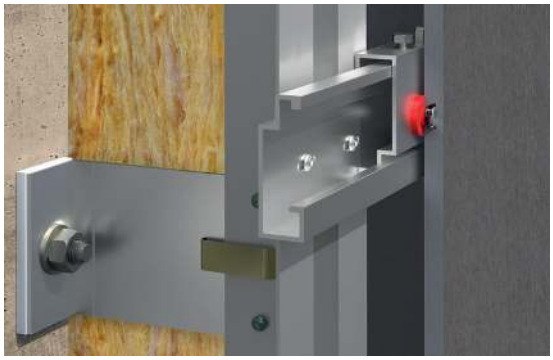


The fischer ceramic anchor:

- FZP II T D40

Thin panel materials.

The most well-known examples of thin panel materials are fiber cement and HPL (high-pressure laminates). Both are artificial materials. Typical for this type of cladding material is a wide range of colours and surface textures. The thickness of the façade panels usually range from 8 mm to 12 mm. The fischer Zykon panel anchors can be used from a panel thickness of 8 mm. fischer partners with many different suppliers for such materials.



Panel anchor for thin materials such as fibre cement and HPL:
- FZP II T PA
- Tergo+

View with glass.

fischer offers the world's first undercut glass point fixing for glazings made of single-pane safety glass (ESG or ESG-H from 10 mm glass thickness) and laminated safety glass (VSG from 8 + 10 mm glass thickness). The glass panels can be enamelled or coated and may also be used as carriers for laminated solar elements.
The German Institute for Building Technology (DIBt) in Berlin has issued the fischer Zykon point fixing (FZP-G) with a general technical approval. This revolutionary development is therefore state of the art and can now be applied without the need for project-specific approval for demanding glass façades. Through the application of undercut technology our company has succeeded in offering globally the first point fixing for glass, which does not fully penetrate the panel with a hole. The smooth exterior of the glass façade offers architects greater creative freedom and, at the same time, reduces the susceptibility to soiling and the required cleaning effort.
To install the point fixing, proprietary drilling and setting tools are required. Specially equipped and trained companies offer the finishing of the glazings and the assembly of the point fixings. On request we will be glad to arrange contact between you and these specialist installers.



The fischer glass anchor:
- FZP G-Z ESG
- FZP G-Z VSG

In case of any further questions regarding the different materials and their fixing solutions, we will be happy to advise you.

Zykon-Panel anchor FZP II A4

The universal undercut anchor made of A4 stainless steel for natural stone.





Flush installation in natural stone



Façade cross-section with flush installation

Applications

- Exterior façades
- Interior façades
- Façade reveals
- Natural stone heating systems

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- The flush-mounting technology of the undercut anchor allows an easy, economical handling of reveals.

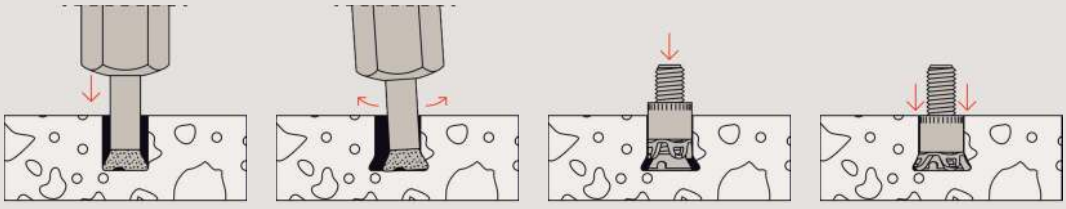
Functioning

- Use wet diamond drilling - first cylindrical, then conical - to drill an undercut hole.
- When the undercut anchor is installed, an optimal, positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed at the absolute anchoring depth and therefore flush with the material.

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels

Installation FZP II A4



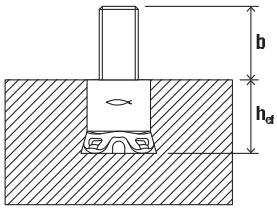


Al Hamra Tower · Kuwait

Technical data



Zykon-Panel anchor FZP II A4



Item	Item No.	Approval ETA	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 12 M6/13 A4	**512131**	●	12	13	M 6	11	13.5	20	stainless steel	250
FZP II 11 x 12 M6/18 A4	**512133**	●	12	18	M 6	11	13.5	20	stainless steel	250
FZP II 11 x 15 M6/10 A4	**512134**	●	15	10	M 6	11	13.5	30	stainless steel	250
FZP II 11 x 15 M6/18 A4	**512135**	●	15	18	M 6	11	13.5	30	stainless steel	250
FZP II 13 x 15 M8/10 A4	**512136**	●	15	10	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 15 M8/15 A4	**512137**	●	15	15	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 15 M8/23 A4	**512138**	●	15	23	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 15 M8/28 A4	**512139**	●	15	28	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 17 M8/17 A4	**512140**	●	17	17	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 21 M8/9 A4	**512141**	●	21	9	M 8	13	15.5	35	stainless steel	250
FZP II 13 x 21 M8/17 A4	**512142**	●	21	17	M 8	13	15.5	35	stainless steel	250
FZP II 13 x 21 M8/22 A4	**512143**	●	21	22	M 8	13	15.5	35	stainless steel	250

Zykon-Panel anchor FZP II Carbon

The universal carbon fibre-reinforced undercut anchor for natural stone.

3a





Flush installation in natural stone



Façade cross-section with flush installation

Applications

- Exterior façades
- Interior façades
- Façade reveals
- Natural stone heating systems

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- The flush-mounting technology of the undercut anchor allows an easy, economical handling of reveals.

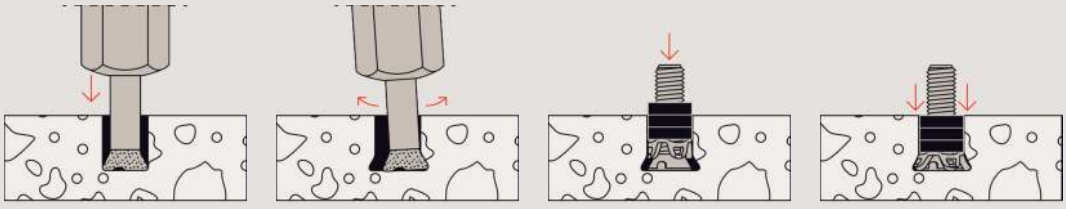
Functioning

- Use wet diamond drilling - first cylindrical, then conical - to drill an undercut hole.
- When the undercut anchor is installed, an optimal, positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed at the absolute anchoring depth and therefore flush with the material.

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels

Installation FZP II Carbon



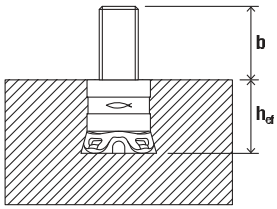


Court Complex · Hawaaly · Kuwait

Technical data



Zykon-Panel anchor FZP II Carbon



Item	Item No.	Approval ETA	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 12 M6/13 CARBON	**511966**	●	12	13	M 6	11	13.5	20	Carbon	250
FZP II 11 x 12 M6/18 CARBON	**511967**	●	12	18	M 6	11	13.5	20	Carbon	250
FZP II 11 x 15 M6/10 CARBON	**511968**	●	15	10	M 6	11	13.5	30	Carbon	250
FZP II 11 x 15 M6/18 CARBON	**511969**	●	15	18	M 6	11	13.5	30	Carbon	250
FZP II 13 x 15 M8/10 CARBON	**511970**	●	15	10	M 8	13	15.5	30	Carbon	250
FZP II 13 x 15 M8/15 CARBON	**511971**	●	15	15	M 8	13	15.5	30	Carbon	250
FZP II 13 x 15 M8/23 CARBON	**511972**	●	15	23	M 8	13	15.5	30	Carbon	250
FZP II 13 x 15 M8/28 CARBON	**511973**	●	15	28	M 8	13	15.5	30	Carbon	250
FZP II 13 x 17 M8/17 CARBON	**511980**	●	17	17	M 8	13	15.5	30	Carbon	250
FZP II 13 x 21 M8/9 CARBON	**511974**	●	21	9	M 8	13	15.5	35	Carbon	250
FZP II 13 x 21 M8/17 CARBON	**511975**	●	21	17	M 8	13	15.5	35	Carbon	250
FZP II 13 x 21 M8/22 CARBON	**511976**	●	21	22	M 8	13	15.5	35	Carbon	250

Zykon-Panel anchor FZP II SO AL

The adjusting undercut anchor made of A4 stainless steel for natural stone.





Stand-off installation in natural stone



Façade cross-section with stand-off installation

Applications

- Exterior façades with high aesthetic requirements
- Interior façades with high aesthetic requirements

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- Using a constant remaining wall thickness as a reference value when drilling holes allows users to compensate panel thickness tolerances.

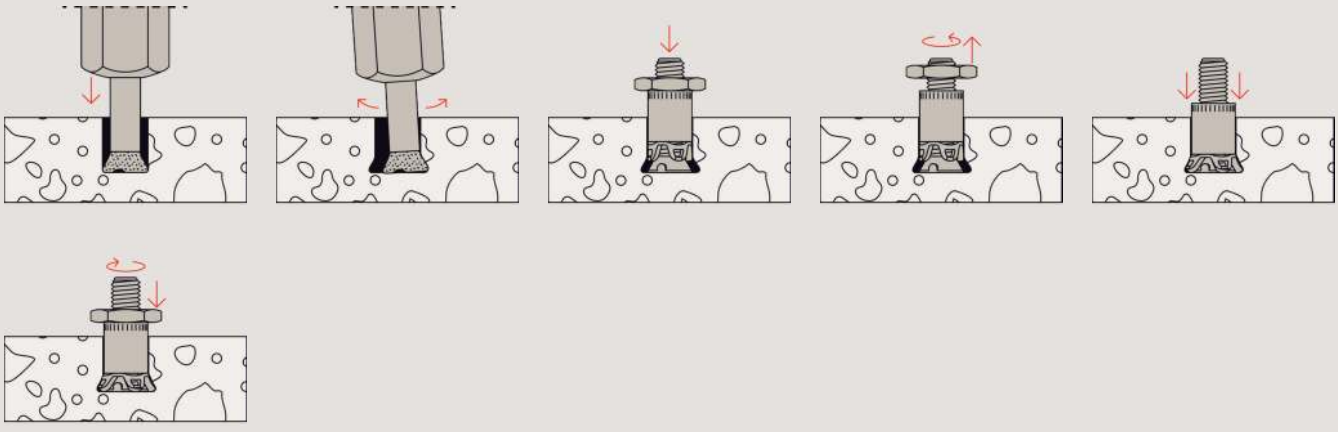
Functioning

- Wet diamond drilling - first cylindrical to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate for panel thickness tolerances helps create a flat façade surface.

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels

Installation FZP II SO AL



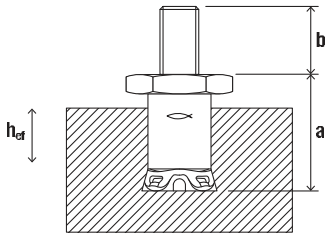


99 Hudson · New York · USA

Technical data



Zykon-Panel anchor
FZP II SO AL



Item	Item No.	Approval ETA	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 21 M6/SO/9 AL	**512144**	●	21	12 - 16	9	M 6	11	13.5	20	stainless steel	250
FZP II 11 x 21 M6/SO/12 AL	**512145**	●	21	12 - 16	12	M 6	11	13.5	20	stainless steel	250
FZP II 13 x 26 M8/SO/17 AL	**512146**	●	26	15 - 21	12	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 30 M8/SO/13 AL	**513226**	●	30	15 - 25	12	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 26 M8/SO/12 AL	**538088**	●	26	15 - 21	12	M 8	13	15.5	30	stainless steel	250

Zykon-Panel anchor FZP II SO Carbon

The adjusting carbon fibre-reinforced undercut anchor for natural stone.





Stand-off installation in natural stone



Façade cross-section with stand-off installation

Applications

- Exterior façades with high aesthetic requirements
- Interior façades with high aesthetic requirements

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- Using a constant remaining wall thickness as a reference value when drilling holes allows users to compensate panel thickness tolerances.

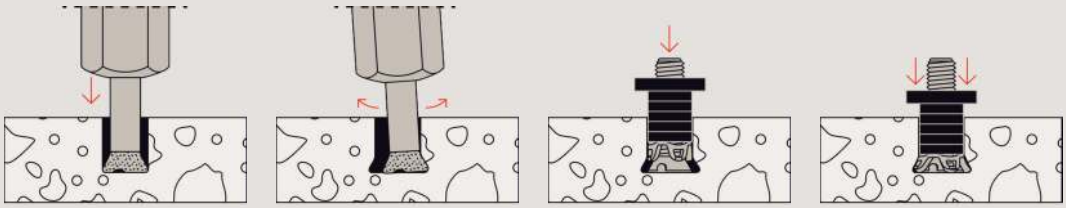
Functioning

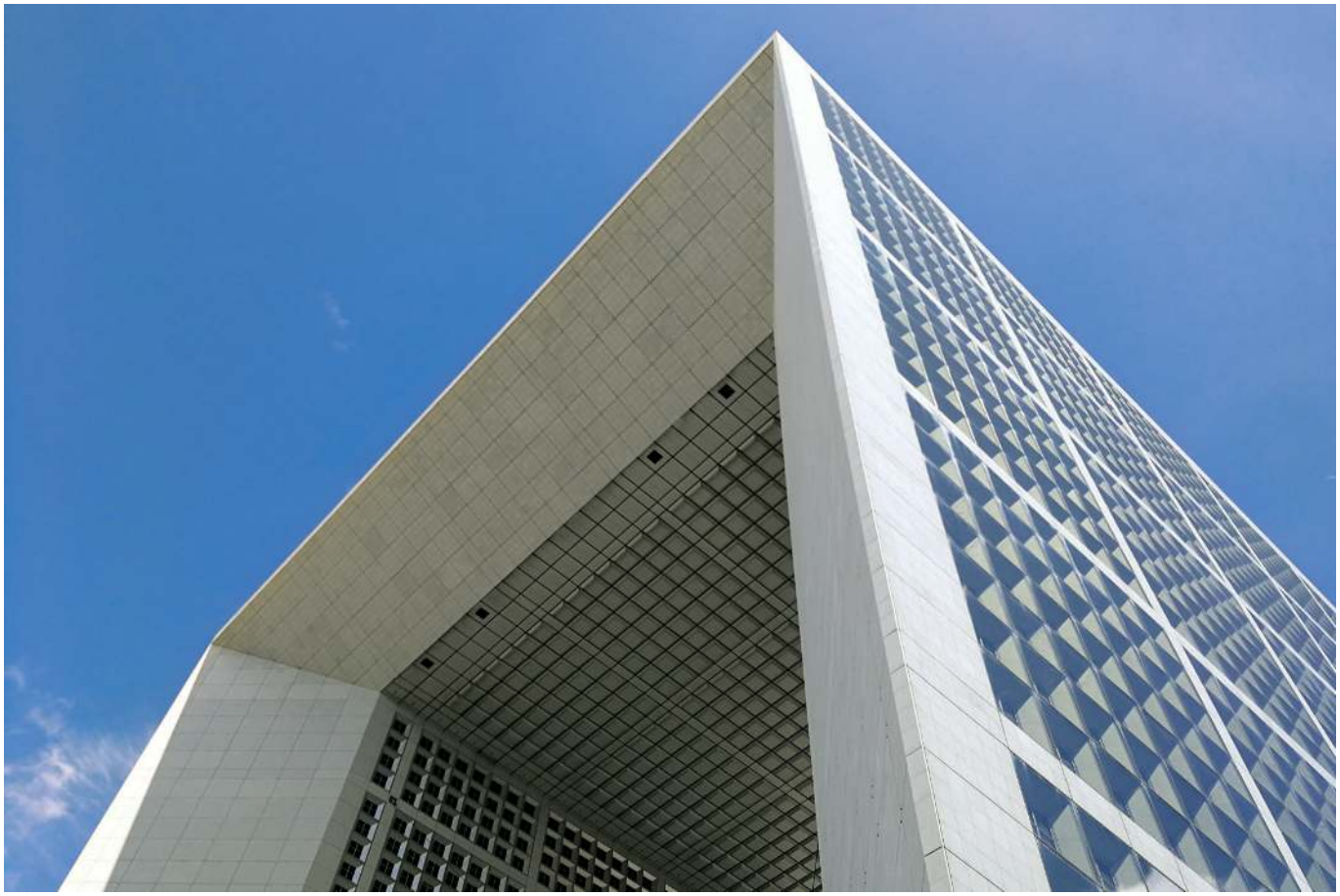
- Wet diamond drilling - first cylindrical to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate for panel thickness tolerances helps create a flat façade surface.

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels

Installation FZP II SO Carbon



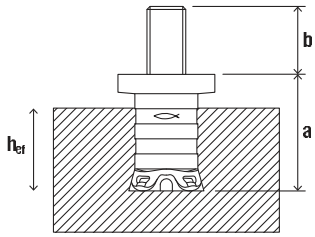


La Grande Arche · Paris · France

Technical data



Zykon-Panel anchor
FZP II SO Carbon



Item	Item No.	Approval ETA	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 21 M6/SO/9 CARBON	**511977**	●	21	12 - 16	9	M 6	11	13.5	20	Carbon	250
FZP II 11 x 21 M6/SO/12 CARBON	**511978**	●	21	12 - 16	12	M 6	11	13.5	20	Carbon	250
FZP II 13 x 26 M8/SO/12 CARBON	**538087**	●	26	15 - 21	12	M 8	13	15.5	30	Carbon	250
FZP II 13 x 26 M8/SO/17 CARBON	**511979**	●	26	15 - 21	17	M 8	13	15.5	30	Carbon	250

Zykon-Panel anchor FZP II VS

The suspension anchor with the fischer Vertical Solution for natural stone façade panels.





Suspension anchor in natural stone



Façade cross-section with suspension anchor

Applications

- Exterior façades with high aesthetic requirements and a reduced wall construction
- Interior façades with high aesthetic requirements and a reduced wall construction

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- Using a constant remaining wall thickness as a reference value when drilling holes allows users to compensate panel thickness tolerances.

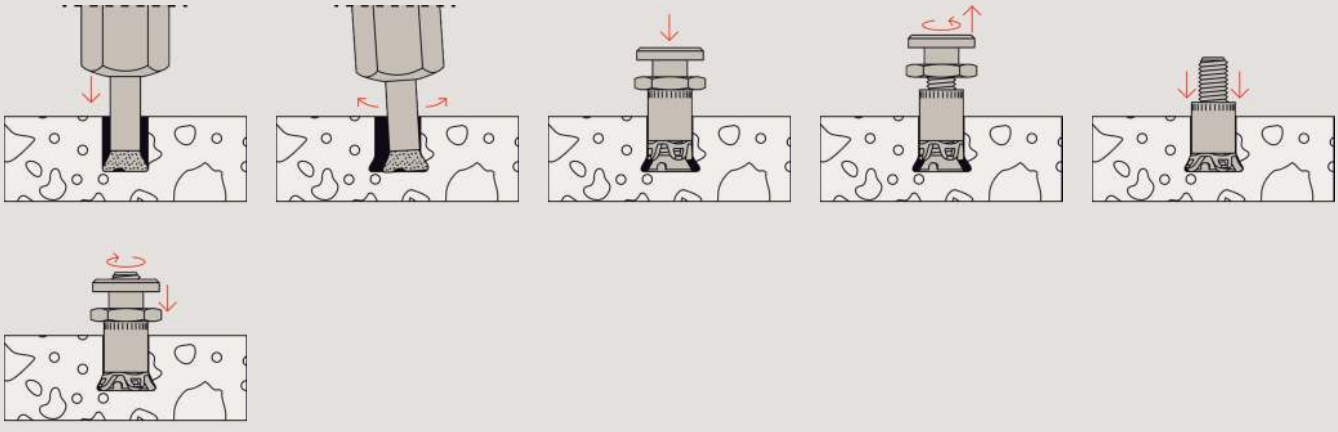
Functioning

- Wet diamond drilling - first cylindrical to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate panel thickness tolerances helps create a flat façade surface.
- Suspension brackets designed based on a lock and key principle are also used during installation.

Building materials

- Natural stone (≥ 20mm)

Installation FZP II VS



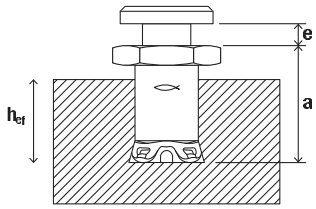


Concorde Hotel · Berlin · Germany

Technical data



Zykon-Panel anchor FZP II VS



Item	Item No.	Approval ETA	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Useable length e [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 21 M6/VS/4 AL	**512147**	●	21	12 - 16	4.5	M 6	11	13.5	20	stainless steel	250
FZP II 13 x 26 M8/VS/4 AL	**512148**	●	26	15 - 21	4.5	M 8	13	15.5	30	stainless steel	250
FZP II 13 x 30 M8/VS/4 AL	**512149**	●	30	15 - 25	4.5	M 8	13	15.5	30	stainless steel	250

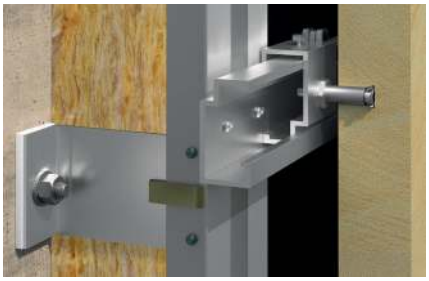
Zykon-Panel anchor FZP II SH

The undercut anchor for soft stone façade panels.





Undercut anchor in soft natural stone



Façade cross-section with soft stone anchor

Applications

- Exterior façades with heavy façade panels made of selected, soft natural stone (stone group IV - sedimentary rock)
- Interior façades with heavy façade panels made of selected, soft natural stone (stone group IV - sedimentary rock)

Certificates

EDELSTAHL® Rostfrei

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The attachment point is not externally visible, creating a visually attractive and consistent façade surface.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The anchor allows for higher breaking loads, compared to commonly available systems.
- Using a constant remaining wall thickness as a reference value when drilling holes allows users to compensate for panel thickness tolerances.

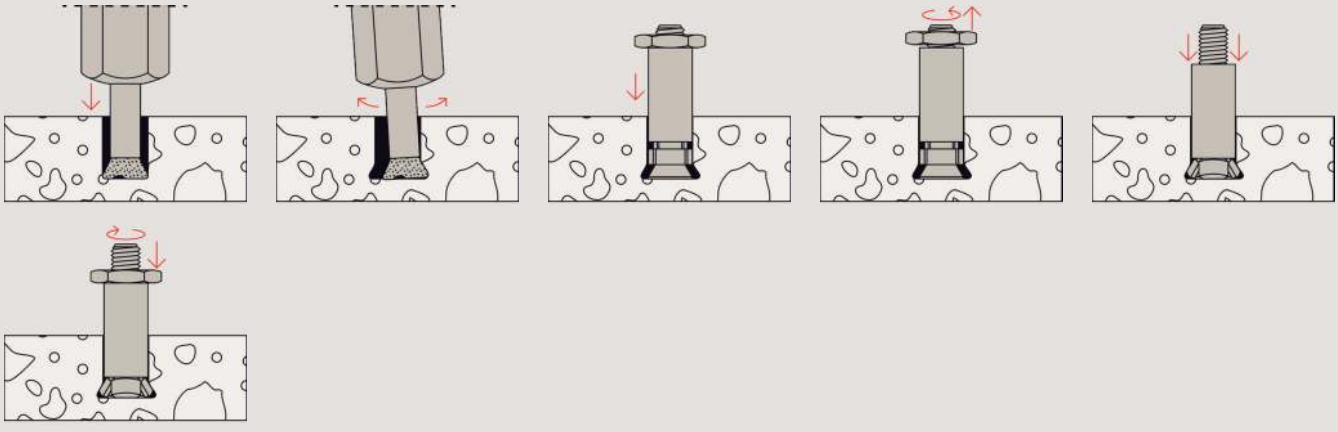
Functioning

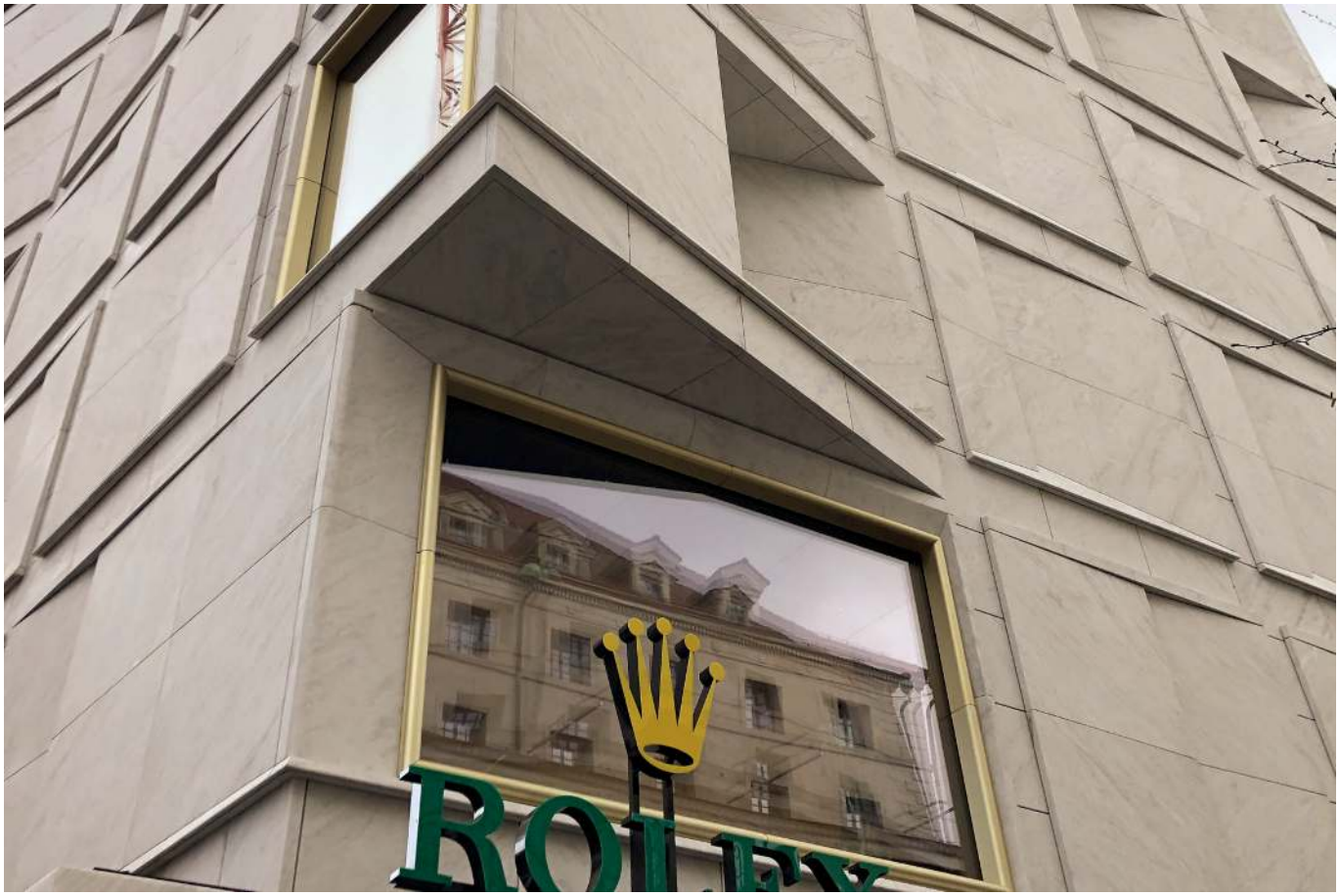
- Wet diamond drilling - first cylindrical, depending on the application either to the absolute anchoring depth or to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor can either be installed flush to the absolute anchoring depth or can be installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate panel thickness tolerances helps create a flat façade surface.

Building materials

- Natural stone (stone group IV) (≥ 50mm)

Installation FZP II SH



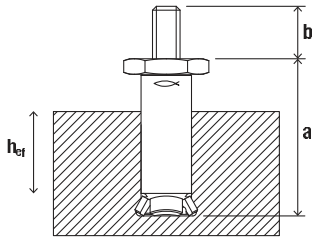


Bucherer · Zurich · Switzerland

Technical data



Zykon-Panel anchor FZP II SH



Item	Item No.	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread M	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP 13 x 30 M8//23 SH A4	**521103**	30	30	23	M 8	13	17.3	50	stainless steel	50
FZP 13 x 41 M8/SO/19 SH AL	**521104**	41	30 - 36	19	M 8	13	17.3	50	stainless steel	50

Zykon-Panel anchor FZP II M8i

The undercut anchor with an internal thread for M8 threaded screws in natural stone façade panels.





Internal threaded anchor in natural stone



Façade cross-section with internal threaded anchor

Applications

- Exterior façades
- Interior façades
- Façade reveals

Certificates

ETA-11/0145

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- The anchor allows for higher pull-out loads, compared to commonly available systems.
- The flush-mounted anchor allows for easy, economical construction of reveals.
- Depending on the application, the user can choose between flush installation with an absolute anchoring depth, for instance for reveal panels, and stand-off installation technology with a constant remaining wall thickness that serves as a reference dimension to compensate panel thickness tolerances.
- There is no protruding external thread, allowing a space-saving transportation of pre-fabricated façade panels.

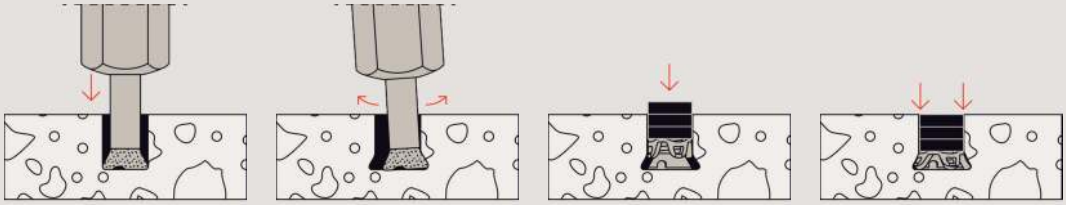
Functioning

- Wet diamond drilling - first cylindrical, depending on the application either to the absolute anchoring depth or to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor can either be installed flush to the absolute anchoring depth or can be installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate panel thickness tolerances helps create a flat façade surface.

Building materials

- Natural stone (≥ 20mm)

Installation FZP II M8i



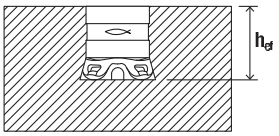


fischer administration building · Waldachtal · Germany

Technical data



Zykon-Panel anchor
FZP II M8i



Item	Item No.	Approval ETA	Anchorage depth h_{ef} [mm]	cylindrical diameter [mm]	Undercutdiameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 15 x 12 M8i	**539478**	●	12	15	17.5	20	Carbon	250
FZP II 15 x 15 M8i	**539479**	●	15	15	17.5	25	Carbon	250
FZP II 15 x 21 M8i	**540298**	●	21	15	17.5	35	Carbon	250

These anchors are supplied with dust protection caps. These can be used to protect the internal thread from contamination if the undercut anchors are prefabricated at the factory and delivered to the construction site without an installed set thread.

Zykon-Panel anchor FZP II M6i

The undercut anchor with an internal thread for M6 threaded screws in natural stone façade panels.





Internal threaded anchor in natural stone



Façade cross-section with internal threaded anchor

Applications

- Indoor applications (such as wash basins, natural stone heating systems, ...)

Certificates

INOX STAINLESS STEEL

Advantages

- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- The high-quality material of the anchor allows for higher pull-out loads than commonly used systems.
- The integrated internal thread allows panels to be pre-fabricated and transported securely.

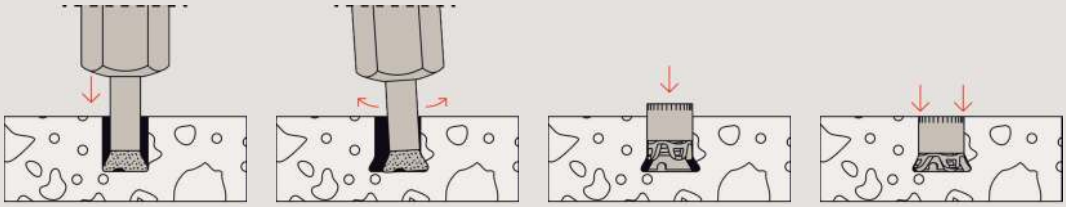
Functioning

- Wet diamond drilling - first cylindrical, depending on the application either to the absolute anchoring depth or to a constant reference dimension for the remaining wall thickness (RWT), then conical to create an undercut drill hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor can either be installed flush to the absolute anchoring depth or can be installed in the conical undercut drill hole using stand-off installation.
- The ability to compensate panel thickness tolerances helps create a flat façade surface.

Building materials

- Natural stone (≥ 20mm)

Installation FZP II M6i



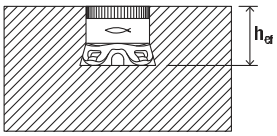


Huyyu-Chen-Fong · Taiwan

Technical data



Zykon-Panel anchor
FZP II M6i

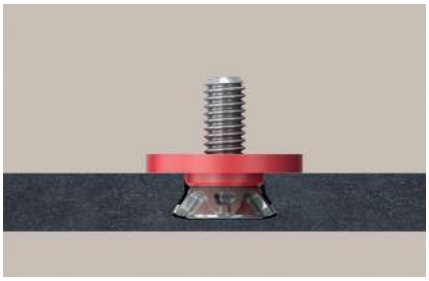


Item	Item No.	Anchorage depth h_{ef} [mm]	cylindrical diameter [mm]	Undercutdiameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 13 x 12 M6i	**512958**	12	13	15.5	20	Polyamide PA6	250

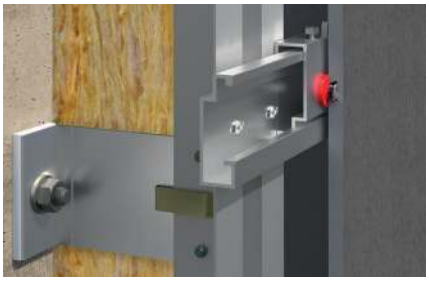
Zykon-Panel anchor FZP II T Tergo+

The specialist for thin fibre cement façade panels by Equitone.





Tergo+ in Equitone fibre cement boards



Façade cross-section with Tergo+ anchor

Applications

- Exterior façades
- Interior façades
- Façade reveals

Certificates

Advantages

- The anchors' short geometry allows it to be used in thin panels with a thickness greater than 8 mm.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The positive-locking anchor is free from expansion pressure and is attached at the fifth point in a structurally optimised location. This provides much better holding force than commonly available systems and allows for the use of large-format panels.

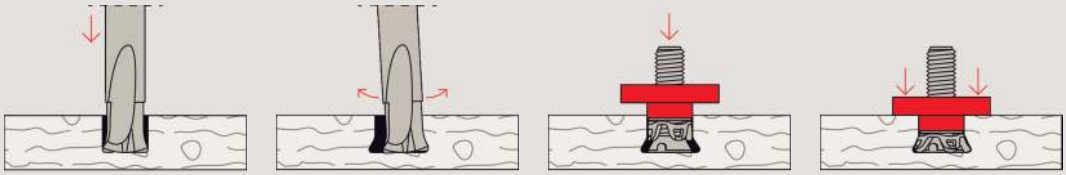
Functioning

- Use dry drilling with a diamond drill bit - first cylindrical, then conical - to drill an undercut hole.
- When the undercut anchor is installed, an optimal, positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed flush to the absolute anchoring depth. After the anchor is set, the spacer washer will be in full contact with the surface of the material.

Building materials

- Equitone fibre cement (≥ 8mm)

Installation FZP II T Tergo+



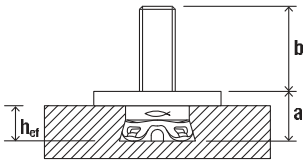


Cahir Castle · Tipperary · Ireland

Technical data



Tergo+ 11 x 5 | Tergo+ 11 x 6 | Tergo+ 11 x 8 | Tergo+ 11 x 10



Item	Item No.	Approval DIBt	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread Ø x length [mm]	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
Tergo+ 11x5 M6/T/11 PA	**552892**		7.5	5	11	M6	11	13.5	8	Polyamide PA6	250
Tergo+ 11x5 M6/T/13 PA	**552893**		7.5	5	13	M6	11	13.5	8	Polyamide PA6	250
Tergo+ 11 x 6 M6/T/10 PA	**532641**	●	8.5	6	10	M6	11	13.5	8	Polyamide PA6	250
Tergo+ 11 x 6 M6/T/13 PA	**532642**	●	8.5	6	13	M6	11	13.5	8	Polyamide PA6	250
Tergo+ 11 x 8 M6/T/10 PA	**537974**	●	10.5	8	10	M6	11	13.5	12	Polyamide PA6	250
Tergo+ 11 x 8 M6/T/13 PA	**537975**	●	10.5	8	13	M6	11	13.5	12	Polyamide PA6	250
Tergo+ 11 x 10 M6/T/9 PA	**532643**	●	12.5	10	9	M6	11	13.5	14	Polyamide PA6	250

These anchors are supplied with M6 locknuts, which have to be used for the installation of the clasps.

Zykon-Panel anchor FZP II T PA

The specialist for thin façade panels, such as HPL and fibre cement.





Undercut anchor in HPL board



Façade cross-section with FZP II T PA

Applications

- Exterior façades
- Interior façades
- Façade reveals

Certificates

ETA-11/0465

Advantages

- The anchor's short geometry allows it to be used in thin panels with a thickness greater than 8 mm.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The positive-locking anchor is free from expansion pressure provides much better holding force than commonly available systems and allows for the use of large-format panels.

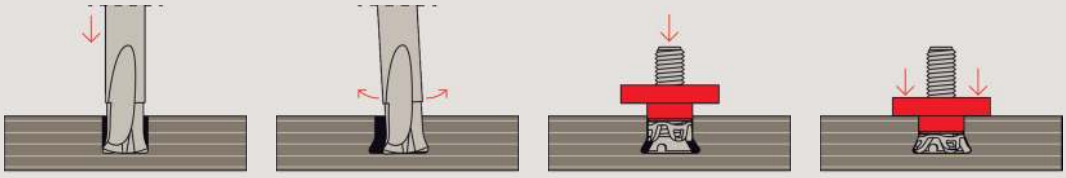
Functioning

- Use dry drilling with a diamond drill bit - first cylindrical, then conical - to drill an undercut hole.
- When the undercut anchor is installed, an optimal, positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed flush to the absolute anchoring depth. After the anchor is set, the spacer washer will be in full contact with the surface of the material.

Building materials

- Fibre cement
- HPL panels
- Thin panel materials (≥ 8 mm)

Installation FZP II T PA



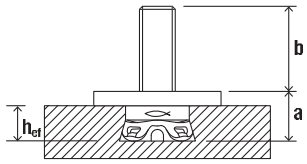


Stabilo Cube · Heroldsberg · Germany

Technical data



FZP II-T PA 11 x 5 | FZP II-T PA 11 x 6 | FZP II-T PA 11 x 8 | FZP II-T PA 11 x 10



Item	Item No.	Approval ETA	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread Ø x length [mm]	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11 x 5 M6/T/11 PA	**552888**		7.5	5	11	M6	11	13.5	8	Polyamide PA6	250
FZP II 11x5 M6/T/13 PA	**552889**		7.5	5	13	M6	11	13.5	8	Polyamide PA6	250
FZP II 11 x 6 M6/T/10 PA	**520365**	●	8.5	6	10	M6	11	13.5	8	Polyamide PA6	250
FZP II 11 x 8 M6/T/12 PA	**520367**	●	10.5	8	12	M6	11	13.5	10	Polyamide PA6	250
FZP II 11 x 10 M6/T/9 PA	**520369**	●	12.5	10	9	M6	11	13.5	12	Polyamide PA6	250

Zykon-Panel anchor FZP II T D40

The specialist for thin ceramic façade panels.





Undercut anchor in ceramic tiles



Façade cross-section with ceramic anchor

Applications

- Exterior façades
- Interior façades
- Façade reveals

Certificates

ETA-11/0465

Advantages

- The anchors' short geometry allows it to be used in thin panels with a thickness greater than 10 mm.
- The fixing of the undercut anchor is not visible on the exposed side, creating a visually attractive and consistent façade surface.
- The adapted shape of the undercut anchor ensures a positive-locking attachment free from expansion pressure in a conical undercut drill hole.
- Setting the anchor using undercut technology allows the user to always select the optimal structural position in the façade panel. This greatly reduces panel deflection.
- The positive-locking anchor is free from expansion pressure provides much better holding force than commonly available systems and allows for the use of large-format panels.

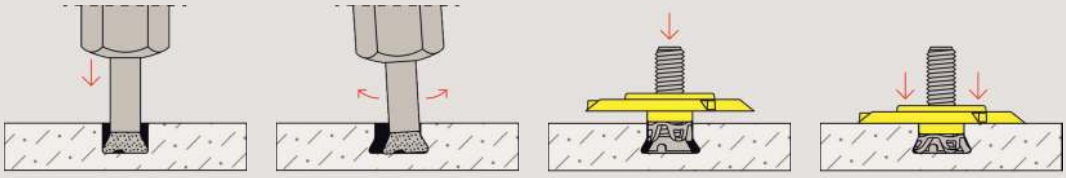
Functioning

- Use wet diamond drilling - first cylindrical, then conical - to drill an undercut hole.
- When the undercut anchor is installed, an optimal positive-locking connection is created between the expanding part and the drill hole.
- The anchor is installed flush to the absolute anchoring depth. After the anchor is set, the spacer washer will be in full contact with the surface of the material.

Building materials

- Ceramics
- Fine stoneware (≥ 10mm)

Installation FZP II T D40





Nieuwe Haagse Passage · The Hague · Netherlands

Technical data



FZP II 11x5 D40



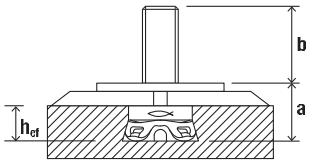
FZP II 11 x 6 D40



FZP II 11 x 8 D40



FZP II 11 x 9 D40

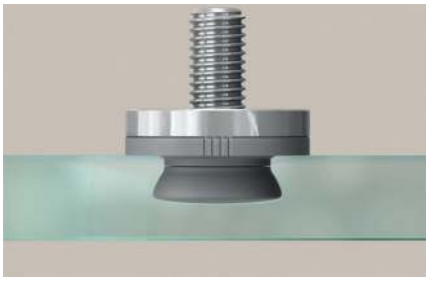


Item	Item No.	Approval ETA	Installed anchor length a [mm]	Anchorage depth h_{ef} [mm]	Projection length b [mm]	Thread Ø x length [mm]	cylindrical diameter [mm]	Undercut-diameter [mm]	Min. panel thickness [mm]	Sleeve material	Sales unit [pcs]
FZP II 11x5 M6/T/10 D40	**552890**		8.5	5	10	M6	11	13.5	8	Polyamide PA6	250
FZP II 11x5 M6/T/13 D40	**552891**		8.5	5	13	M6	11	13.5	8	Polyamide PA6	250
FZP II 11 x 6 M6/T/9 D40 PA	**532644**	●	9.5	6	9	M6	11	13.5	10	Polyamide PA6	250
FZP II 11 x 8 M6/T/10 D40 PA	**532645**	●	11.5	8	10	M6	11	13.5	12	Polyamide PA6	250
FZP II 11 x 9 M6/T/9 D40 PA	**532646**	●	12.5	9	9	M6	11	13.5	13	Polyamide PA6	250

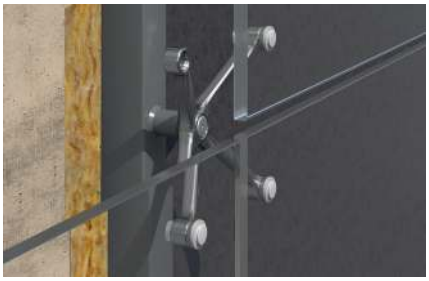
Zykon-Glas point fixing FZP G Z ESG

The glass point holder for aesthetic fixing of single layered glass façade panels.





Glass point holder in single layered glass panels



Façade cross-section with single layered glass panel

Applications

- Exterior façades
- Interior façades
- Glass façades

Certificates

Advantages

- The geometry of the anchor requires only a small drill hole diameter, allowing for a discreet and visually attractive fixing solution.
- There is no need to drill through the glass façade panel to install the anchor. This adds more safety. The fastening point remains inside the façade panels and does not penetrate through to the outside. This reduces the danger of contamination and ensures a good seal.
- Create an undercut drill hole and chamfer the edge of the drill hole in one work step.

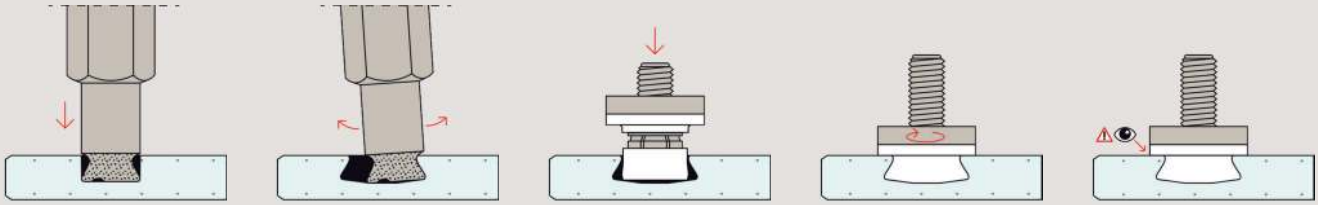
Functioning

- Before glass hardening: use wet diamond drilling - first cylindrical, then conical - to drill an undercut hole.
- After drilling the glass, the glass must be hardened before the undercut anchors can be set.
- When the undercut anchor is set, an optimal, positive-locking connection is created between the expanding part and the drill hole.

Building materials

- Single layer safety glass (≥ 10mm)
- Glass ceramic (≥ 10mm)

Installation in single layer safety glass





Bahai Temple · Santiago de Chile · Chile

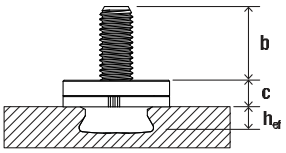
Technical data



FZP G Z (ESG)



FZP G Z 6kt (ESG)

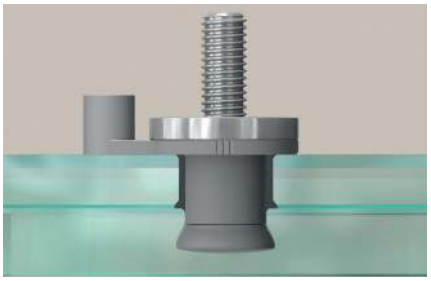


Item	Item No.	Approval DIBt	Drill hole diameter [mm]	Bolt projection length b [mm]	Structural height c [mm]	Anchorage depth h_{ef} [mm]	Glass structure	Sales unit [pcs]
FZP 15 x 6 M8/11 G-Z	**047254**	●	15	11.5	6.5	6	≥ 10	100
FZP 15 x 6 M8/25 G-Z	**047259**	●	15	25	6.5	6	≥ 10	100
FZP 15 x 7 M8/10 G-Z	**047273**	●	15	10.5	6.5	7	≥ 12	100
FZP 15 x 7 M8/24 G-Z	**047274**	●	15	24	6.5	7	≥ 12	100
FZP 15 x 6 M8/11 G-Z 6KT	**051435**	●	15	11.5	6.5	6	≥ 10	100
FZP 15 x 6 M8/25 G-Z 6KT	**051436**	●	15	25	6.5	6	≥ 10	100
FZP 15 x 7 M8/10 G-Z 6KT	**051440**	●	15	10.5	6.5	7	≥ 12	100
FZP 15 x 7 M8/24 G-Z 6KT	**051441**	●	15	24	6.5	7	≥ 12	100

Zykon-Glas point fixing FZP G Z VSG

The glass point holder for aesthetic fixing of laminated composite safety glass.





Glass point holder in laminated composite safety glass



Façade cross-section with laminated composite safety glass

Applications

- Exterior façades
- Interior façades

Certificates

Advantages

- The geometry of the anchor requires only a small drill hole diameter, allowing for a discreet and visually attractive fixing solution.
- There is no need to drill through the glass façade panel to install the anchor. This adds more safety. The fastening point remains inside the façade panels and does not penetrate through to the outside. This reduces the danger of contamination and ensures a good seal.
- Create an undercut drill hole and chamfer the edge of the drill hole in one work step.

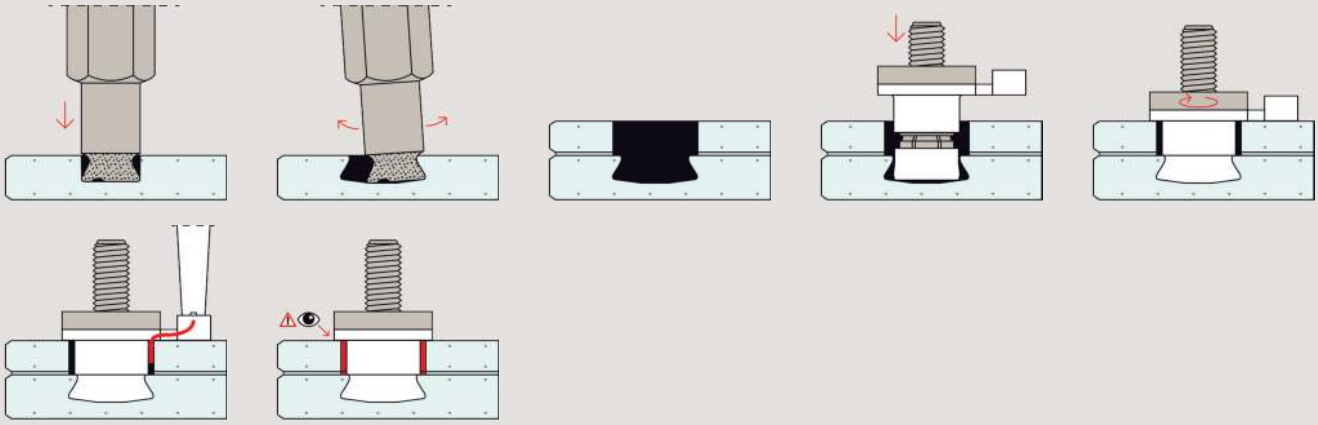
Functioning

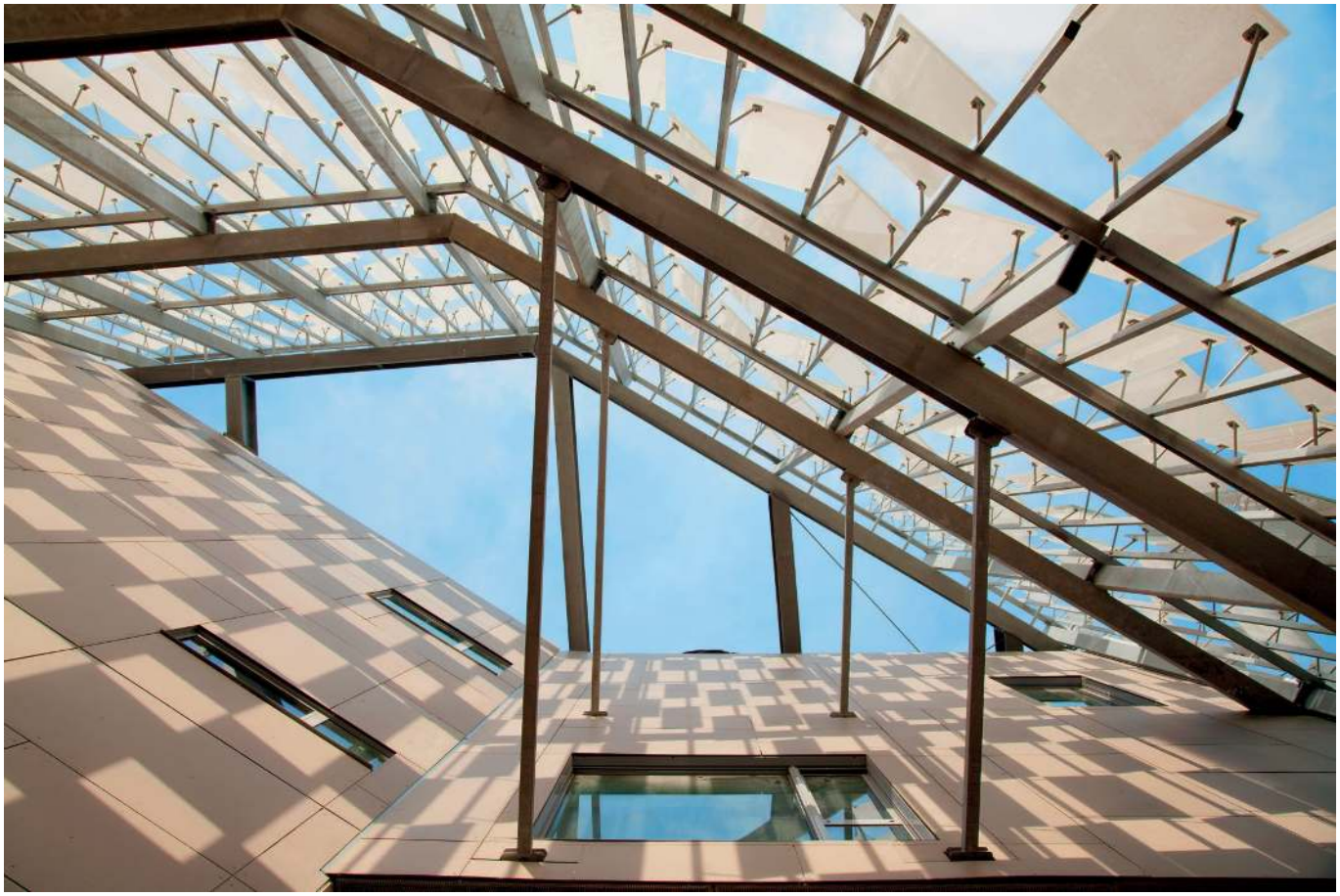
- Before glass hardening: use wet diamond drilling - first cylindrical, then conical - to drill an undercut hole.
- After drilling the glass, the glass must be hardened before the undercut anchors can be set.
- When the undercut anchor is set, an optimal, positive-locking connection is created between the expanding part and the drill hole.

Building materials

- Laminated composite safety glass (>18mm)

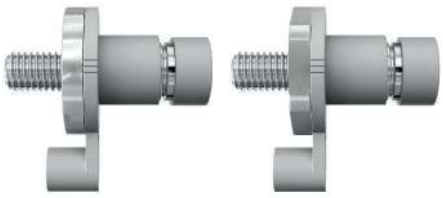
Installation in laminated composite safety glass





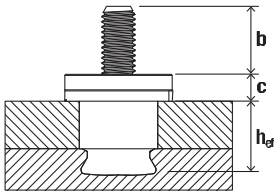
FRAC art centre · Marseille · France

Technical data

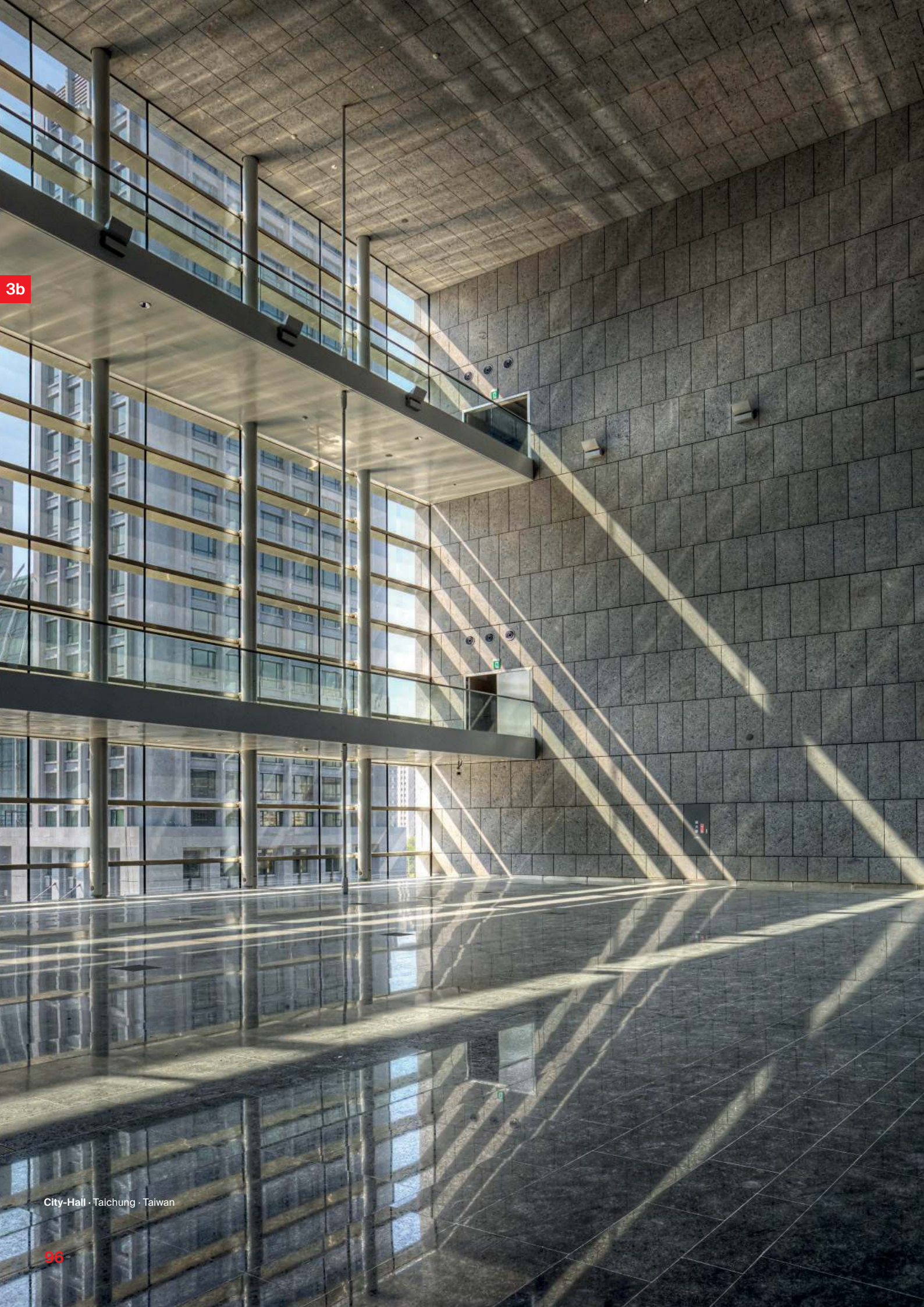


FZP G Z (VSG)

FZP G Z 6kt (VSG)



Item	Item No.	Approval DIBt	Drill hole diameter [mm]	Structural height c [mm]	Bolt projection length b [mm]	Anchorage depth h_{ef} [mm]	Glass structure	Thread A	Sales unit [pcs]
FZP 15 x 15,5 M8/16 G-Z	**047300**	●	15	6.5	16	15,5	10/8	M 8	100
FZP 15 x 17,5 M8/14 G-Z	**050407**	●	15	6.5	14	17,5	10/10	M 8	100
FZP 15 x 15,5 M8/16 G-Z 6KT	**051442**	●	15	6.5	16	15,5	10/8	M 8	100
FZP 15 x 17,5 M8/14 G-Z 6KT	**051447**	●	15	6.5	14	17,5	10/10	M 8	100



3b

City-Hall · Taichung · Taiwan

3b
Machine technology and drill bits

DRILLING MACHINES

Drill rig SBN 502	101	
Mobile drilling equipment LBT 80	102	
Manual drill head MB 2	103	
Mobile drilling equipment BSN 100	104	
Mobile drilling equipment BSN 101T	105	
Side table BST	106	

DRILL BITS

Undercut drill bits	109	
Undercut drill bits CNC	110	
Undercut drill bits glass	111	

TESTING AND MEASURING EQUIPMENT

Measuring equipment	113	

SETTING TOOLS

Setting tools	117	

3b

A fully coordinated complete system.

The perfect solution for rainscreen façades.

Just as much know-how as for the development of the Zykon panel anchor and sub-frame systems has been invested in the machine technology. This forms an indispensable part of the façade system.
The machine technology includes not only fischer drilling machines and drill bits, which are specially developed for the creation of the undercut drill holes, but also test and measuring equipment for quality control of the hole geometry and setting tools to ensure safe and fast installation of the fischer Zykon panel anchors.

In addition, it is possible to make the undercut holes using your own CNC machining equipment.



3b

Bellavita Shopping Mall · Taipeh · Taiwan

3b

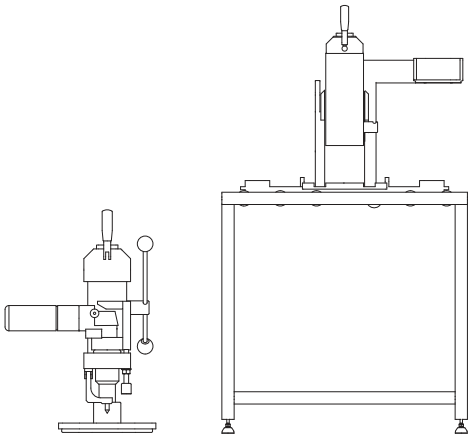
Drilling machines

to ensure correct undercut drill hole geometry for fischer Zykon panel anchors.

fischer offers proprietary machines of various sizes, from portable on-site up to large-scale production equipment. These machines enable the fast and economic production of drill holes with diamond drilling tools. Quality control of the drilled holes is then carried out by taking the hole dimensions with the testing and measuring equipment and comparing them with the target dimensions and tolerance specifications. Finally, the undercut anchors are installed in the undercut holes of the façade panels using the appropriate setting devices.

The fixing specialists at fischer façade systems offer a wide range of services in this context:

- Diverse range of machines
- Large-scale production machines
- Support with machine selection
- Purchase/rental of the machines



Drill rig SBN 502

Undercut drilling machines for wet diamond drilling of natural stone and ceramic façade panels.



Advantages

- Easy handling
- Economic creation of undercut drill holes in production
- Compact dimensions

Functioning

- Diamond drilling
- Water cooling
- Undercutting
- Wet drilling

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials

Technical data

Item	Item No.	Useable material	Drill bit	Drilling Technology	Dimensions [cm]	Table skewness [cm]	Weight [kg]	Connections	Power input [W]	Water connection	Water consumption
SBN 502	**061500**	natural stone, ceramic	Diamond drill bit	Manual MB 2	210 x 140 x 160	170 x 130 x 80	450	230 V, 10/16 A	2 x 1000	1/2 inch cross section, at least 2 bar fresh water	1,5 L/ min (idle running)

Mobile drilling equipment LBT 80

Undercut drilling machines for wet diamond drilling of natural stone and ceramic façade panels.



Advantages

- Easy handling
- Economic creation of undercut drill holes in reveal panels
- Compact dimensions

Functioning

- Diamond drilling
- Water cooling
- Undercutting
- Wet drilling

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials

Technical data

Item	Item No.	Useable material	Drill bit	Drilling Technology	Dimensions [cm]	Table skewness [cm]	Weight [kg]	Connections	Power input [W]	Water connection	Water consumption
LBT 80	**046225**	natural stone, ceramic	Diamond drill bit	Manual MB 2	72 x 80 x 142	40 x 80 x 75	65	230 V, 10/16 A	1000	1/2 inch cross section, at least 2 bar fresh water	1,5 L/ min (idle running)

Manual drill head MB 2

Undercut drilling machines for mounting on existing processing lines for wet drilling of facade panels made of natural stone and ceramics.



Advantages

- easy attachment with a flange plate
- smallest drilling unit from fischer with the advantages of the big machines
- possibility of individual solutions

Functioning

- Diamond drilling
- Water cooling
- Undercutting
- Wet drilling
- Vacuum

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials

Technical data

Item	Item No.	Useable material	Drill bit	Drilling Technology	Dimensions [mm]	Weight [kg]	Connections	Power input [W]	Water consumption
MB 2	**061130**	natural stone, ceramic	Diamond drill bit	Manual MB 2	190 x 290 x 600	30	230 V, 10/16 A	1000	1,5 L/min (idle running)

Mobile drilling equipment BSN 100

Undercut drilling machines for wet diamond drilling of natural stone and ceramic façade panels.



Advantages

- Easy handling
- Economic creation of undercut drill holes
- Construction site machine

Functioning

- Diamond drilling
- Water cooling
- Undercutting
- Wet drilling
- Vacuum

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials

Technical data

Item	Item No.	Useable material	Drill bit	Drilling Technology	Dimensions [mm]	Weight [kg]	Connections	Power input [W]	Water connection	Water consumption
BSN 100 VP	**061502** [2]	natural stone, ceramic	Diamond drill bit	Manual MB 1	340 x 450 x 480	20	230 V, 10/16 A	1200	1/2 inch cross section, at least 2 bar fresh water	1,5 L/min (idle running)
BSN 100 VD	**046223** [1]	natural stone, ceramic	Diamond drill bit	Manual MB 1	340 x 450 x 480	20	230 V, 10/16 A	1200	1/2 inch cross section, at least 2 bar fresh water	1,5 L/min (idle running)

1) Supplied with a venturi nozzle #802111

2) Supplied with a vacuum pump #802597

Mobile drilling equipment BSN 101T

Drilling system for dry drilling using carbide cutters in façade panels, such as HPL and fibre cement.



Advantages

- Easy handling
- Economic construct undercut drill holes
- Compact dimensions

Functioning

- Carbide drilling fraises
- Dry drilling
- Undercutting
- Vacuum

Building materials

- Fibre cement
- HPL panels
- Thin panel materials (≥ 8 mm)

Technical data

Item	Item No.	Useable material	Drill bit	Drilling Technology	Dimensions [mm]	Weight [kg]	Connections	Power input [W]
BSN 101T	**802484** [1)]	Thin panel materials (e. g. HPL, fibre cement)	Carbide cutters	Manual MB 1	280 x 530 x 520	15	230 V, 10/16 A	1200

1) Supplied with one venturi nozzle #802111. Additionally a vacuum pump #802597 can be purchased.

Side table BST

Supporting tables for drilling machines.



Advantages

- Improves operating comfort
- Work with larger panel formats
- Enlarges the machine table surface

Technical data



BST 80



BST 502

Item	Item No.	Dimensions [mm]	Weight [kg]	Number of rollers	Max. load (carnier roller) [N]	Suitable for machine type
BST 80	**046228**	800 x 480 x 780 (B x H x T)	20	5 pcs. Ø 50 x 390 mm	200	LBT 80
BST 502	**046235**	1000 x 1250 x 830 (B x H x T)	50	55 pcs. Ø 60 mm	200	SBN 502

Machine accessories

Accessories for fischer undercut drilling machines.

Vacuum pump VP



Item	Item No.	For machine type	Dimensions [mm]	Weight [kg]	Technical details
Vacuum pump VP	**802597**	BSN 100, BSN 101 T	230 x 210 x 280 (B x T x H)	11	850 W, 230 V, 3,5 A, 50-60Hz

Venturi nozzle VD



Item	Item No.	For machine type	Dimensions [mm]	Weight [kg]	Technical details
Venturi nozzle VD	**802111**	BSN 100, BSN 101 T	120 x 60 x 20 (B x T x H)	0,1	

Vacuum cleaner SSG



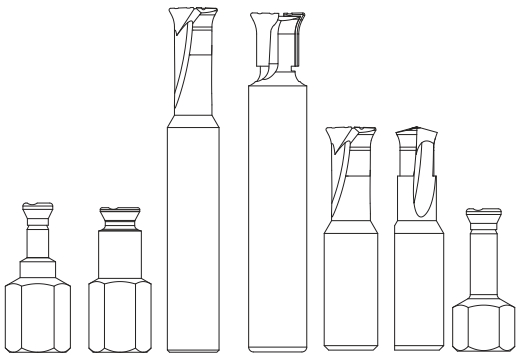
Item	Item No.	For machine type	Dimensions [mm]	Weight [kg]	Technical details
Vacuum cleaner SSG	**802596**	BSN 101 T	350 x 400 x 350 (B x T x H)	4	500 W, 230 V, 1,9-2,2 A, 60 Hz

3b

Drill bits

to ensure correct undercut drill hole geometry for fischer Zykon panel anchors.

Different materials require different types of drill bits. The appropriate drilling tool must be selected for each material and anchor combination. For example, a diamond drill bit with water cooling is used for natural stone or ceramic panels. With carbide cutters, many other materials such as HPL and fibre cement can be drilled dry, without the need for water cooling.



Undercut drill bits

Undercut drill bit for façade panels.



Applications

- Interior façades
- Exterior façades
- Façade reveals

Versions

- Diamond drill bit
- Carbide drill bit

Advantages

- Simple creation of undercut drill holes for fischer-Zykon panel anchors.

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials
- Fibre cement
- HPL panels
- Solid surfaces
- Thin panel materials (≥ 8 mm)

Technical data



FZPB FZPB 11/28 FZPB 11T D12

Item	Item No.	Useable material	Drilling method	for BSN 100 VD & VP	for SBN 502 & LBT 80	for BSN 100T	Drill depth h_0 [mm]
FZPB 9	**060713**	Natural stone	wet	–	FZP II M6	–	16
FZPB 9T	**530910**	ceramic	wet	–	FZP II T D40	–	16
FZPB 11	**060710**	Natural stone	wet	FZP II M6	FZP II M8, FZP II M6i	–	21
FZPB 11/28	**092880**	Natural stone	wet	FZP II M6	FZP II M8, FZP II M6i	–	28
FZPB 13	**060711**	Natural stone	wet	FZP II M8, FZP II M6i	FZP II M8i	–	21
FZPB 15	**530908**	Natural stone	wet		–	–	21
FZPB 11T D12	**522402**	Thin panel materials (e. g. HPL, fibre cement)	dry	–	–	FZP II T	10

Undercut drill bits CNC

Creation of undercut holes for anchors using a CNC process.



Applications

- Interior façades
- Exterior façades
- Façade reveals

Versions

- Helix drilling
- Single stage, direct drilling
- Two-stage, direct drilling with pre-drilling

Advantages

- Low investment costs
- Fast implementation of fischer undercut technology

Building materials

- Natural stone (≥ 20mm)
- Artificial concrete panels
- Ceramics (≥ 10 mm)
- Solid-surface materials
- Fibre cement
- HPL panels
- Solid surfaces
- Thin panel materials (≥ 8 mm)

Technical data



FZPB FZPB CNC DIA

Item	Item No.	Useable material	Drilling method	for CNC + adapter	Drill depth h_0 [mm]
FZPB 11/21 CNC	**535984** 1)	natural stone, ceramic	wet	FZP II M6, FZP II T D40	21
FZPB 11/28 CNC	**530911** 1)	Natural stone	wet	FZP II M6	28
FZPB 13/21 CNC	**535985** 1)	Natural stone	wet	FZP II M8, FZP II M6i	21
FZPB 13/38 CNC	**540698** 1)	Natural stone	wet	FZP II M8, FZP II M6i	38
FZPB 15/28 CNC	**547077** 1)	Natural stone	wet	FZP II M8i	28
FZPB 11T CNC	**522398**	Thin panel materials (e. g. HPL, fibre cement)	dry	FZP II T	10
FZPB 11T CNC-DIA	**541464**	Thin panel materials (e. g. HPL, fibre cement)	dry	FZP II T	10
CNC adapter	**804063**	natural stone, ceramic	wet	FZP II M6, FZP II M8, FZP II M6i, FZP II M8i	–

1) if necessary the fischer CNC adapter #804063 (machine side: R 1/2°-60°; drill bit side M14 thread) may be required

Undercut drill bits glass

Creation of undercut holes in glass.



Applications

- Glass façades
- Interior façades
- Exterior façades

Advantages

- Creation of undercut drill holes for fischer Zykon panel anchors in glass..

Building materials

- Single layer safety glass (≥ 10mm)
- Laminated composite safety glass (≥ 18mm)
- Glas ceramic

Versions

- Helix drilling

Technical data



FZPB G

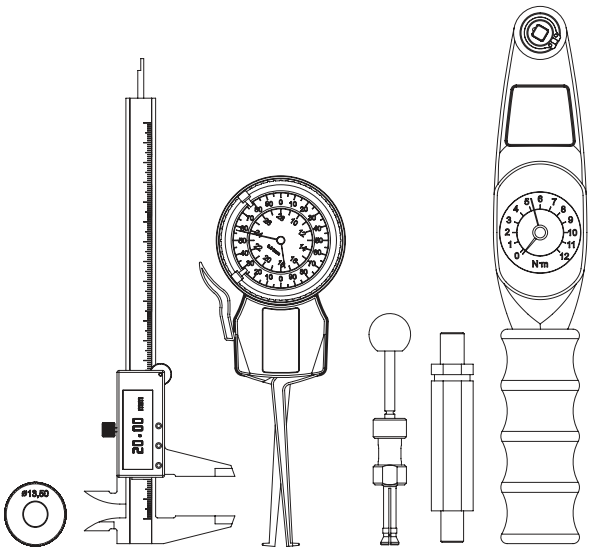
Item	Item No.	Useable material	Drilling method	for CNC + adapter	Drill depth h_0 [mm]
FZPB 13 G6	**019265**	glass	wet	FZP G Z ESG, FZP G Z VSG	6
FZPB 13 G7	**019266**	glass	wet	FZP G Z ESG, FZP G Z VSG	7

3b

Testing and measuring equipment

for quality control of undercut holes for fischer Zykon panel anchors.

The safe and reliable function of the fixing system depends on various factors. An essential requirement is correctly drilled anchor holes and their quality control. The drill holes should be checked and recorded according to the testing and setting guidelines as stipulated in the general technical approval.



Testing and measuring equipment

Quality controlling for undercut drill holes.

Dial gauge for measuring the undercut diameter



Dial gauge STU

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i	FZP-G ESG	FZP-G VSG
STU 10 - 30	802506	all	●	●	●	●	●	●	●	●

Caliper for the measuring of the depth and cylindrical diameter of the drill hole



Analog caliper MST



Digital caliper MST-D

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i	FZP-G ESG	FZP-G VSG
MST	802575	all	●	●	●	●	●	●	●	●
MST-D	802507	all	●	●	●	●	●	●	●	●

Undercut volume gauge for checking the minimum undercut volume



Undercut volume gauge HVL

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i		
HVL 11	802333	natural stone, ceramic	●	–	–	●	–	–		
HVL 11T	802732	Fibre cement	–	–	●	–	–	–		
HVL 13	802337	Natural stone	–	●	–	–	●	–		
HVL 15	804186	Natural stone	–	–	–	–	–	●		

Diameter gauge for checking the cylindrical drill hole diameter



Diameter gauge DPL

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i		
DPL 11	802339	natural stone, ceramic	●	–	–	●	–	–		
DPL 11T	804089	Fibre cement	–	–	●	–	–	–		
DPL 13	802338	Natural stone	–	●	–	–	●	–		
DPL 15	804184	Natural stone	–	–	–	–	–	●		

Accessories



Torque wrench DMS



Adjustment ring ESR

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i	FZP-G ESG	FZP-G VSG
DMS 0,5 - 13,5 Nm	102863	all	●	●	●	●	●	●	●	●
ESR 13,5 - 15,5	802543	all	●	●	●	●	●	●	●	●



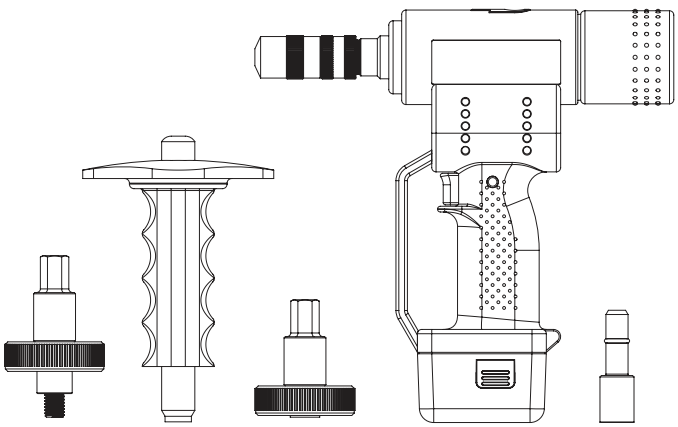
Concorde Hotel · Berlin · **Germany**

3b

Setting tools

for proper installation of fischer Zykon panel anchors.

The setting tools complete the overall fischer Zykon panel anchor fixing system. Based on years of experience, coordinated and revised with our customers, fischer offers a range of high-quality tools for simple, fast and safe installation of the FZP II anchors. This is carried out according to the general technical approval relevant to the anchor and panel material combination.



Setting tools

Installation of fischer Zykon panel anchors FZP II.

Setting tools



Battery operated setting tool SGB



Manual setting tool SGT



Rivet setting tool NSG

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M6 T	FZP II M6 T D40	FZP II M6i	FZP II M8i
NSG	46236	The lightweight battery operated blind rivet setting tool for setting the blind rivets.	–	–	–	–	–	–
SGB/230V	802522 [1]	Natural stone, thin panel materials (e. g. HPL, fibre cement)	●	●	●	●	●	●
SGT	802669 [2]	Natural stone, thin panel materials (e. g. HPL, fibre cement)	●	–	●	●	●	–

1) Dangerous goods - no express shipping possible.

2) for max. thread projection 16 mm

Setting adapter



Setting adapter SGA M8



Setting adapter SGA M8i

Item	Item No.	Useable material	FZP II M6	FZP II M8	FZP II M8i	FZP II M6 T	FZP II M6 T D40	FZP-G ESG	FZP-G VSG	
SGA-M6	803749 [1]	natural stone, ceramic	●	–	–	●	●	–	–	
SGA-M8	803748 [1]	Natural stone	–	●	–	–	–	●	●	
SGA-M8i	804432	Natural stone	–	–	●	–	–	–	–	

1) for max. thread projection 18 mm

Setting tool FZE plus



Setting tool FZE plus

Item	Item No.	Useable material	FZP II M6	FZP II M6i	FZP II M8	FZP II M8i				
FZE 10 plus	044637 [1]	Natural stone	●	●	–	–				
FZE 12 plus	044638	Natural stone	–	–	●	–				
FZE 14 plus	044639	Natural stone	–	–	–	●				

1) Without centring pin.



3c

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3c
SystemOne subframe system

Chair bracket	126	
Horizontal profiles	127	
Agraffe	128	
Vertical profiles	129	
Wall holder	130	
Accessories	132	

Subframe systems

SystemOne, SystemOne Light and SystemOne Vertical Solutions.

SystemOne

A key element of fischer façade systems is the System-One subframe. It is designed for high loads, large-sized, heavy natural stone slabs and for bridging non-load-bearing building structures. The subconstruction reduces assembly times on-site, reduces noise, e.g. during renovations, and allows easy replacement of panels. The combination of horizontal profiles and panel clasps results in a constant construction dimension of 37 mm.



ATK 103 System

A rainscreen façade is a ventilated double-layer cladding system which structurally separates the weather protection and insulation functions. Based on many advantages compared to sealed façade systems rainscreen systems have become very popular nowadays. Besides the aesthetic advantages there are in addition functional and safety benefits, which include the rear ventilation cavity and non-combustible insulation materials.

These systems are less susceptible to damage than other façade systems and provide a wide freedom of design. In addition, fire, noise and lightning protection requirements can be implemented.



Groove System

The fischer Grooving system is designed to be located at the top and bottom edge of the cladding panel.
Grooving system is a combination between vertical and horizontal profiles and wall brackets, each element have its own benefit to have by the end 100% safe and aligned system.



Pin System

The fischer Pin Facade system is designed and developed by fischer's facade experts to produce safe methods of fixing the highest level of quality using fischer's chair clamp.
The chair clamp is made of stainless steel material and it has all kinds of adjustments in the three axis.



ATK 103 Concealed Undercut rain screen façade.

Suitable for tiles, fine stoneware, natural stone, Porcelain and fiber-cement.

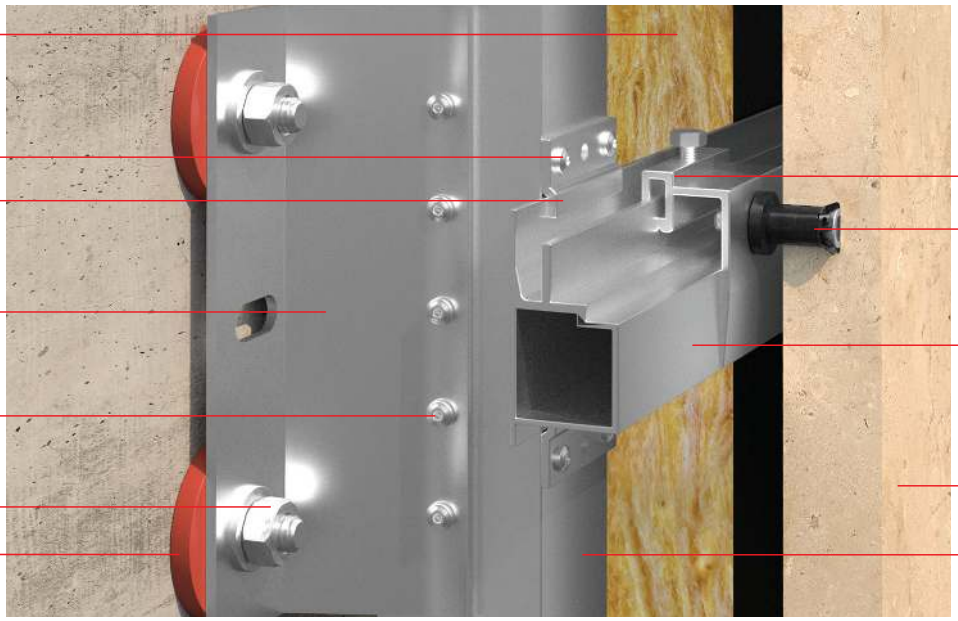




SystemOne for heavy duty stone cladding.

Heavy duty undercut system

3c



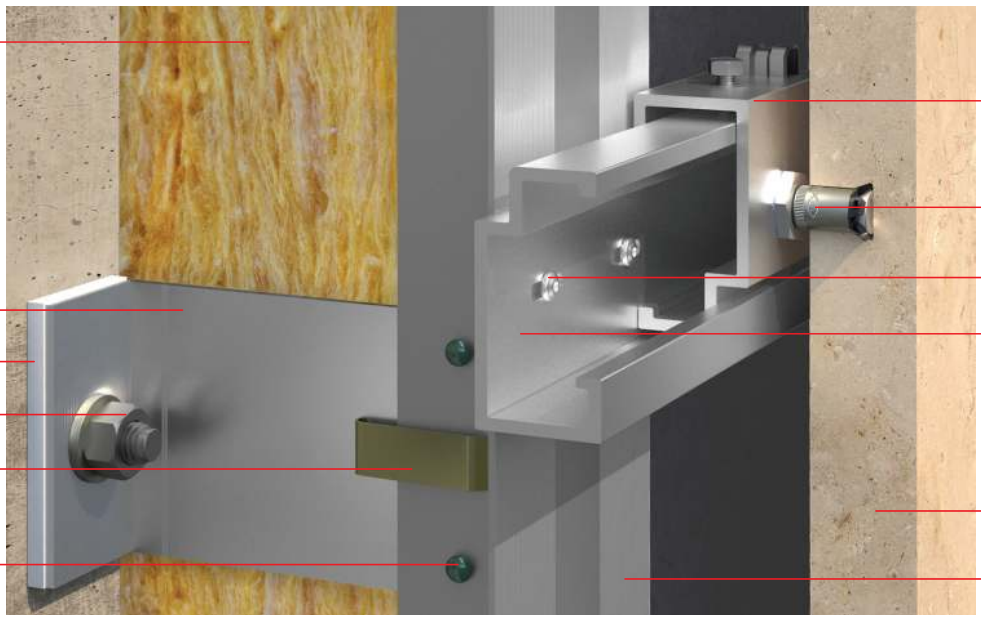
Technical data

Concealed system		
Product type	**Product description**	**Annotation**
Isolator	Cold Bridge Stop CBS	PVC washer
Wall holder	FPH 68	Fix point holder
Wall holder	SPH 68	Sliding point holder
Wall fixing	FAZ II 10/10 A4	Bolt anchor for concrete
Wall fixing	SXRL 10 x 80 FUS	Frame fixing for masonry
Vertical profile	VP 80/2	Aluminum profile, 6m
Fixing	Rivet 4,8X12 A4	–
Horizontal profile	HP BS bracket solution	Aluminum profile, 6m
Profile guidance	GLB	For fix and sliding points
Clasp	BR-BS M8/100	Clasp for fix or sliding point
Clasp	ES-BS	Adjustment screw
Clasp	Fixit	Fix point locking
Undercut anchor	FZP II 13x26 M8/SO/12 Carbon	Stand-off anchor
Undercut anchor	FZP II 15x15 M8 I	Iinternal threaded flush anchor

Typical items for a subframe systems as depicted. For more items, specific information and quotations we kindly ask you to refer to:
facades@fischer.de or www.fischer-international.com/fischer-facade-systems

ATK 103 System for light cladding.

Light undercut system



Technical data

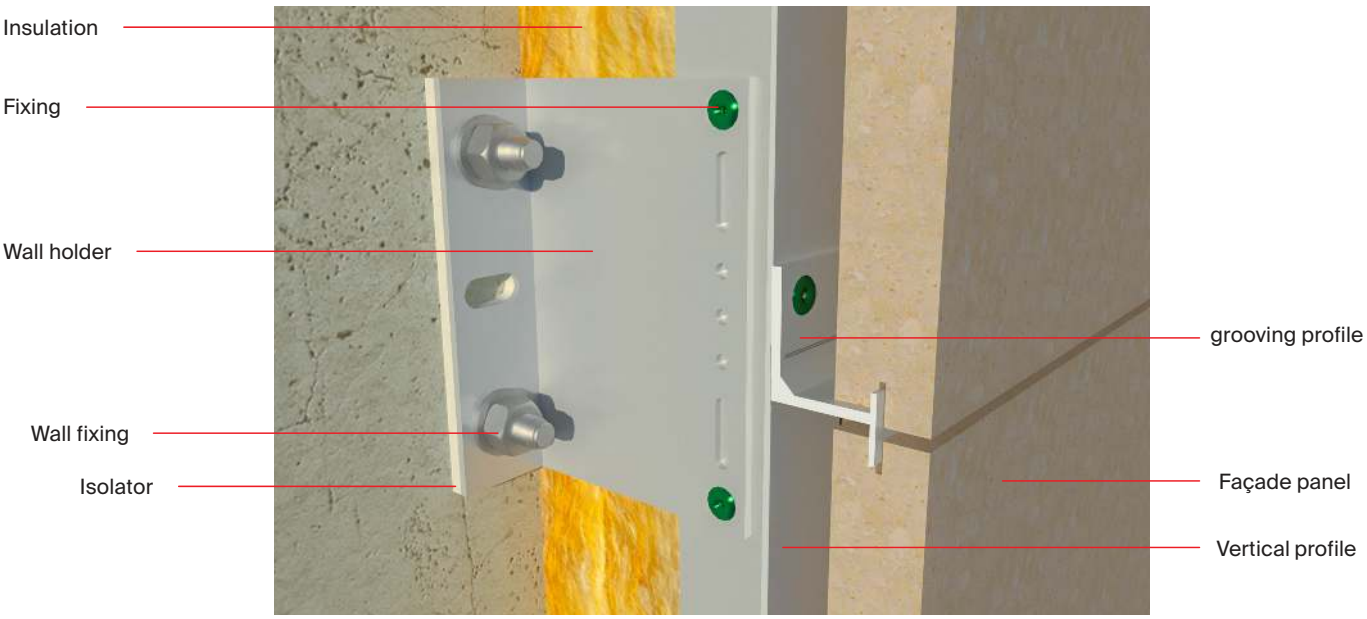
Concealed system		
Product type	**Product description**	**Annotation**
Isolator	Thermostop 40x150x6/11	For fix points
Isolator	Thermostop 40x80x6/11	For sliding points
Wall holder	FLH 120x150x3/11/F-SP AL	Fix point holder
Wall holder	FLH 120x80x3/11/SP AL	Sliding point holder
Wall fixing	FAZ II 10/10 A4	Bolt anchor for concrete
Wall fixing	SXRL 10 x 80 FUS	Frame fixing for masonry
Adjustment element	Helping Hand clip	–
Vertical profile	T-Profile 100/52/2	Aluminum profile, 6m
Fixing	Special Rivet SNA 5 x 12 K14	–
Horizontal profile	H-Profil ATK103S/ t=2mm	Aluminum profile, 6m
Clasp	ATK103 S, t2, B60, D6,5 adjustable	Including fix point locking
Clasp	ATK103 S, t2, B36, D6,5 rigid	For sliding points
Undercut anchor	FZP II 11X21 M6/SO/12 AL	Stand-off anchor
Undercut anchor	FZP II 11X12 M6/13 A4	Flush anchor

Typical items for a subframe systems as depicted. For more items, specific information and quotations we kindly ask you to refer to:
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Groove System

Grooving system

3c



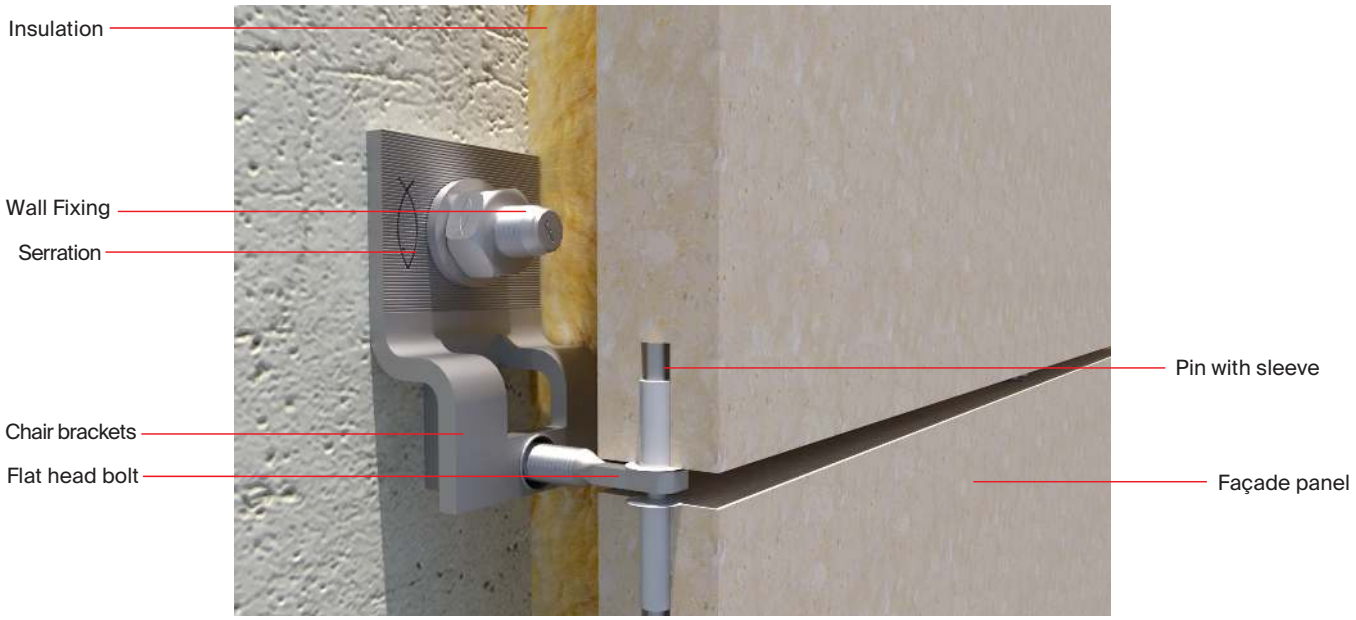
Technical data

Concealed system		
Product type	**Product description**	**Annotation**
Isolator	Thermostop 40x150x6/11	For fix points
Isolator	Thermostop 40x80x6/11	For sliding points
Wall holder	FLH 120x150x3/11/F-SP AL	Fix point holder
Wall holder	FLH 120x80x3/11/SP AL	Sliding point holder
Wall fixing	FAZ II 10/10 A4	Bolt anchor for concrete
Wall fixing	SXRL 10 x 80 FUS	Frame fixing for masonry
Vertical profile	T-Profile 100/52/2	Aluminum profile, 6m
Fixing	Special Rivet SNA 5 x 12 K14	–
Horizontal profile	FGSP	Aluminum profile, 6m

Typical items for a subframe systems as depicted. For more items, specific information and quotations we kindly ask you to refer to:
facades@fischer.de or www.fischer-international.com/fischer-facade-systems

Pin system

Pin system



Technical data

Concealed system		
Product type	**Product description**	**Annotation**
Chair bracket	FC-SF 50-65 A4	Pin bracket
Wall fixing	FAZ II 10/10 A4	Bolt anchor for concrete
Wall fixing	SXRL 10 x 80 FUS	Frame fixing for masonry

Typical items for a subframe systems as depicted. For more items, specific information and quotations we kindly ask you to refer to:
facades@fischer.de or www.fischer-international.com/fischer-facade-systems

Chair Bracket

Pin System solution





Chair bracket in façade cross section with natural stone

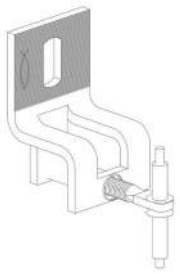
Applications

- For natural stone cladding as :
  1. Traventine
  2. Lime Stone
  3. Marble
  4. Granite

Advantages

- Tested and adhered according to EN 10088:2004 for A4 and EN ISO 4042 for A2 Clamps makes it last longer
- Suitable for the clamping range from 50mm to 120mm stand-off installation
- 24mm slot for easy adjustment during stone alignment

Technical data

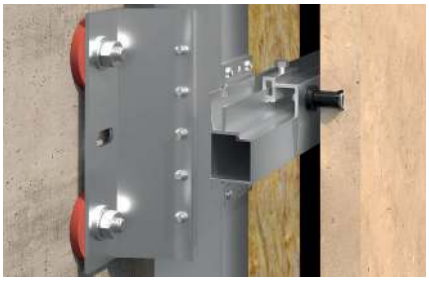


Item no.	Description	SS Version	Off-set Length	Box Qty
547731	FC-SF 50-65 A2	304 (A2)	50-65 mm	50
547732	FC-SF 80-120 A2	304 (A2)	80-120mm	50
547733	FC-SF 50-65 A4	316 (A4)	50-65mm	50
547734	FC-SF 80-120 A4	316 (A4)	80-120mm	50

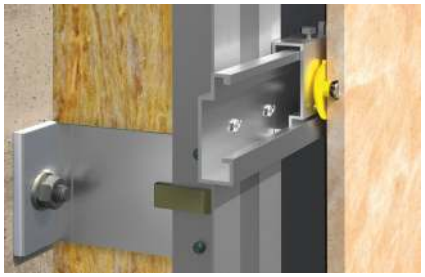
Horizontal profiles

Horizontal profile Bracket Solution





SystemOne in façade cross section with natural stone



SystemOne Light in façade cross section with natural stone

Applications

- As a horizontal profile for subframe systems in rainscreen facades

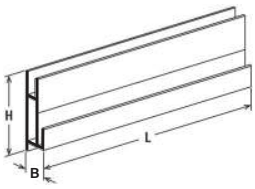
Advantages

- Horizontal load bearing and transfer to the vertical profiles
- Quick and easily suspend façade panels thanks to the coordinated geometries of the brackets and horizontal profiles
- Aluminum 6061 T6

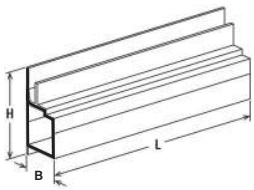
Functioning

- Geometric coordination
- Horizontal load transfer

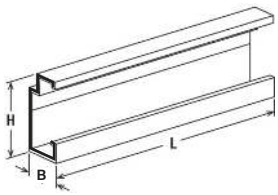
Technical data



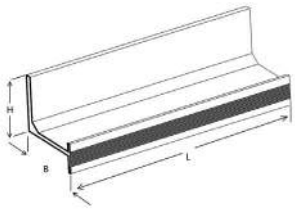
HP-BSL



HP-BS



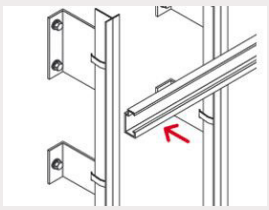
ATK103

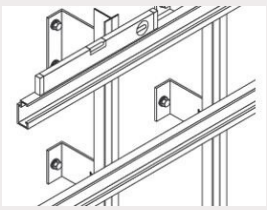


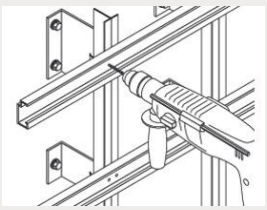
FGS GROOVE

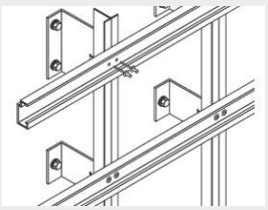
Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Sales unit [pcs]	Aluminum grade
HP BS	559652	6000	34	74	1	6061 T6
HP BSL	559653	6000	21	64	1	6061 T6
H-Profil ATK103S/ t=2mm	559657	6000	29	62	1	6061 T6
H-Profil ATK103P/ t=3mm	559658	6000	30	62	1	6061 T6
H-Profil ATK103S-20/ t=2mm	559659	6000	19	62	1	6061 T6
H-Profil ATK103P-20/ t=3mm	559660	6000	20	62	1	6061 T6
FGS Groove system profile	563759	6000	34.5	52	1	6061 T6

Installation





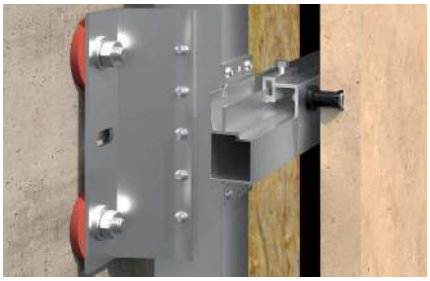




Agraffe

Clasps Bracket Solution





SystemOne in façade cross section with natural stone



SystemOne Vertical Solution in façade cross section with natural stone

Applications

- As a suspension element in the horizontal profile for subframe systems in rainscreen façades.

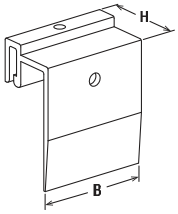
Advantages

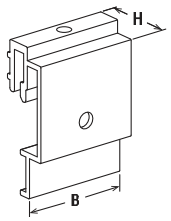
- Clasps can be pre-assembled, saving time on the construction site.
- Fast and easy installation of façade panels thanks to the coordinated geometries of the clasps and horizontal profiles.
- Aluminum 6061 T6

Functioning

- Geometric coordination
- Load bearing

Technical data





Item	Item No.	Width B [mm]	Undercut Diameter D [mm]	Sales unit [pcs]	Match Item	Match Item No.
BR-BS M6/50	048904	50	M6	250	559652	HP BS
BR-BS M6/100	091536	100	M6	125	559652	HP BS
BR-BS M8/50	049238	50	M8	250	559652	HP BS
BR-BS M8/100	078585	100	M8	125	559652	HP BS
BR-BS M8/150	078587	150	M8	100	559652	HP BS
BR-BSL 40-M6	018439	40	M6	250	559653	HP BS
BR-BSL 40-M8	018448	40	M8	250	559653	HP BS
BR-BSL 90-M8	018447	90	M8	200	559653	HP BS
FHC Agraffe 30x3 36/M6	00562912	36	M6	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 30x3 36/M8	00562916	36	M8	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 30x3 60/M6	00567095	60	M6	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 30x3 60/M8	00562908	60	M8	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 30x3 80/M6	00562920	80	M6	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 30x3 80/M8	00562924	80	M8	1	559658/559657	H-Profile ATK103P/ATK103S
FHC Agraffe 20x3 36/M6	00562913	36	M6	1	559660/559659	H-Profile ATK103P-20/ATK103S-20
FHC Agraffe 20x3 36/M8	00562917	36	M8	1	559660/559659	H-Profile ATK103P-20/ATK103S-20
FHC Agraffe 20x3 60/M6	00567096	60	M6	1	559660/559659	H-Profile ATK103P-20/ATK103S-20
FHC Agraffe 20x3 60/M8	00562909	60	M8	1	559660/559659	H-Profile ATK103P-20/ATK103S-20
FHC Agraffe 20x3 80/M6	00562921	80	M6	1	559660/559659	H-Profile ATK103P-20/ATK103S-20
FHC Agraffe 20x3 80/M8	00562925	80	M8	1	559660/559659	H-Profile ATK103P-20/ATK103S-20

Vertical profiles

Box-section vertical profile





SystemOne in façade cross section with natural stone



SystemOne Vertical Solution in façade cross section with natural stone

Applications

- As a vertical profile for subframe systems in rainscreen facades

Versions

- Box
- L
- T

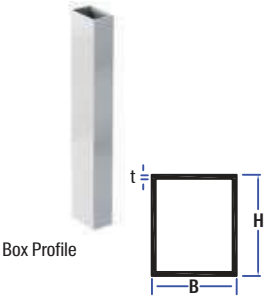
Advantages

- Vertical box sections are better suited to absorb higher loads than T- or L-profiles, thanks to their closed geometry.
- Better resistance to torsion.
- Tolerance compensation for the substrate.
- Simple geometry.
- Aluminium 6061 T6

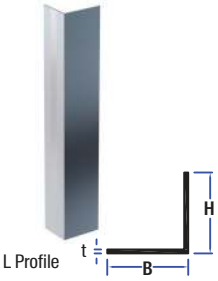
Functioning

- Vertical load transfer
- Tolerance compensation

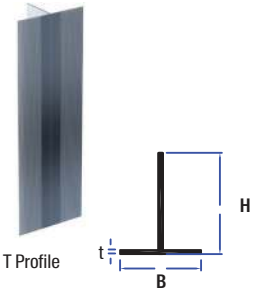
Technical data



Box Profile



L Profile



T Profile

Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness t [mm]	Sales unit [pcs]
Box25X50X2	559635	6000	50	25	2	1
Box25X50X1.4	559637	6000	50	25	1.4	1
Box25X50X2.5	559638	6000	50	25	2.5	1
Box30X50X2	559639	6000	50	30	2	1
Box30X50X1.8	559640	6000	50	30	1.8	1
Box40X50X2	559641	6000	50	40	2	1
Box50X50X2	559645	6000	50	50	2	1
Box80X50X2	559646	6000	50	80	2	1
Box100X50X2	559647	6000	50	100	2	1
Box120X50X3	559648	6000	50	120	3	1
Box150X50X3	559649	6000	50	150	3	1
Box180X50X3	559650	6000	50	180	3	1
Box200X50X3	559651	6000	50	200	3	1
L-Profil 50/50/2 6M	559654	6000	50	50	2	1
T-Profil 52/40/2 6M	559655	6000	40	52	2	1
T-Profil 52/80/2 6M	559656	6000	80	52	2	1

Wall Holder

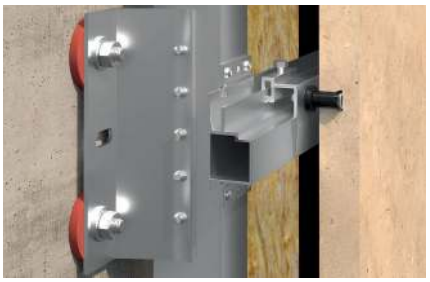
Wall holder with fixing points on both sides



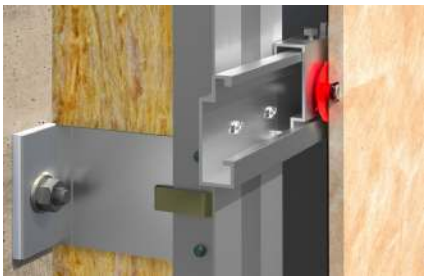
FPH



SPH



SystemOne in façade cross section with natural stone



SystemOne Vertical Solution in façade cross section with natural stone

Applications

- As a wall holder for subframe systems in rainscreen facades

Versions

- FPH
- SPH

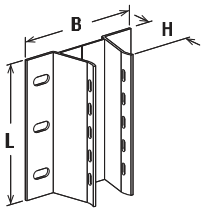
Advantages

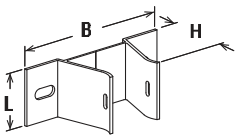
- The wall holder is used to absorb and transfer the loads applied to the façade system.
- They compensate the tolerance of the substrate.
- Available as fixed and sliding point anchors.
- Absorption of thermal longitudinal expansion through slots on the sliding point anchor.
- 6063 T66

Functioning

- Vertical load transfer.
- Absorption of higher loads through double-sided attachment.
- Tolerance compensation for structural tolerances.
- Easy installation with attachments on both sides.

Technical data





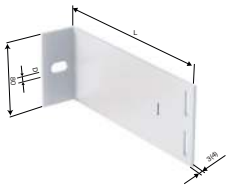
Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Slot l x s [mm]	Match	Sales unit [pcs]
FPH 30	**018442**	180	140	30	11 x 25	VP 50, VP 100	40
FPH 54	**018444**	180	160	54	11 x 25	VP 50, VP 100	40
FPH 68	**048900**	180	160	68	11 x 25	VP 50, VP 100	30
FPH 93	**048901**	180	160	93	11 x 25	VP 50, VP 100	20
FPH 133	**030367**	180	160	133	11 x 25	VP 50, VP 100	24
SPH 30	**018443**	60	140	30	11 x 25	VP 50, VP 100	100
SPH 54	**018445**	60	160	54	11 x 25	VP 50, VP 100	100
SPH 68	**048902**	60	160	68	11 x 25	VP 50, VP 100	90
SPH 93	**048903**	60	160	93	11 x 25	VP 50, VP 100	75
SPH 133	**030368**	60	160	133	11 x 25	VP 50, VP 100	50

Wall Holder FLH

Fix-Sliding point
h=150mm



Sliding Point
h=80mm



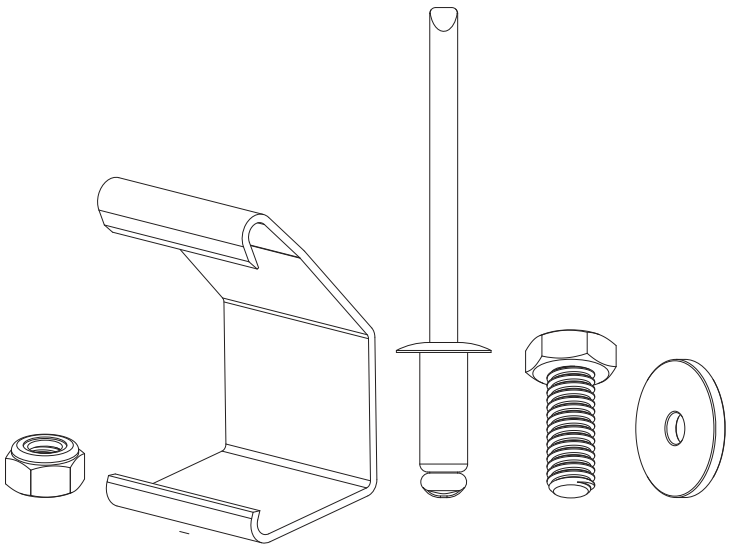
Item no.	Description	Order Quantity [pcs]	Anchoring Ø [mm]	Height [mm]	length [mm]	Material	Thickness [mm]
Fix-Sliding Point, h=150mm,∅11mm							
568231	FLH 40x40x3x150-FP Al	50	11	150	40	EN AW 6061 T6	3
568233	FLH 40x60x4x150-FP AL	50	11	150	60	EN AW 6061 T6	4
568235	FLH 50x75x4x150-FP AL	50	11	150	75	EN AW 6061 T6	4
568237	FLH 50x100x4x150-FP AL	50	11	150	100	EN AW 6061 T6	4
548083	FLH 120x150x3/11/F-SP AL	50	11	150	120	EN AW 6063 T6	3
548089	FLH 140x150x3/11/F-SP AL	50	11	150	140	EN AW 6063 T6	3
548107	FLH 160x150x3/11/F-SP AL	50	11	150	160	EN AW 6063 T6	3
548110	FLH 180x150x3/11/F-SP AL	50	11	150	180	EN AW 6063 T6	3
548113	FLH 200x150x3/11/F-SP AL	50	11	150	200	EN AW 6063 T6	3
548116	FLH 220x150x3/11/F-SP AL	25	11	150	220	EN AW 6063 T6	3
548119	FLH 240x150x3/11/F-SP AL	25	11	150	240	EN AW 6063 T6	3
548122	FLH 260x150x3/11/F-SP AL	25	11	150	260	EN AW 6063 T6	3
548125	FLH 280x150x3/11/F-SP AL	25	11	150	280	EN AW 6063 T6	3
548128	FLH 300x150x3/11/F-SP AL	25	11	150	300	EN AW 6063 T6	3
548132	FLH 320x150x3/11/F-SP AL	25	11	150	320	EN AW 6063 T6	3
Sliding Point, h=80mm,∅11mm							
568232	FLH 40x40x3x80-SP AL	100	11	80	40	EN AW 6061 T6	3
568234	FLH 40x60x4x150-FP AL	100	11	80	60	EN AW 6061 T6	4
568236	FLH 50x75x4x80P-SP AL	100	11	80	75	EN AW 6061 T6	4
568238	FLH 50x100x4x80-SP AL	100	11	80	100	EN AW 6061 T6	4
548081	FLH 120x80x3/11/SP AL	100	11	80	120	EN AW 6063 T66	3
548087	FLH 140x80x3/11/SP AL	100	11	80	140	EN AW 6063 T66	3
548105	FLH 160x80x3/11/SP AL	100	11	80	160	EN AW 6063 T66	3
548108	FLH 180x80x3/11/SP AL	100	11	80	180	EN AW 6063 T66	3
548111	FLH 200x80x3/11/SP AL	100	11	80	200	EN AW 6063 T66	3
548114	FLH 220x80x3/11/SP AL	50	11	80	220	EN AW 6063 T66	3
548117	FLH 240x80x3/11/SP AL	50	11	80	240	EN AW 6063 T66	3
548120	FLH 260x80x3/11/SP AL	50	11	80	260	EN AW 6063 T66	3
548123	FLH 280x80x3/11/SP AL	50	11	80	280	EN AW 6063 T66	3
548126	FLH 300x80x3/11/SP AL	50	11	80	300	EN AW 6063 T66	3
548129	FLH 320x80x3/11/SP AL	50	11	80	320	EN AW 6063 T66	3

3c

Installation accessories

for the installation of fischer rainscreen façade systems.

The installation accessories include all components and elements which are required to assemble fischer façade systems as a rainscreen façade.
In addition to the usual fixings and connectors such as screws, rivets and nuts, accessories for sub-frame systems and reveal angles for the design of façade corners are included.



Accessories

Diverse assortment of accessories for installing a subframe system

Reveal angle LW



LW 50

Item	Item No.	Material	Adapted for	Length L [mm]	Height H [mm]	Width B [mm]	Material thickness [mm]	Angle	Slot l x s [mm]	Sales unit [pcs]
LW 50-M6/M8	**568381**	Aluminium	FZP II M6, FZP II M6 Carbon	80	80	50		90°	9 x 15	125

Profile guidance GLB



GLB

Item	Item No.	Material	Adapted for	Length L [mm]	Height H [mm]	Material thickness [mm]	Sales unit [pcs]
Profile guidance GLB	**048906**	ALU		50	27	3	200

Fixit Plastic wedge to form a horizontal fixed point



Fixit

Item	Item No.	Material	Length L [mm]	Height H [mm]	Material thickness [mm]	Sales unit [pcs]
Fixit	**048905**	PVC	45	20		250

HP-Clip = visual protection clip to cover the aluminium substructure in the panel joints



HP-Clip

Item	Item No.	Material	Length L [mm]	Height H [mm]	Width B [mm]	Material thickness [mm]	Sales unit [pcs]
Cover plate HP-Clip	**096451**	PVC	70	40	45	2	300

Thermal isolator CBS



Cold bridge stop CBS

Item	Item No.	Material	External-Ø d [mm]	Internal diameter D [mm]	Material thickness [mm]	Sales unit [pcs]
Cold Bridge Stopp CBS	**092680**	PVC	50	12,0	5	200

Thermostop



40x80x6/11



40x150x6/11

Item	Item No.	Contents [ml]	Sales unit [pcs]
Thermostop 40x80x6/11	**540741**	100 x Thermostop	1
Thermostop 40x150x6/11	**546156**	50 x Thermostop	1

Strip holder bracket solution



SH-BS

Item	Item No.	Material	Length L [mm]	Height H [mm]	Material thickness [mm]	Sales unit [pcs]
Strip holder bracket solution	**079169**	Aluminium	120	50	4	50

Blind rivet



Blind rivet A4

Item	Item No.	Material	External-Ø d [mm]	Length L [mm]	Clamping range [mm]	Sales unit [pcs]
Blind rivet 4.8 x 12 A4 (UAE)	**567423**	A4	4.8	12	5.5-7	500
Blind rivet 4.8 x 14 A4 (UAE)	**569176**	A4	4.8	14	7.5-9	500
Blind rivet 4.8 x 16 A4 (UAE)	**569078**	A4	4.8	16	9.5-11	500

1) Design Tension Force 2.25 KN
2) Design Shear Force 3.00 KN

Façade self-drilling screw



Self-Drilling screw FABSA 23-A2

Item	Item No.	Material	External-Ø d [mm]	Diameter of washer [mm]	Length L [mm]	Sales unit [pcs]
Self Drilling screw 5.5x26 A4	**562758**	A4	5.5	16	26	500
Self Drilling screw 5.5x25 A2	**563181**	A2	5.5	16	25	500

1) Design Tension Force 1.56 KN
2) Design Shear Force 1.80 KN

Washer



Washer

Item	Item No.	Material	Internal diameter D [mm]	Width across nut SW [mm]	Height H [mm]	DIN	Sales unit [pcs]
Washer M6-A4	**516824**	A2	6	10	1.6	125	100
Washer M8-A4	**516825**	A2	8	13	1.6	125	100

Spike washer



Spike washer A4

Item	Item No.	Material	Internal diameter D [mm]	Length L [mm]	Height H [mm]	Material thickness [mm]	Sales unit [pcs]
Spike washer M6 - A4	**049914**	A4	6	20	20	3	100
Spike washer M8 - A4	**049915**	A4	8	20	20	3	100

Nut A4



Hexagonal nut A4



Lock nut A4



Serrated Nut A4

Item	Item No.	Material	Internal thread A1	Width across nut SW [mm]	Height H [mm]	DIN		Sales unit [pcs]
Nut M6 A4	**521667**	A4	M 6	10	5.2	934	24 032	100
Nut M8 A4	**521668**	A4	M 8	13	6.8	934	24 032	100
Lock nut M6 A4	**521669**	A4	M 6	10	8	985	24 032	100
Lock nut M8 A4	**521670**	A4	M 8	13	9.5	985	24 032	100
Serrated Nut M6 A4 (UAE)	**557977**	A4	M 6	10	6	1661	6923	250
Serrated Nut M8 A4 (UAE)	**541614**	A4	M 8	13	8	1661	6923	250

Screw locking liquid



Screw locking liquid

Item	Item No.	Contents [ml]	Sales unit [pcs]
Screw locking liquid 10ml	**521676**	10	1

Profile connector



PSV-BS



PSV-BSL



PSV-VS

Item	Item No.	Material	Length L [mm]	Height H [mm]	Width B [mm]	Material thickness [mm]	Sales unit [pcs]
PSV-BS	**521665**	Aluminium	200	30	30	2	25
PSV-BSL	**018446**	Aluminium	200	35	10	2	25
PSV-VS	**049905**	Aluminium	200	45	20	2	50

Adjustment screw



Adjustment screw

Item	Item No.	Material	External-Ø d [mm]	Width across nut SW [mm]	Length L [mm]	DIN	Sales unit [pcs]
Hex Bolt M6x20 A4	**568245**	A4	6	10	20	933	50

Adjustable wedge



Adjustable wedge

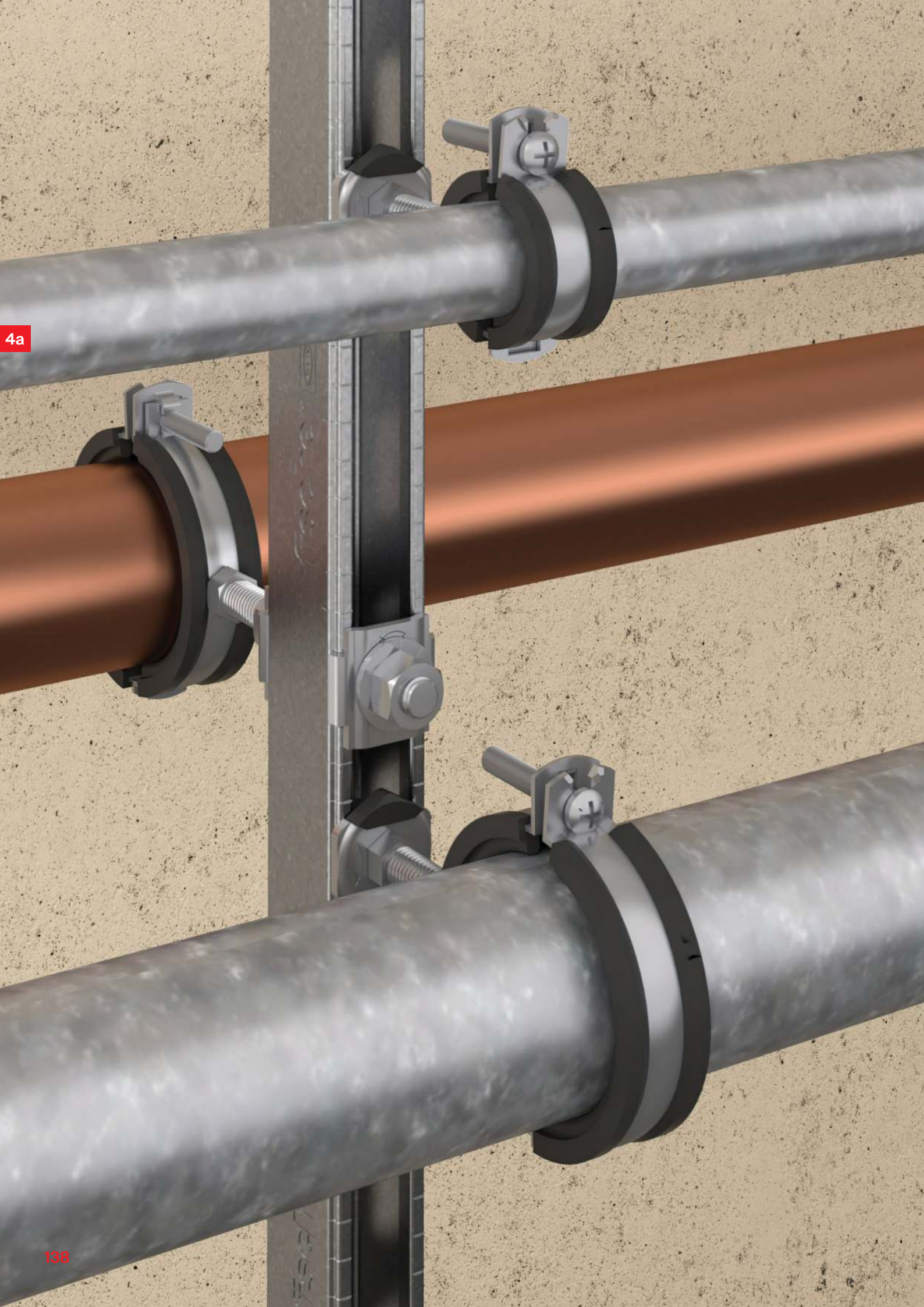
Item	Item No.	Material	Sales unit [pcs]
Adjustable wedge VS	**521675**	PVC	5

Socket wrench



Item	Item No.	Sales unit [pcs]		
NSG (price)	**046236**	1		

1) Dangerous goods - no express shipping possible.



4a

4

Installation System

4a

Pipe clamps

TWO SCREW PIPE CLAMPS

Pipe clamp FRSR	140	
Pipe clamp FRSR HDG & SS 316	142	
Pipe clamp FRS	144	
Pipe clamp FRSRN	146	
Silicone pipe clamp FRSH	148	

HEAVY DUTY PIPE CLAMPS

Heavy duty pipe clamp FRSM - metric	150	

SPRINKLER PIPE CLAMPS

Sprinkler clamp FRSPC	152	
Clevis Hanger FCH	154	
Riser clamp RCWR	156	

OTHERS

U-Bolt	157	
Rubber lined U-bolt	159	
Rubber Lined U-strap	161	
U-Strap USP	162	
Riser clamp Rubber Lined	164	
Rubber Lined Clevis hanger RLFCH	165	
Clevis hanger FCH CHW	166	
Rubber Support Insert FRSI	168	

Pipe clamp FRSR

The two-screw pipe clamp with single and combination connecting thread





Drainage pipe assembly

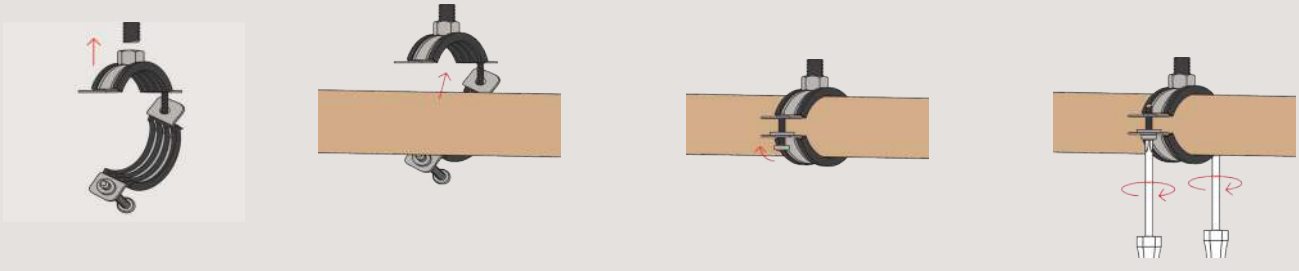
Advantages/benefits

- Simple installation due to large opening angle.
- Locking screw secured against loss.
- Single and Combination connecting thread for cost-effective warehousing and flexibility at the construction site.
- Can be used with PVC, CU, HDPE and PPR pipes

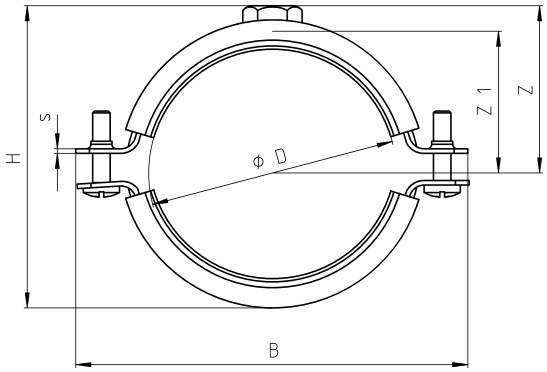
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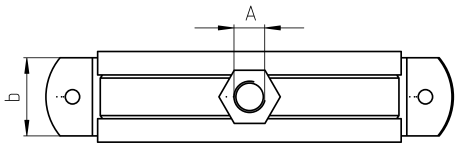
- Material: Steel
- Zinc plating: Electro zinc plated 5 - 9 µm
- Standard: comply with ASTM B633 SC1
- Available in SC3 on special request. Also
- available in dacromet finish 8.6 mm for more detail check annex (B)
- Standard: ASTM A153
- HDG: Coating thinknes, Min 45 µm
- Connecting nut: resistance welded
- Locking screw: flat head screw with combination recessed head
- Sound Insulation inserts: Material EPDM chlorine-free & silicone-free
- Sound insulation: acc. to DIN 4109
- Temperature range: -40 °C to +100 °C
- Hardness: 60 ± 5° Shore

Installation FRSR



Technical data





Item	Item No GI	Size [inch]	Clamping range D [mm]	s x b [mm]	Screw M [mm]	Thread diameter A [mm]	Design load N_d [kN]	Sales unit [pcs]
FRSR 11-14 M8	568804	1/4”	11-14	1.0x 20	M5 x 16	M8	1.12	100
FRSR 15-19M8	568805	3/8”	15-19	1.0 x 20	M5 x 16	M8	1.12	100
FRSR 20-25 M8	568806	1/2”	20-25	1.0 x 20	M5 x 16	M8	1.12	100
FRSR 26-30 M8	568807	3/4”	26-30	1.0 x 20	M5 x 16	M8	1.12	100
FRSR 32-36 M8	568808	1”	32-36	1.0 x 20	M5 x 16	M8	1.12	100
FRSR 38-43 M8	568809	1-1/4”	38-43	1.0 x 20	M5 x 20	M8	1.12	50
FRSR 47-51 M8	568810	1-1/2”	47-51	1.0 x 20	M5 x 20	M8	1.12	50
FRSR 53-58 M8	568811	--	53-58	1.0 x 20	M5 x 20	M8	1.12	50
FRSR 60-64 M8	568812	2”	60-64	1.0 x 20	M5 x 20	M8	1.12	50
FRSR 63-67 M8	568813	65	63-67	1.0 x 20	M5 x 20	M8	1.12	25
FRSR 68-72 M8	568814	--	68-72	1.0 x 20	M6 x 20	M8	1.12	25
FRSR 75-80 M8 / M10	534144	2-1/2“	75-80	1.5 x 20	M6 x 20	M8+M10	1.19	25
FRSR 81-86 M8 / M10	534145	--	81-86	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR 87-92 M8 / M10	534146	3”	87-92	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR 99-105 M8 / M10	534147	3-1/2	99-105	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR 107-112 M8 / M10	534148	--	107-112	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR 113-118 M8 / M10	534149	4”	113-118	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 125-130 M8 / M10	534150	--	125-130	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 131-137 M8 / M10	560264		131-137	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 138-142 M8 / M10	534151	5”	138-142	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 148-153 M8 / M10	560265	-	148-153	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR 159-166 M8 / M10	534152	6”	159-166	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 168-172 M8/M10	560266	6”	168-172	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 175-183 M8 / M10	560272	-	175-183	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 193-203 M8 / M10	560268	-	193-203	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 200-212 M8 / M10	534153	-	200-212	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR 215-220 M8 / M10	534154	8''	215-220	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR 223-228 M8 / M10	-	-	223-228	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 249-253 M8 / M10	560269	-	249-253	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 292-296 M8 / M10	560273	-	292-296	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 300-305 M8 / M10	-	-	300-305	2.0 x 20	M6 x 20	M8+M10	3.5	1
FRSR 313-318 M8 / M10	560270	-	313-318	2.0 x 20	M6 x 20	M8+M10	3.5	1
FRSR 320-328 M8 / M10	560271	-	320-328	2.0 x 20	M6 x 20	M8+M10	3.5	1
FRSR 350-355 M8 / M10	-	-	350-355	2.0 x 20	M6 x 20	M8+M10	3.5	1

Pipe clamp FRSR HDG & SS 316

The two-screw pipe clamp with combination connecting thread





Drainage pipe assembly

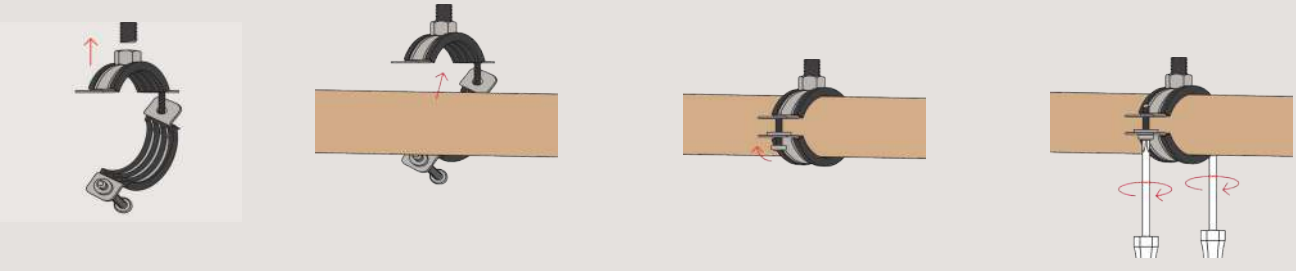
Advantages/benefits

- Simple installation due to large opening angle.
- Locking screw secured against loss.
- Single and Combination connecting thread for cost-effective warehousing and flexibility at the construction site.
- Can be used with PVC, CU, HDPE and PPR pipes

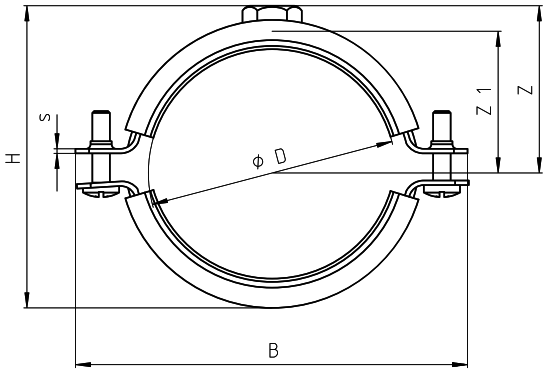
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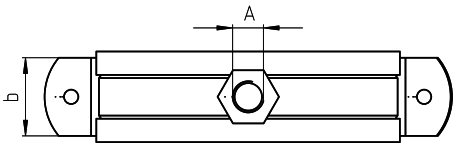
- Material: Steel
- Standard: ASTM A153
- HDG: Coating thinknes, Min 45 µm
- Also available in Stainless Steel 316
- Connecting nut: resistance welded, M8/M10
  Locking screw: flat head screw with
- combination recessed head
  Sound Insulation inserts: Material EPDM
- chlorine-free & silicone-free
  Sound insulation: acc. to DIN 4109
- Temperature range: -40 °C to +100 °C
  Hardness: 60 ± 5° Shore

Installation FRSR



Technical data



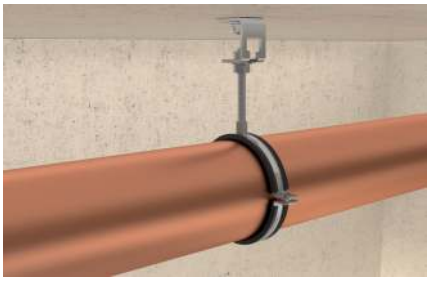


Item	HDG Art.-NO	SS 316 Art.-NO	Size [inch]	Clamping range D [mm]	s x b [mm]	Screw M [mm]	Thread daimeter A [mm]	Design load N_d [kN]	Sales Unit [pcs]
FRSR 11-14 M8 / M10	557931	559073	1/4”	11-14	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR 15-19M8 / M10	557933	559074	3/8”	15-19	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR 20-25 M8 / M10	557934	559075	1/2”	20-25	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR 26-30 M8 / M10	557935	559076	3/4”	26-30	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR 32-36 M8 / M10	557936	559077	1”	32-36	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR 38-43 M8 / M10	557937	559078	1-1/4”	38-43	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR 47-51 M8 / M10	557938	559079	1-1/2”	47-51	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR 53-58 M8 / M10	557939	559080	--	53-58	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR 60-64 M8 / M10	557940	559081	2”	60-64	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR 63-67 M8 / M10	557941	559082	65	63-67	1.2 x 20	M5 x 20	M8+M10	1.19	25
FRSR 68-72 M8 / M10	557942	559083	--	68-72	1.5 x 20	M6 x 20	M8+M10	1.19	25
FRSR 75-80 M8 / M10	557943	559084	2-1/2“	75-80	1.5 x 20	M6 x 20	M8+M10	1.19	25
FRSR 81-86 M8 / M10	557944	559085	--	81-86	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR 87-92 M8 / M10	557945	559086	3”	87-92	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR 99-105 M8 / M10	557946	559087	3-1/2	99-105	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR 107-112 M8 / M10	557947	559089	--	107-112	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR 113-118 M8 / M10	557948	559090	4”	113-118	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 125-130 M8 / M10	557949	559091	--	125-130	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 138-142 M8 / M10	557950	559092	5”	138-142	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 148-153 M8/M10	557951	559093	-	148-153	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR 159-166 M8 / M10	557952	559094	6”	159-166	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR 175-183 M8 / M10	557955	559097	-	175-183	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR 200-212 M8 / M10	557953	559095	-	200-212	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 215-220 M8 / M10	557954	559096	8’’	215-220	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 223-228 M8 / M10	557956	559098	-	223-228	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 249-253 M8 / M10	557957	559099	-	249-253	2.0 x 20	M6 x 20	M8+M10	3.5	8
FRSR 300-305 M8 / M10	557958	559100	-	300-305	2.0 x 20	M6 x 20	M8+M10	3.5	1
FRSR 350-355 M8 / M10	557959	559102	-	350-355	2.0 x 20	M6 x 20	M8+M10	3.5	1

Pipe clamp FRS

The two-screw pipe clamp with combination connecting thread





Height adjustable pipe installation



Drainage pipe assembly

Applications

- Secure fixing for pipes with threaded rods or stud screws (also when there are fire protection requirements)

Certificates

Fire resistance classification R120

MLAR R30

sound insulation tested

Advantages/benefits

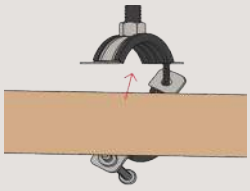
- The fire test report guarantees independently tested functional safety.
- The two screws allow an easy adjustment to suit the outer pipe diameter.
- The combination connecting nut with thread M8/M10 enables optimised mounting choices.
- The sound insulation insert offers noise protection and prevents contact corrosion.
- The screw's safety feature ensures trouble-free installation.

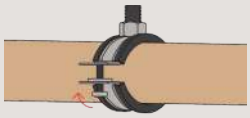
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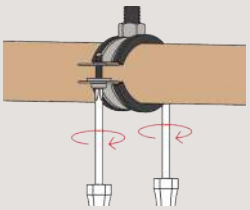
- Material: steel DC01 (material no. 1.0330) acc. to DIN EN 10130
- Zinc plating: electro zinc-plated, 5 - 9 µm
- Connecting nut: resistance welded, M8 / M10, SW 13
- Locking screw: flat head screw with combination recessed head
- Material sound insulation insert: EPDM; chlorine-free; silicone-free
- Sound insulation: for DIN 4109
- Temperature range: -40 °C to +100 °C
- Hardness: 55 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2

Installation FRS

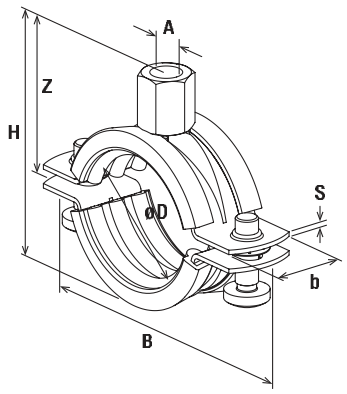




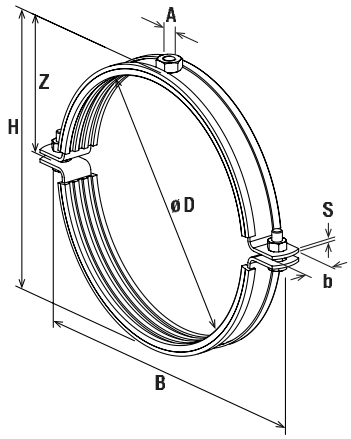




Technical data



FRS M8/M10



FRS

Item	Item No.	Fire test report	Thread A	Size [inch]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Width x thick-ness clamp band b x s [mm]	Height Z [mm]	Locking screw	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
FRS 12 - 15 M8/M10	**510969**	●	M 8 / M 10	1/4"	12 - 15	55	39	20 x 1.25	31	M 6	1.00	100
FRS 15 - 19 M8/M10	**042535**	●	M 8 / M 10	3/8"	15 - 19	59	43	20 x 1.25	29	M 6	1.00	100
FRS 20 - 24 M8/M10	**042536**	●	M 8 / M 10	1/2"	20 - 24	65	48	20 x 1.25	32	M 6	1.00	100
FRS 25 - 30 M8/M10	**042537**	●	M 8 / M 10	3/4"	25 - 30	72	54	20 x 1.25	35	M 6	1.00	100
FRS 32 - 37 M8/M10	**042538**	●	M 8 / M 10	1"	32 - 37	77	61	20 x 1.25	38	M 6	1.00	100
FRS 40 - 45 M8/M10	**042554**	●	M 8 / M 10	1 1/4"	40 - 45	89	69	20 x 1.25	42	M 6	1.00	50
FRS 48 - 54 M8/M10	**510970**	●	M 8 / M 10	1 1/2"	48 - 54	99	78	20 x 1.25	46	M 6	1.00	50
FRS 55 - 61 M8/M10	**042555**	●	M 8 / M 10	2"	55 - 61	105	85	20 x 1.25	50	M 6	1.00	50
FRS 63 - 67 M8/M10	**091488**	●	M 8 / M 10	–	63 - 67	111	91	20 x 1.25	53	M 6	1.00	50
FRS 72 - 80 M8/M10	**091489**	●	M 8 / M 10	2 1/2"	72 - 80	125	104	20 x 2.0	60	M 6	1.50	25
FRS 87 - 92 M8/M10	**091505**	●	M 8 / M 10	3"	87 - 92	137	116	20 x 2.0	66	M 6	1.50	25
FRS 95 - 103 M8/M10	**545649**	●	M 8 / M 10	–	95 - 103	149	130	25 x 2,0	73	M 6	2.00	25
FRS 108 - 116 M8/M10	**091506**	●	M 8 / M 10	4"	108 - 116	164	140	25 x 2,0	78	M 6	2.0	20
FRS 121 - 128 M8/M10	**079456**	●	M 8 / M 10	–	121 - 128	176	152	25 x 2.5	84	M 6	2.50	10
FRS 133 - 141 M8/M10	**079457**	●	M 8 / M 10	5"	133 - 141	187	165	25 x 2.5	90	M 6	2.50	10
FRS 159 - 165 M8/M10	**079458**	●	M 8 / M 10	–	159 - 165	211	198	25 x 2.5	102	M 6	2.50	8
FRS 165 - 168 M8/M10	**079459**	●	M 8 / M 10	6"	165 - 168	225	192	25 x 2.5	104	M 6	2.50	8
FRS 200-206 M10	**539660**	–	M 10	–	200 - 206	256	227	25 x 2.5	118	M 8	2.75	15
FRS 210-219 M10	**558335**	–	M 10	–	210 - 219	262	240	25 x 2.5	124	M 8	2.75	15

Pipe clamp FRSRN

The two-screw pipe clamp with combination connecting thread





Chilled water pipe support

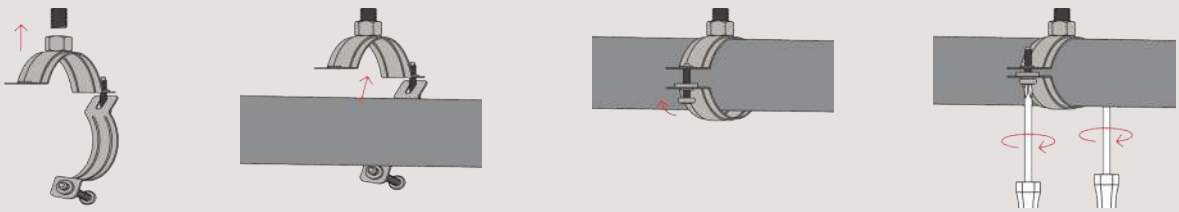
Advantages/benefits

- Simple installation due to large opening angle.
- Locking screw secured against loss.
- Combination connecting thread for cost-effective warehousing and flexibility at the construction site.
- To be used with rubber support inserts for Chilled Water Pipes (CHWP).

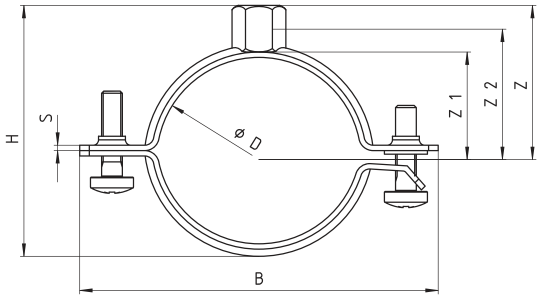
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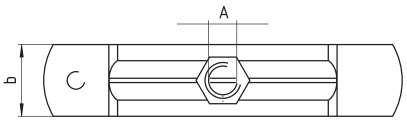
- Material: Steel DD11 (material no. 1.0332 acc. to DIN EN 10111
- Zinc plating: Electro zinc plated 5 - 9 µm
- Standard: comply with ASTM B 633 SC1
- HDG also available upon request
- Connecting nut: resistance welded, M8 and M8/M10 SW 13, M10/M12 SW 17
- Locking screw: Flat head screw with combination recessed head

Installation FRSRN



Technical data





Item	Art.-NO.	Size [inch]	Clamping range D [mm]	s x b [mm]	Screw M	Thread diameter A (mm)	Design load Nd [kN]	Sales unit [pcs]
FRSR-N 11-14 M8 / M10	**549800**	1/4”	11-14	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR-N 15-19 M8 / M10	**549801**	3/8”	15-19	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR-N 20-25 M8 / M10	**549802**	1/2”	20-25	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR-N 26-30 M8 / M10	**549803**	3/4”	26-30	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR-N 32-36 M8 / M10	**549804**	1”	32-36	1.2 x 20	M5 x 16	M8+M10	1.19	100
FRSR-N 38-43 M8 / M10	**549805**	1-1/4”	38-43	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR-N 47-51 M8 / M10	**549806**	1-1/2”	47-51	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR-N 53-58 M8 / M10	**549807**	--	53-58	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR-N 60-64 M8 / M10	**549808**	2”	60-64	1.2 x 20	M5 x 20	M8+M10	1.19	50
FRSR-N 63-67 M8 / M10	**549809**	65	63-67	1.2 x 20	M5 x 20	M8+M10	1.19	25
FRSR-N 68-72 M8 / M10	**549810**	--	68-72	1.5 x 20	M6 x 20	M8+M10	1.19	25
FRSR-N 75-80 M8 / M10	**549811**	2-1/2“	75-80	1.5 x 20	M6 x 20	M8+M10	1.19	25
FRSR-N 81-86 M8 / M10	**549812**	--	81-86	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR-N 87-92 M8 / M10	**549813**	3”	87-92	1.5 x 20	M6 x 20	M8+M10	2.24	25
FRSR-N 99-105 M8 / M10	**549814**	3-1/2	99-105	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR-N 107-112 M8 / M10	**549815**	--	107-112	2.0 x 20	M6 x 20	M8+M10	2.24	20
FRSR-N 113-118 M8 / M10	**549816**	4”	113-118	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR-N 125-130 M8 / M10	**549817**	--	125-130	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR-N 138-142 M8 / M10	**549818**	5”	138-142	2.0 x 20	M6 x 20	M8+M10	3.08	10
FRSR-N 159-166 M8 / M10	**549819**	6”	159-166	2.0 x 20	M6 x 20	M8+M10	3.08	8
FRSR-N 200-212 M8 / M10	**549820**	--	200-212	2.0 x 20	M6 x 20	M8+M10	3.50	8
FRSR-N 215-220 M8 / M10	**549821**	8”	215-220	2.0 x 20	M6 x 20	M8+M10	3.50	8

Silicone pipe clamp FRSH

The two-screw pipe clamp with a sound insulation insert with resistance to high temperatures





Sliding element on cantilever

Applications

- Fixing of high-temperature pipelines with threaded rods or stud screws (e.g. steam pipes)

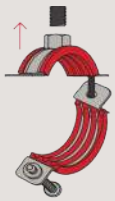
Advantages/benefits

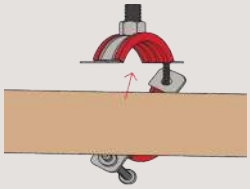
- The special silicone sound insulation insert allows a use with average temperatures of up to +220 °C.
- The two screws enable an easy adjustment to suit the outer pipe diameter.
- The screw's safety feature ensures trouble-free installation.

Properties

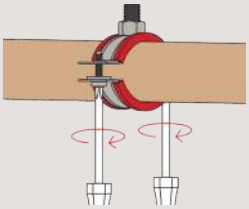
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, 5 - 9 µm
- Connecting nut: (up to FRSH 59 - 63) resistance welded, M8 and M8 / M10 SW 13, M10 SW 17
- Locking screw: flat head screw with combination recessed head
- Material sound insulation insert: silicone
- Sound insulation: for DIN 4109
- Temperature range: -40 °C to +220 °C
- Hardness: 60 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2

Installation FRSH

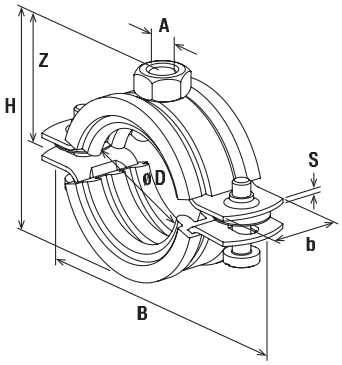








Technical data



FRSH

Item	Item No.	Thread A	Size [inch]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Height Z Z [mm]	Locking screw	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
FRSH 15 - 19	**063490**	M 8	3/8"	15 - 19	62	41	20 x 1.25	24	M 5	1.00	100
FRSH 20 - 24	**063492**	M 8	1/2"	20 - 24	68	46	20 x 1.25	26	M 5	1.00	100
FRSH 25 - 30	**063494**	M 8	3/4"	25 - 30	75	52	20 x 1.25	29	M 5	1.00	100
FRSH 32 - 37	**063495**	M 8	1"	32 - 37	80	59	20 x 1.25	33	M 5	1.00	100
FRSH 40 - 45	**063498**	M 8	1 1/4"	40 - 45	90	67	20 x 1.25	37	M 5	1.00	50
FRSH 48 - 53	**063499**	M 8	1 1/2"	48 - 53	97	75	20 x 1.25	41	M 5	1.00	50
FRSH 54 - 59	**063500**	M 8	–	54 - 59	104	81	20 x 1.25	44	M 5	1.00	50
FRSH 60 - 64	**063502**	M 8	2"	60 - 64	110	86	20 x 1.25	46	M 5	1.00	50
FRSH 68 - 73	**063504**	M 10	–	68 - 73	122	95	25 x 1,5	51	M 6	1.30	25
FRSH 74 - 78	**063505**	M 10	2 1/2"	74 - 78	130	100	25 x 1,5	55	M 6	1.30	25
FRSH 80 - 86	**063511**	M 10	–	80 - 86	130	108	25 x 1,5	58	M 6	1.30	25
FRSH 87 - 92	**063513**	M 10	3"	87 - 92	141	114	25 x 1,5	61	M 6	1.30	25
FRSH 95 - 103	**063518**	M 10	–	95 - 103	156	125	25 x 1,5	67	M 6	1.30	25
FRSH 102 - 116	**063520**	M 10	4"	102 - 116	172	140	25 x 2,0	74	M 6	2.00	20
FRSH 133 - 141	**063537**	M 8 / M 10	5"	133 - 141	198	174	25 x 2.5	95	M 8	2.00	10
FRSH 159 - 168	**091507**	M 8 / M 10	–	159 - 168	226	201	25 x 2.5	109	M 8	2.00	8

Heavy duty pipe clamp FRSM - metric

The large pipe clamp with sound insulation insert for medium to heavy loads





Heavy pipe on cantilever



Heavy drainage pipe under angle bracket

Applications

- Fixing of medium to heavy pipes with threaded rods (hanger bolts)

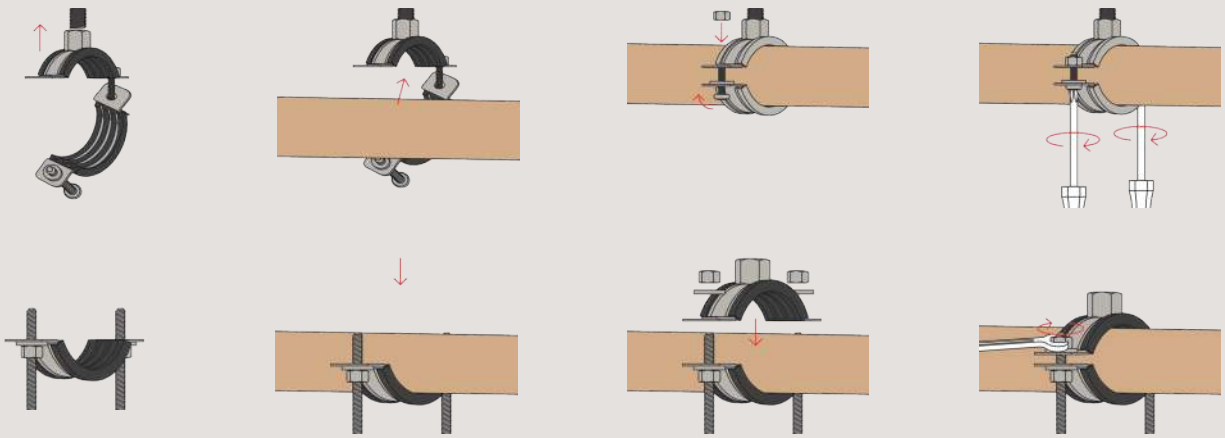
Advantages/benefits

- High tested loads guarantee save functioning of the FRSM.
- The combination connecting nut with thread M10/M12, M12/M16 or M16 allows for optimised mounting choices.
- From Ø 124 mm it is possible to install with 2 threaded rods, e.g. for the fixing of cast iron roof drainage pipes.
- The two screws allow for easy adjustment to suit the outer pipe diameter.
- The screw's safety features ensures trouble-free installation.

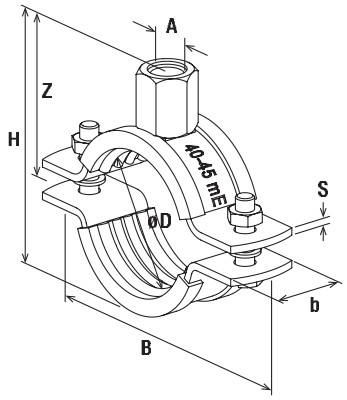
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, 5 - 9 µm
- Connecting nut: M10 / M12 = SW 17, M12 / M16 = SW 22, M16 = SW 24
- Locking screw: hexagon screw with nut
- Material sound insulation insert: EPDM; chlorine-free; silicone-free
- Temperature range: -50 °C to +110 °C
- Hardness: 45 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2

Installation FRSM



Technical data



FRSM - metrisch

Item	Item No.	Thread A	Size [inch]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Height Z Z [mm]	Locking screw	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
FRSM 1/2" M10/M12	**554243**	M 10 / M 12	1/2"	19 - 23	77	56	25 x 2.5	38	M 6	2.50	50
FRSM 3/4" M10/M12	**554244**	M 10 / M 12	3/4"	24 - 29	83	62	25 x 2.5	41	M 6	2.50	50
FRSM 1" M10/M12	**554245**	M 10 / M 12	1"	33 - 36	91	69	25 x 2.5	45	M 6	2.50	50
FRSM 1 1/4" M10/M12	**554246**	M 10 / M 12	1 1/4"	40 - 45	100	78	25 x 2.5	49	M 6	2.50	20
FRSM 1 1/2" M10/M12	**554247**	M 10 / M 12	1 1/2"	47 - 52	107	85	25 x 2.5	53	M 6	2.50	20
FRSM 53 - 58 M10/M12	**554248**	M 10 / M 12	–	53 - 58	113	91	25 x 2.5	56	M 6	2.50	20
FRSM 2" M10/M12	**554249**	M 10 / M 12	2"	60 - 65	120	98	25 x 2.5	59	M 6	2.50	20
FRSM 2 1/2" M10/M12	**554250**	M 10 / M 12	2 1/2"	73 - 78	138	115	30 x 3,0	68	M 8	3.00	20
FRSM 79 - 85 M10/M12	**554251**	M 10 / M 12	–	79 - 85	145	122	30 x 3,0	71	M 8	3.00	20
FRSM 3" M10/M12	**554252**	M 10 / M 12	3"	88 - 93	153	130	30 x 3,0	75	M 8	3.00	20
FRSM 102 M10/M12	**554253**	M 10 / M 12	–	100 - 106	166	143	30 x 3,0	82	M 8	3.00	20
FRSM 4" M10/M12	**554254**	M 10 / M 12	4"	108 - 116	176	153	30 x 3,0	87	M 8	3.00	20
FRSM 124 - 129 M10/M12	**093709**	M 10 / M 12	–	124 - 129	190	164	30 x 3,0	92	M 8	3.00	20
FRSM 131 - 137 M10/M12	**093710**	M 10 / M 12	–	131 - 137	198	172	30 x 3,0	96	M 8	3.00	20
FRSM 138 - 145 M10/M12	**093711**	M 10 / M 12	5"	138 - 145	205	180	30 x 3,0	100	M 8	3.00	20
FRSM 156 - 162 M10/M12	**093712**	M 10 / M 12	–	156 - 162	223	197	30 x 3,0	108	M 8	3.00	20
FRSM 165 - 171 M10/M12	**093713**	M 10 / M 12	6"	165 - 171	232	206	30 x 3,0	113	M 8	3.00	20
FRSM 177 - 183 M10/M12	**558303**	M 10 / M 12	–	177 - 183	245	222	30 x 3,0	121	M 8	3.0	20
FRSM 188 - 194 M10/M12	**093714**	M 10 / M 12	7"	188 - 194	255	229	30 x 3,0	124	M 8	3.00	10
FRSM 196 - 203 M10/M12	**093715**	M 10 / M 12	–	196 - 203	263	238	30 x 3,0	129	M 8	3.00	10
FRSM 212 M12/M16	**505453**	M 12 / M 16	–	205 - 214	297	264	40 x 4,0	147	M 12	5.00	10
FRSM 8" M12/M16	**505454**	M 12 / M 16	8"	219 - 225	308	275	40 x 4,0	153	M 12	5.00	10
FRSM 250 M12/M16	**505455**	M 12 / M 16	–	244 - 250	333	300	40 x 4,0	165	M 12	5.00	10
FRSM 10" M12/M16	**505456**	M 12 / M 16	10"	267 - 273	356	323	40 x 4,0	177	M 12	5.00	10
FRSM 277 - 283 M12/M16	**558304**	M 12 / M 16	–	277 - 283	367	334	–	180	M 12	5.00	10
FRSM 300 M12/M16	**505457**	M 12 / M 16	–	297 - 304	387	354	40 x 4,0	192	M 12	5.00	10
FRSM 305 - 316 M12/M16	**552858**	M 12 / M 16	–	305 - 316	397	366	40 x 4,0	198	M 12	5.00	10
FRSM 12" M12/M16	**505458**	M 12 / M 16	12"	320 - 328	411	378	40 x 4,0	204	M 12	5.00	10
FRSM 348 - 356 M16	**504594**	M 16	–	348 - 356	480	403	50 x 5,0	213	M 16	8.00	1
FRSM 364 - 372 M16	**504595**	M 16	–	364 - 372	496	419	50 x 5,0	221	M 16	8.00	1
FRSM 400 - 409 M16	**504596**	M 16	–	400 - 409	533	456	50 x 5,0	240	M 16	8.00	1
FRSM 454 - 462 M16	**504597**	M 16	–	454 - 462	586	509	50 x 5,0	266	M 16	8.00	1
FRSM 500 - 508 M16	**504598**	M 16	–	500 - 508	632	555	50 x 5,0	290	M 16	8.00	1

Sprinkler clamp FRSP C

The flexible sprinkler loop with FM and UL approval





Sprinkler pipe installation

Applications

- Installation of sprinkler pipes
- Used for the suspension of stationary, non-insulated pipelines

Certificates

FM APPROVED

UL

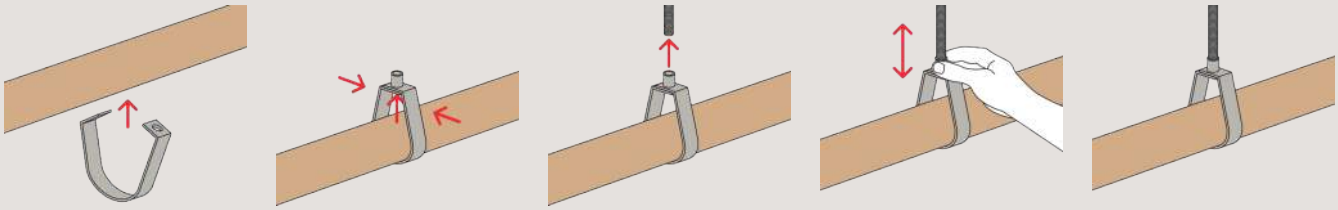
Advantages/benefits

- The FM-approval guarantees independently tested safety for the use in sprinkler systems.
- The sprinkler loop with clearance hole for easy fixing with threaded rod and nut.
- The UL approval guarantees the use in firefighting and sprinkler applications
- Easy to install without tools

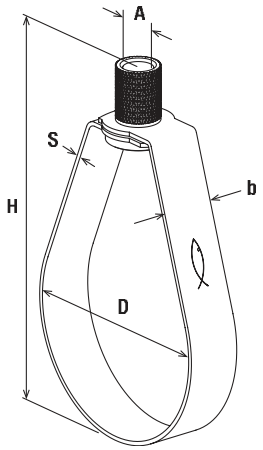
Properties

- Material: Carbon Steel Q 235
- Zinc plating: electro zinc-plated, min. 5 µm
- Green epoxy coated clamps also available upon request
- Standard: comply with ASTM B 633 SC1
  Also available in SC3 on special request.
- Comply with MSS SP 69/MSS SP 58
  Type 7

Installation FRSP C



Technical data



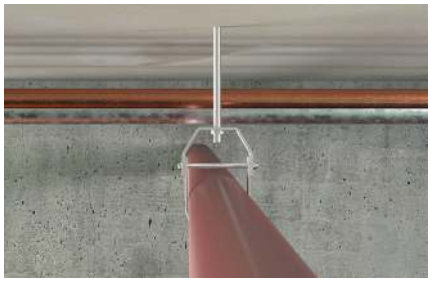
FRSP C

Item	Item No	Clamping range D [mm]	Rod size A [mm]	Height H [mm]	Width b [mm]	Thickness S [mm]	Design load N_d [kN]	Sales unit [pcs.]
FRSP C 1/2”	**516662**	19-23	M 10	72	16	1.2	2.1	100
FRSP C 3/4”	**516663**	25-29	M 10	78	16	1.2	2.1	100
FRSP C 1”	**516664**	33-36	M 10	86	16	1.2	2.1	100
FRSP C 1-1/4”	**516665**	40-45	M 10	94	16	1.2	2.1	100
FRSP C 1-1/2”	**516666**	47-52	M 10	99	16	1.2	2.1	100
FRSP C 2”	**516667**	60-65	M 10	109	16	1.2	2.1	100
FRSP C 2-1/2”	**516668**	73-78	M 10	141	19	2.2	7.7	60
FRSP C 3”	**516669**	88-93	M 10	162	19	2.2	7.7	60
FRSP C 4”	**516670**	110-116	M 10	195	19	2.2	7.7	24
FRSP C 5”	**532356**	138-145	M 12	226	19	2.5	9.1	24
FRSP C 6”	**516671**	165-171	M 12	267	19	3.0	9.1	24
FRSP C 8”	**516672**	217-221	M 12	316	19	3.0	9.1	12

Clevis Hanger FCH

The universal clevis hanger with FM and UL approval





Sprinkler pipe installation

Applications

- Installation of sprinkler pipes
- Used for the suspension of stationary, non-insulated pipelines

Certificates

FM APPROVED

UL

from M10

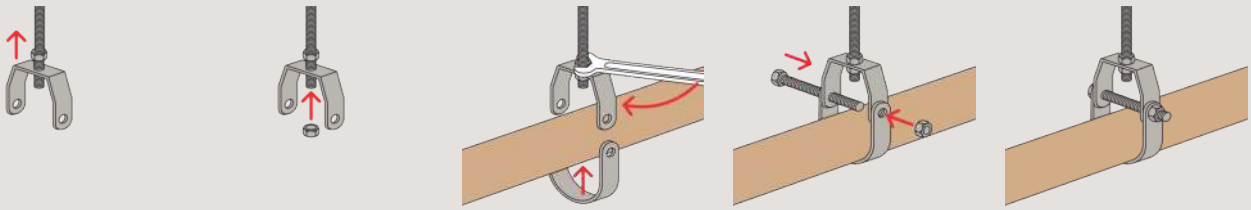
Advantages/benefits

- Heavy duty Clevis Hanger.
- Designer for fire fighting systems.
- Design allows vertical adjustment of pipe after installation.
- Nuts above Clevis must be tightened securely to ensure proper hanger performance.

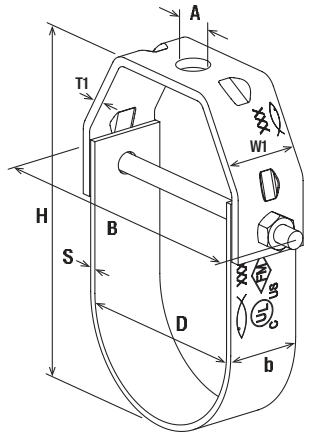
Properties

- Material: Carbon Steel Q 235
  Zinc plating: electro zinc-plated, min. 5 µm
- Standard: comply with ASTM B633 SC1 Also available in SC3 on special request.
- Green epoxy coated clamps also available upon request
- Comply with MSS SP 69/MSS SP 58 Type-1

Installation FCH



Technical data



FCHS

Item	Item No	Clamping range D [mm]	Rod size A [mm]	Height H [mm]	Distance center to top B [mm]	Design load [kN]	Width b [mm]	Thickness s [mm]	W1 [mm]	T1 [mm]	Sales unit [pcs]
FCH 1/2”	**532187**	**19 - 23**	M 10	51.0	37.6	4.2	19	2.5	19	2.0	150
FCH 3/4”	**532190**	**25 - 29**	M 10	58.4	42.3	4.2	19	2.5	19	2.0	120
FCH 1	**532195**	**33 - 36**	M 10	70.0	50.5	4.2	19	2.5	19	2.0	120
FCH 1-1/4”	**532197**	**40 - 45**	M 10	84.0	59.9	4.2	25	2.5	25	2.0	56
FCH 1-1/2”	**532198**	**47 - 52**	M 10	100.0	72.9	4.2	25	2.5	25	2.0	56
FCH 2”	**516695**	**60 - 65**	M 10	114.3	81.2	4.2	25	3.0	25	2.0	56
FCH 2-1/2”	**516696**	**71 - 75**	M 12	132.7	92.7	7	30	3.0	30	2.5	60
FCH 3”	**516697**	**87 - 92**	M 12	152.6	104.4	7	30	3.5	30	2.5	48
FCH 4”	**516699**	**110 - 116**	M 16	192.0	130.4	7	30	5.0	30	3.0	24
FCH 5”	**516700**	**138 - 145**	M 16	237.8	161.4	8.4	30	6.0	30	4.0	24
FCH 6”	**516701**	**165 - 171**	M 20	272.3	181.2	12.6	38	8.0	38	5.0	12
FCH 8”	**516702**	**217 - 221**	M 20	333.4	216.4	12.6	38	9.0	38	5.0	6
* **FCH 10”**	**516703**	**271 - 275**	M 20	400.0	254.5	22.4	50	9.0	50	6.0	2
* **FCH 12”**	**516704**	**321 - 326**	M 20	479.1	308.2	22.4	50	9.0	50	6.0	2

* 516703, 516704 UL/FM approvals not available

Riser clamp RCWR

RCWR riser pipe clamps for secure fixing of vertical riser pipes with UL certification.





Floorcrossing Downpipe

Applications

- Secure fixing of vertical pipelines
- For use in dry interior areas

Certificates

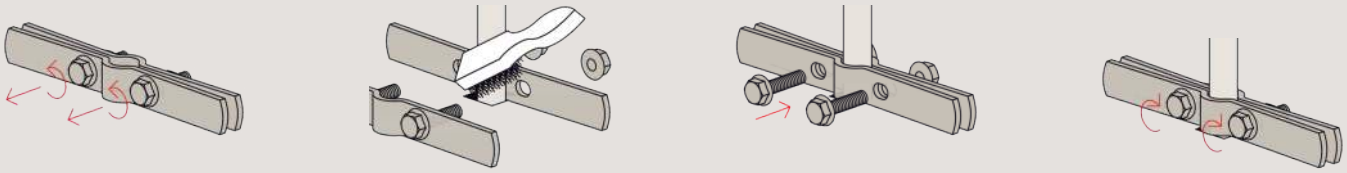
Advantages/benefits

- Usable for all kinds of pipes
- Suitable sizes for pipe diameters of 1/2" to 8"
- Easy installation using hexagonal screws and nuts
- Safe for use thanks to UL certification

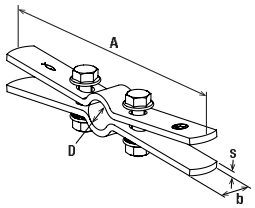
Properties

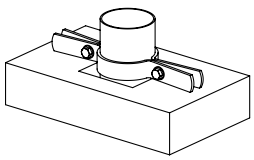
- Material: steel Q235B
- Zinc plating: electro zinc-plated, min. 5 µm

Installation RCWR



Technical data





RCWR

Item	Item No.	UL approved	Clamping range D [mm]	Width A A [mm]	Width x thickness clamp band b x s [mm]	Design load [kN]	Tightening torque screw [Nm]	Sales unit [pcs]
RCWR 1/2"	516673	•	22	215	25 x 5,0	4.62	25	35
RCWR 3/4"	516674	•	28	229	25 x 5,0	4.62	25	30
RCWR 1"	516675	•	34	230	25 x 5,0	4.62	25	25
RCWR 1 1/4"	516676	•	43	241	25 x 5,0	4.62	25	25
RCWR 1 1/2"	516677	•	49	251	25 x 3,0	4.62	25	25
RCWR 2"	516678	•	62	262	30 x 5,0	4.62	25	25
RCWR 2 1/2"	532380	•	75	281	30 x 5,0	5.18	25	25
RCWR 3"	516679	•	91	299	30 x 5,0	6.44	25	20
RCWR 4"	516680	•	116	329	38 x 6,0	9.40	60	12
RCWR 5"	516681	•	144	362	38 x 6,0	12.46	60	12
RCWR 6"	516682	•	171	394	50 x 6,0	16.10	60	8
RCWR 8"	516683	•	223	464	50 x 9,5	25.2	100	4

U-bolt

The U-bolt with metric thread



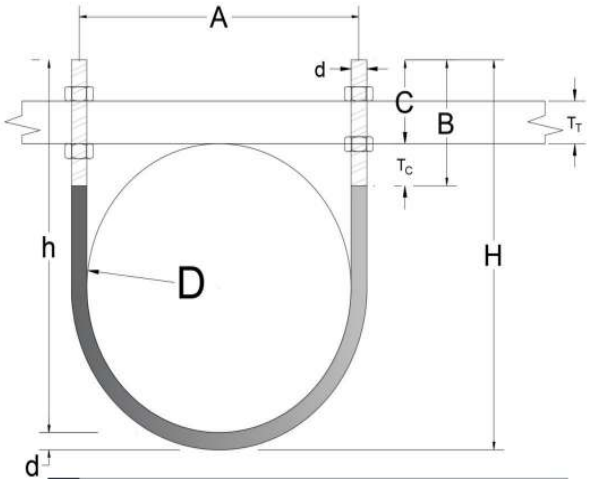
Advantages/benefits

- Good for use as a guide mounting.
- The U-Bolt's two nuts or four nuts allow for ideal adaptation to suit the outer pipe diameter.

Properties

- Material 1: Steel Grade 4.8 acc.to ISO 898 - 1
- Zinc plating: Electro zinc plated 5 - 9 µm
- Standard: comply with ASTM B633 SC1 Finish HDG: 40 µm
- U-Bolts for fire fighting applications should comply with NFPA, available upon request

Technical data



Art No.	Pipe Size	D [mm]	A [mm]	C [mm]	B [mm]	d [mm]	T_T	T_c	H [mm]	h [mm]	Steel Grade	Design suspension load [KN]	Sales unit [pcs]
UB5022	1/2 "	22	30	22	34	8	12	12	52	44	4.8	7.81	1
UB5027	3/4 "	27	35	22	34	8	12	12	57	49	4.8	7.81	1
UB5034	1 "	34	42	22	34	8	12	12	64	56	4.8	7.81	1
UB5043	1 1/4 "	43	51	33	45	8	23	12	84	76	4.8	7.81	1
UB5049	1 1/2 "	49	57	33	45	8	23	12	90	82	4.8	7.81	1
UB5061	2 "	61	69	33	45	8	23	12	102	94	4.8	7.81	1
UB5065	-	65	75	35	50	10	23	15	110	100	4.8	12.37	1
UB5074	2 1/2 "	74	84	35	50	10	23	15	119	109	4.8	12.37	1
UB5081	-	81	91	35	50	10	23	15	126	116	4.8	12.37	1
UB5089	3 "	89	99	35	50	10	23	15	134	124	4.8	12.37	1
UB5093	-	93	103	35	50	10	23	15	138	128	4.8	12.37	1
UB50102	3 1/2 "	102	112	55	70	10	43	15	167	157	4.8	12.37	1
UB50107	-	107	117	55	70	10	43	15	172	162	4.8	12.37	1
UB50115	4 "	115	125	55	70	10	43	15	180	170	4.8	12.37	1
UB50122	-	122	132	55	70	10	43	15	187	177	4.8	12.37	1
UB50125	-	125	135	55	70	10	43	15	190	180	4.8	12.37	1
UB50134	-	134	144	55	70	10	43	15	199	189	4.8	12.37	1
UB50142	5 "	142	154	57	75	12	43	18	211	199	4.8	17.98	1
UB50149	-	149	161	57	75	12	43	18	218	206	4.8	17.98	1
UB50157	-	157	169	57	75	12	43	18	226	214	4.8	17.98	1
UB50161	-	161	173	57	75	12	43	18	230	218	4.8	17.98	1
UB50169	-	169	181	57	75	12	43	18	238	226	4.8	17.98	1
UB50177	6 "	177	189	57	75	12	43	18	246	234	4.8	17.98	1

Art No.	Pipe Size	D [mm]	A [mm]	C [mm]	B [mm]	d [mm]	T_T	T_c	H [mm]	h [mm]	Steel Grade	Design suspension load [KN]	Sales unit [pcs]
UB50184	-	184	196	57	75	12	43	18	253	241	4.8	17.98	1
UB50191	-	191	203	57	75	12	43	18	260	248	4.8	17.98	1
UB50199	-	199	211	57	75	12	43	18	268	256	4.8	17.98	1
UB50207	-	207	219	57	75	12	43	18	276	264	4.8	17.98	1
UB50211	-	211	223	57	75	12	43	18	280	268	4.8	17.98	1
UB50220	8 "	220	232	57	75	12	43	18	289	277	4.8	33.42	1
UB50224	-	224	236	57	75	12	43	18	293	281	4.8	33.42	1
UB50232	-	232	244	57	75	12	43	18	301	289	4.8	33.42	1
UB50239	-	239	251	57	75	12	43	18	308	296	4.8	33.42	1
UB50245	-	245	257	57	75	12	43	18	314	302	4.8	33.42	1
UB50252	-	252	268	61	85	16	43	24	329	313	4.8	33.42	1
UB50258	-	258	274	61	85	16	43	24	335	319	4.8	33.42	1
UB50265	-	265	281	61	85	16	43	24	342	326	4.8	33.42	1
UB50274	10 "	274	290	68	92	16	50	24	358	342	4.8	33.42	1
UB50284	-	284	300	68	92	16	50	24	368	352	4.8	33.42	1
UB50292	-	292	308	68	92	16	50	24	376	360	4.8	33.42	1
UB50299	-	299	315	68	92	16	50	24	383	367	4.8	33.42	1
UB50312	-	312	328	68	92	16	50	24	396	380	4.8	33.42	1
UB50324	12 "	324	340	68	92	16	50	24	408	392	4.8	33.42	1
UB50338	-	338	354	68	92	16	50	24	422	406	4.8	33.42	1
UB50350	-	350	366	68	92	16	50	24	434	418	4.8	33.42	1
UB50356	14 "	356	372	68	92	16	50	24	440	424	4.8	33.42	1
UB50362	-	362	378	68	92	16	50	24	446	430	4.8	33.42	1
UB50370	-	370	386	68	92	16	50	24	454	438	4.8	33.42	1
UB50374	-	374	390	68	92	16	50	24	458	442	4.8	33.42	1
UB50388	-	388	404	68	92	16	50	24	472	456	4.8	33.42	1
UB50394	-	394	410	68	92	16	50	24	478	462	4.8	52.22	1
UB50400	-	400	416	68	92	16	50	24	484	468	4.8	52.22	1
UB50407	16 "	407	423	68	92	16	50	24	491	475	4.8	52.22	1
UB50420	-	420	436	68	92	16	50	24	504	488	4.8	52.22	1
UB50424	-	424	440	68	92	16	50	24	508	492	4.8	52.22	1
UB50432	-	432	452	72	102	20	50	30	524	504	4.8	52.22	1
UB50445	-	445	465	72	102	20	50	30	537	517	4.8	52.22	1
UB50458	18 "	458	478	72	102	20	50	30	550	530	4.8	52.22	1
UB50471	-	471	491	72	102	20	50	30	563	543	4.8	52.22	1
UB50486	-	486	506	72	102	20	50	30	578	558	4.8	52.22	1
UB50496	-	496	516	72	102	20	50	30	588	568	4.8	52.22	1
UB50508	20 "	508	528	72	102	20	50	30	600	580	4.8	52.22	1
UB50522	-	522	542	72	102	20	50	30	614	594	4.8	52.22	1
UB50534	-	534	554	72	102	20	50	30	626	606	4.8	52.22	1
UB50546	-	546	566	72	102	20	50	30	638	618	4.8	52.22	1
UB50557	-	557	577	72	102	20	50	30	649	629	4.8	52.22	1
UB50572	-	572	592	72	102	20	50	30	664	644	4.8	52.22	1
UB50584	-	584	604	72	102	20	50	30	676	656	4.8	52.22	1
UB50610	24 "	610	630	72	102	20	50	30	702	682	4.8	52.22	1
UB50638	-	638	658	72	102	20	50	30	730	710	4.8	52.22	1
UB50648	-	648	668	72	102	20	50	30	740	720	4.8	52.22	1
UB50660	-	660	680	72	102	20	50	30	752	732	4.8	17.98	1
UB50674	-	674	694	72	102	20	50	30	766	746	4.8	17.98	1
UB50686	-	686	706	72	102	20	50	30	778	758	4.8	17.98	1
UB50710	-	710	730	72	102	20	50	30	802	782	4.8	17.98	1
UB50740	-	740	760	72	102	20	50	30	832	812	4.8	17.98	1

Rubber lined U-bolt



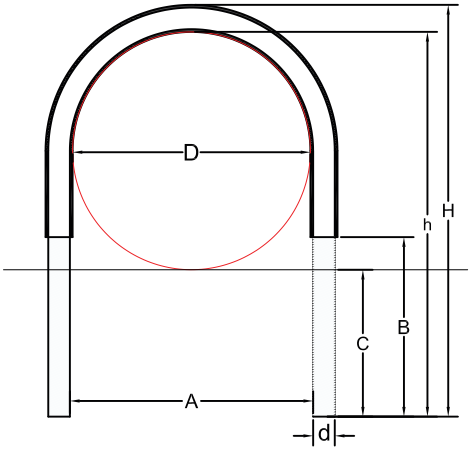
Advantages/benefits

- Good for use as a guide mounting.
- The U-Bolt's two nuts or 4 nuts allows for ideal adaptation to suit the outer pipe diameter.

Properties

- Material: Steel grade 4.8
- Zinc plating: minimum 5µm
- HDG: Minimum 40 µm
- SS316 also available upon request
- Rubber: EPDM
- Noise Reduction: Upto 18 dB
- Rubber Colour: Black
- Rubber Thickness: 1.5 mm
- Temperature Resistance: -20 ~ 110 C°
- Custom Sizes available on request

Technical data



Item	Art.no	D [mm]	A [mm]	C [mm]	B [mm]	d [mm]	h [mm]	H [mm]	Steel Grade	Sales Unit (pcs)
RL U Bolt-20	542550	20	23	30	46	8	50	61	4.8	10
RL U Bolt-25	542551	25	28	30	46	8	55	66	4.8	10
RL U Bolt-32	542552	32	35	35	51	8	67	78	4.8	10
RL U Bolt-36	542553	36	39	35	51	8	71	82	4.8	10
RL U Bolt-40	542554	40	43	35	51	8	75	86	4.8	10
RL U Bolt-43	542555	43	46	35	51	8	78	89	4.8	10
RL U Bolt-50	542556	50	53	55	71	8	105	116	4.8	10
RL U Bolt-56	542557	56	59	55	71	8	111	122	4.8	10
RL U Bolt-63	542558	63	66	55	73	10	118	131	4.8	10
RL U Bolt-75	542559	75	78	55	73	10	130	143	4.8	5
RL U Bolt-82	542560	82	85	55	73	10	137	150	4.8	5
RL U Bolt-90	542561	90	93	55	73	10	145	158	4.8	5
RL U Bolt-110	542562	110	113	180	198	10	290	303	4.8	5
RL U Bolt-125	542563	125	128	180	198	10	305	318	4.8	1
RL U Bolt-140	542564	140	143	180	198	10	320	333	4.8	1
RL U Bolt-160	542565	160	163	180	198	10	340	353	4.8	1

Technical data

Item	Art.no	D [mm]	A [mm]	C [mm]	B [mm]	d [mm]	h [mm]	H [mm]	Steel Grade	Sales Unit (pcs)
RL U Bolt-200	**542566**	200	203	180	200	12	380	395	4.8	5
RL U Bolt-225	**542567**	225	228	180	200	12	405	420	4.8	5
RL U Bolt-250	**RLU250**	250	253	180	200	12	430	445	4.8	1
RL U Bolt-280	**RLU280**	280	283	180	204	16	460	479	4.8	1
RL U Bolt-315	**RLU315**	315	318	180	204	16	495	514	4.8	1
RL U Bolt-355	**RLU355**	355	358	180	204	16	535	554	4.8	1
RL U Bolt-400	**RLU400**	400	403	180	204	16	580	599	4.8	1
RL U Bolt-450	**RLU450**	450	453	180	204	16	630	649	4.8	1
RL U Bolt-500	**RLU500**	500	503	180	208	20	680	703	4.8	1
RL U Bolt-630	**RLU630**	630	633	180	208	20	810	833	4.8	1
RL U Bolt-710	**RLU710**	710	713	180	208	20	890	913	4.8	1
RL U Bolt-800	**RLU800**	800	803	180	208	20	980	1003	4.8	1
RL U Bolt-900	**RLU900**	900	903	180	208	20	1080	1103	4.8	1
RL U Bolt-1000	**RLU1000**	1000	1003	180	208	20	1180	1203	4.8	1
RL U Bolt-1200	**RLU1200**	1200	1203	180	208	20	1380	1403	4.8	1

Rubber Lined U-Strap

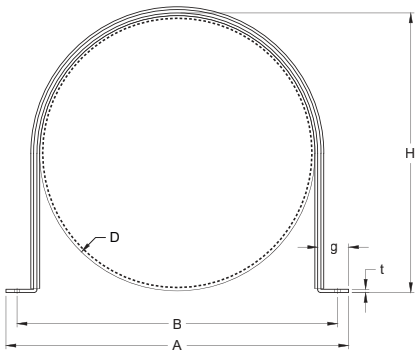


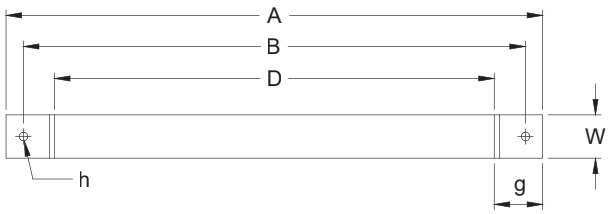
Applications

- Installation of plain pipes
- Two slots on both sides allow easy installation

Properties

- Material: Carbon Steel Q 235
- Zinc plating: Electro zinc plated 5 - 9 µm
  Standard: comply with ASTM B 633 SC1
- Available in SC3 on special request.
- Available in Hot Dipped Galvanized approx. 40 µm
- Rubber specifications:
  A - EPDM
  B - Temperature Resistance (-20 To 110 degree)
  C - Noise reduction rating Up to 18dB
  D - Color = Black
  E - Thick = 1.5 mm





Technical data

Item	Art No.	D [mm]	A [mm]	B [mm]	H [mm]	t [mm]	W [mm]	h [mm]	Bolt	g [mm]	Sales Unit [pcs]
RL U-STRAP 20	542513	20	80	56	20	2	30	10	8	30	10
RL U-STRAP 25	542514	25	85	61	25	2	30	10	8	30	10
RL U-STRAP 32	542515	32	92	68	32	2	30	10	8	30	10
RL U-STRAP 36	542516	36	96	72	36	2	30	10	8	30	10
RL U-STRAP 40	542517	40	100	76	40	2	30	10	8	30	10
RL U-STRAP 43	542518	43	103	79	43	2	30	10	8	30	100
RL U-STRAP 50	542519	50	110	86	50	2	30	10	8	30	10
RL U-STRAP 56	542520	56	116	92	56	2	30	10	8	30	10
RL U-STRAP 63	542522	63	123	99	63	2	30	10	8	30	10
RL U-STRAP 75	542523	75	135	111	75	2	30	10	8	30	10
RL U-STRAP 82	542524	82	142	118	82	2	30	10	8	30	10
RL U-STRAP 90	542525	90	150	126	90	2	30	10	8	30	10
RL U-STRAP 110	542526	110	180	150	110	2	30	12	10	35	5
RL U-STRAP 160	542527	160	230	200	160	2	30	12	10	35	5
RL U-STRAP 200	542528	200	270	240	200	2	30	12	10	35	5
RL U-STRAP 250	542529	250	320	290	250	2	30	12	10	35	1
RL U-STRAP 315	542530	315	385	355	315	2	30	12	10	35	1
RL U-STRAP 400	542531	400	470	440	400	2	30	12	10	35	1

U-Strap USP



Applications

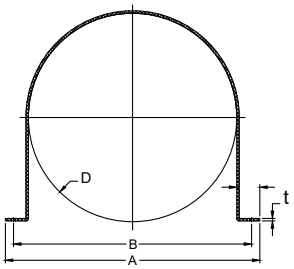
- Installation of insulated pipes
- Can be used with Rubber inserts
- Two slots on both sides allow easy installation

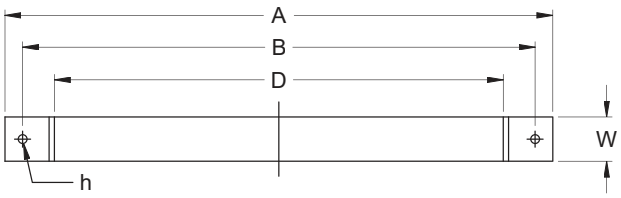
Properties

- Material: Carbon Steel Q 235
- Zinc plating: Electro zinc plated 5 - 9 µm Standard: comply with ASTM B633 SC1
- Available in SC3 on special request.
- Available in Hot Dipped Galvanized approx. 40 µm

4a

Technical data





Item	Art No. GI	Art No. hdg	D [mm]	A [mm]	B [mm]	t x w [mm]	Bolt size [mm]	Sales Unit [pcs]
U-STRAP 21	541787	557960	21	81	54	2 x 25	8	100
U-STRAP 27	541788	557961	27	87	60	2 x 25	8	100
U-STRAP 33	541789	557962	33	93	66	2 x 25	8	100
U-STRAP 42	516708	557963	42	102	75	2 x 25	8	100
U-STRAP 48	516709	557964	48	108	81	2 x 25	8	100
U-STRAP 59	541790	557965	59	119	92	2 x 25	8	100
U-STRAP 65	541791	557966	65	125	98	2 x 25	8	100
U-STRAP 72	535020	557967	72	132	105	2 x 25	8	50
U-STRAP 76	516711	557968	76	172	136	2 x 25	10	50
U-STRAP 80	541792	557969	80	176	140	2 x 25	10	50
U-STRAP 84	541793	557970	84	180	144	2 x 25	10	30
U-STRAP 86	541795	557971	86	182	146	2 x 25	10	30
U-STRAP 89	541796	557972	89	185	149	2 x 25	10	30
U-STRAP 92	541797	557973	92	188	152	2 x 25	10	30
U-STRAP 98	535022	557974	98	194	158	2 x 25	10	30
U-STRAP 102	541798	557975	102	198	162	3 x 25	10	30
U-STRAP 106	541799	557976	106	202	166	3 x 25	10	30
U-STRAP 110	541800	557977	110	206	170	3 x 25	10	30
U-STRAP 114	541801	557978	114	210	174	3 x 25	10	30
U-STRAP 118	541802	557979	118	214	178	3 x 25	10	30
U-STRAP 122	541803	557980	122	218	182	3 x 25	10	30
U-STRAP 126	532394	557981	126	222	186	3 x 25	10	30
U-STRAP 134	541804	557982	134	230	194	3 x 25	10	20
U-STRAP 138	541806	557983	138	234	198	3 x 25	10	20
U-STRAP 141	541807	557984	141	237	201	3 x 25	10	20
U-STRAP 148	532395	557985	148	244	208	3 x 25	10	20
U-STRAP 152	541808	557986	152	248	212	3 x 25	10	20
U-STRAP 156	541809	557987	156	252	216	3 x 25	10	20
U-STRAP 160	541810	557988	160	256	220	3 x 25	10	--
U-STRAP 164	541811	557989	164	260	224	3 x 25	10	10
U-STRAP 168	532397	557990	168	264	228	3 x 25	10	10
U-STRAP 172	535027	557991	172	268	232	3 x 25	10	10
U-STRAP 177	541812	557992	177	273	237	3 x 25	10	10
U-STRAP 179	532398	557993	179	275	239	3 x 25	10	10
U-STRAP 183	541813	557994	183	279	243	3 x 38	10	10
U-STRAP 188	541814	557995	188	284	248	3 x 38	10	10

	Art No.		D	A	B	t x w	Bolt size	Sales Unit
	GI	hdg	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]
U-STRAP 191	541815	557996	191	287	251	3 x 38	10	10
U-STRAP 198	541816	557997	198	294	258	3 x 38	10	10
U-STRAP 202	541817	557998	202	298	262	3 x 38	10	10
U-STRAP 205	532400	557999	205	301	265	3 x 38	10	10
U-STRAP 210	541818	558000	210	306	270	3 x 38	10	5
U-STRAP 214	541819	558001	214	310	274	3 x 38	10	5
U-STRAP 218	541820	558002	218	314	278	3 x 38	10	5
U-STRAP 223	535032	558003	223	319	283	3 x 38	10	5
U-STRAP 232	541821	558004	232	328	292	3 x 38	10	5
U-STRAP 238	541822	558005	238	334	298	3 x 38	10	5
U-STRAP 241	532403	558006	241	337	301	3 x 38	10	5
U-STRAP 244	541823	558007	244	356	314	3 x 38	12	5
U-STRAP 251	541824	558008	251	363	321	3 x 38	12	5
U-STRAP 257	535034	558009	257	369	327	3 x 38	12	5
U-STRAP 264	541825	558010	264	376	334	3 x 38	12	5
U-STRAP 268	541826	558011	268	380	338	3 x 38	12	5
U-STRAP 272	541827	558012	272	384	342	3 x 38	12	5
U-STRAP 283	535123	558013	283	395	353	3 x 38	12	5
U-STRAP 291	535125	558014	291	403	361	3 x 38	12	5
U-STRAP 295	532406	558015	295	407	365	3 x 38	12	3
U-STRAP 298	541828	558016	298	410	368	3 x 38	12	3
U-STRAP 311	541829	558017	311	423	381	3 x 38	12	3
U-STRAP 318	541830	558020	318	430	388	3 x 38	12	3
U-STRAP 323	532816	558021	323	435	393	3 x 38	12	3
U-STRAP 337	535128	558022	337	449	407	4 x 50	12	3
U-STRAP 349	541831	558023	349	461	419	4 x 50	12	3
U-STRAP 355	541832	558024	355	467	425	4 x 50	12	3
U-STRAP 361	541833	558025	361	473	431	4 x 50	12	3
U-STRAP369	535131	558026	369	481	439	4 x 50	12	3
U-STRAP 373	541834	558027	373	485	443	4 x 50	12	3
U-STRAP 387	541835	558028	387	499	457	4 x 50	12	3
U-STRAP 393	535133	558029	393	505	463	4 x 50	12	3
U-STRAP 399	541836	558030	399	511	469	4 x 50	12	3
U-STRAP 403	541837	558031	403	515	473	4 x 50	12	3
U-STRAP 405	541838	558032	405	517	475	4 x 50	12	3
U-STRAP 419	541839	558033	419	531	489	4 x 50	12	3
U-STRAP 423	541840	558034	423	535	493	4 x 50	12	3
U-STRAP 431	541841	558035	431	543	501	4 x 50	12	3
U-STRAP 444	541842	558036	444	556	514	4 x 50	12	3
U-STRAP 453	541843	558037	453	565	523	4 x 50	12	3
U-STRAP 456	532821	558039	456	568	526	4 x 50	12	3
U-STRAP 470	541844	558040	470	582	540	4 x 50	12	3
U-STRAP 473	541845	558041	473	585	543	4 x 50	12	3
U-STRAP 483	541846	558042	483	595	553	4 x 50	12	3
U-STRAP 495	541847	558043	495	607	565	4 x 50	12	3
U-STRAP 506	541848	558044	506	618	576	4 x 50	12	3
U-STRAP 521	541849	558045	521	633	591	4 x 50	12	3
U-STRAP 533	532824	558046	533	645	603	4 x 50	12	3
U-STRAP 536	541850	558047	536	648	606	4 x 50	12	--
U-STRAP 546	535142	558048	546	658	616	4 x 50	12	2
U-STRAP 566	541851	558049	566	678	636	4 x 50	12	2
U-STRAP 572	535143	558050	572	684	642	4 x 50	12	2
U-STRAP 584	541852	558051	584	696	654	4 x 50	12	2
U-STRAP 587	541853	558052	587	699	657	4 x 50	12	2
U-STRAP 608	541854	558053	608	720	678	4 x 50	12	2
U-STRAP 638	535144	558054	638	750	708	4 x 50	12	2
U-STRAP 647	541855	558055	647	759	717	4 x 50	12	2
U-STRAP 658	532828	558056	658	770	728	4 x 50	12	2
U-STRAP 673	541856	558057	673	785	743	4 x 50	12	2
U-STRAP 685	541857	558058	685	797	755	4 x 50	12	2
U-STRAP 709	541858	558059	709	821	779	4 x 50	12	2
U-STRAP 739	541859	558060	739	851	809	4 x 50	12	2
U-STRAP 759	541860	558061	759	871	829	4 x 50	12	2

Riser Clamp Rubber Lined

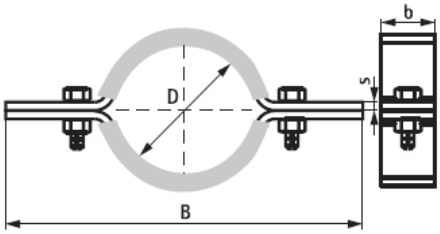


Advantages/benefits

- Riser clamps are used for support of vertical piping
- Rubber Lined Clamps shall be connected below the pipe couplers and works on bearing principle

Properties

- Material: carbon steel Q235
- Zinc plating: Electro zinc plated 5-9 µm
- Standard: comply with ASTM B 633 SC3
- Also available in SS 316 on special request.
- Comply with MSS SP 69/MSS SP 58 type-42
- Rubber specification:
  A- EPDM
  B- Temperature Resistance
  (20 to 110 Degree C)
  C- Noise reduction rating up to 18dB



Technical data

Item	Pipe Size OD [mm]	Clamp Dia D [mm]	B [mm]	b [mm]	s [mm]	Sales Unit [pcs]
RLRCWR01	200	200	450	50	10	1
RLRCWR02	225	225	475	50	10	1
RLRCWR03	250	250	500	50	10	1
RLRCWR04	280	280	530	50	10	1
RLRCWR05	315	315	565	50	12	1
RLRCWR06	355	355	615	50	12	1
RLRCWR07	400	400	660	60	16	1
RLRCWR08	450	450	710	60	16	1
RLRCWR09	500	500	760	60	16	1
RLRCWR10	630	630	910	60	16	1
RLRCWR11	710	710	990	75	16	1
RLRCWR12	800	800	1080	75	16	1
RLRCWR13	900	900	1200	75	16	1
RLRCWR14	1000	1000	1300	75	16	1
RLRCWR15	1200	1200	1540	75	16	1

Rubber Lined Clevis hanger RLFCH

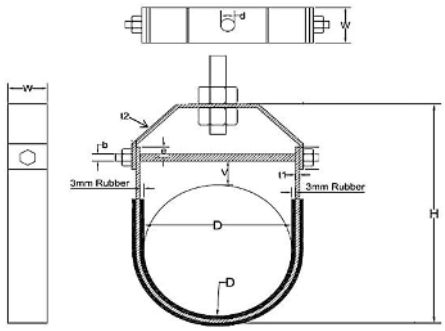


Advantages/benefits

- Heavy duty Clevis Hanger
- Design allows vertical adjustment of pipe after installation
- Nuts above Clevis must be tightened securely to ensure proper hanger performance
- Spacing between supports to be calculated by fischer before installation

Properties

- Electro Galvanized as per ASTM B 633 standard SC3 12 micron
- HDG finish minimum 40 Micron
- SS 316 also available
- Material : Carbon steel 23523
- Bolt 4.8 Grade
- Rubber specification
  A- EPDM
  B - Temperature Resistance (-20 To 110 degree)
  C- Noise reduction rating Up to 18dB



Technical data

Item	Pipe Dia D [mm]	Thickness t1 [mm]	Thickness t2	Width [mm]	Rod Size d	Height H [mm]	Design load [KN]	Sales Unit [pcs]
RLFCH001	200	4	6	50	16	329	8.01	1
RLFCH002	225	6	6	50	20	374	8.01	1
RLFCH003	250	6	6	50	20	407	15.71	1
RLFCH004	280	6	6	50	20	447	6.43	1
RLFCH005	315	6	6	50	20	494	15.71	1
RLFCH006	355	6	10	65	20	562	21.43	1
RLFCH007	400	6	10	65	20	622	21.43	1
RLFCH008	450	6	10	75	20	689	21.43	1
RLFCH009	500	6	10	75	20	755	25.71	1
RLFCH010	630	6	10	75	20	937	25.71	1
RLFCH011	710	6	10	75	20	1043	25.71	1
RLFCH012	800	6	10	75	20	1163	25.71	1
RLFCH013	900	6	10	100	20	1297	25.71	1
RLFCH014	1000	6	10	100	20	1442	25.71	1
RLFCH015	1200	6	10	100	20	1709	25.71	1

Clevis Hanger FCH CHW





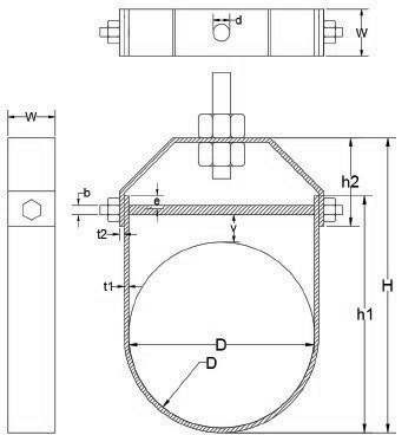
Heavy pipe suspended support

Advantages/benefits

- Heavy duty Clevis Hanger.
- Designer for chilled water pipe work
- Design allows vertical adjustment of pipe after installation.
- Nuts above Clevis must be tightened securely to ensure proper hanger performance.

Properties

- Electro Galvanized as per ASTM B 633
- standard SC3 12 micron
- HDG Finish (40 micron minimum), SS316
- Material : Carbon steel Q235
- Bolt 4.8 Grade



Technical data

	Item	D [mm]	h1 [mm]	h2 [mm]	b [mm]	W [mm]	d [mm]	H [mm]	Design load [KN]	Sales Unit [pcs]
Clevis Hanger 22	**542217**	22	47	34	6	19	10	51	1.54	10
Clevis Hanger 27	**542218**	27	52	37	6	19	10	59	1.54	10
Clevis Hanger 34	**542219**	34	59	40	6	19	10	69	2.88	10
Clevis Hanger 43	**542220**	43	68	45	6	25	10	83	2.88	10
Clevis Hanger 49	**542221**	49	74	48	6	25	10	92	2.88	10
Clevis Hanger 61	**542222**	61	86	54	6	25	10	110	2.88	10
Clevis Hanger 71	**542223**	71	105	68	10	25	14	131	3.46	10
Clevis Hanger 77	**542224**	77	111	70	10	30	14	139	3.46	10
Clevis Hanger 83	**542225**	83	117	74	10	30	14	149	3.46	10
Clevis Hanger 91	**542226**	91	125	77	10	30	14	160	6.15	10
Clevis Hanger 97	**542227**	97	131	81	10	30	14	170	6.15	10
Clevis Hanger 102	**542228**	102	136	83	10	30	14	177	6.15	10
Clevis Hanger 106	**542229**	106	140	85	10	30	14	183	6.15	10
Clevis Hanger 110	**542230**	110	144	87	10	30	14	189	6.15	10

Technical data

	Item	D [mm]	h1 [mm]	h2 [mm]	b [mm]	W [mm]	d [mm]	H [mm]	Design load [KN]	Sales Unit [pcs]
Clevis Hanger 115	**542231**	115	149	89	10	30	14	196	6.15	5
Clevis Hanger 121	**542232**	121	160	103	12	30	16	215	8.01	5
Clevis Hanger 127	**542233**	127	166	105	12	30	16	223	8.01	5
Clevis Hanger 133	**542234**	133	172	107	12	30	16	232	8.01	5
Clevis Hanger 139	**542235**	139	178	109	12	30	16	239	8.01	5
Clevis Hanger 142	**542236**	142	181	110	12	30	16	243	8.01	5
Clevis Hanger 153	**542237**	153	192	114	12	30	16	258	8.01	5
Clevis Hanger 160	**542238**	160	199	116	12	30	16	267	8.01	5
Clevis Hanger 166	**542239**	166	205	118	12	38	16	274	8.01	5
Clevis Hanger 173	**542240**	173	212	120	12	38	16	284	8.01	5
Clevis Hanger 178	**542241**	178	217	122	12	38	16	291	8.01	5
Clevis Hanger 191	**542242**	191	230	126	12	38	16	309	8.01	5
Clevis Hanger 205	**542243**	205	244	131	12	38	16	327	8.01	1
Clevis Hanger 214	**542244**	214	253	134	12	38	16	339	8.01	1
Clevis Hanger 220	**542245**	220	259	136	12	38	16	347	8.01	1
Clevis Hanger 232	**542246**	232	281	153	16	38	20	375	15.71	1
Clevis Hanger 241	**542247**	241	290	156	16	38	20	387	15.71	1
Clevis Hanger 269	**542248**	269	318	166	16	50	20	424	15.71	1
Clevis Hanger 274	**542249**	274	323	167	16	50	20	430	15.71	1
Clevis Hanger 283	**542250**	283	332	170	16	50	20	442	6.43	1
Clevis Hanger 319	**542251**	319	368	182	16	50	20	490	15.71	1
Clevis Hanger 324	**542252**	324	373	184	16	50	20	497	15.71	1
Clevis Hanger 337	**542253**	337	394	207	20	50	24	529	21.43	1
Clevis Hanger 356	**542254**	356	413	213	20	50	24	554	21.43	1
Clevis Hanger 373	**542255**	373	431	219	20	50	24	578	21.43	1
Clevis Hanger 387	**542256**	387	445	224	20	50	24	597	21.43	1
Clevis Hanger 407	**542257**	407	464	230	20	50	24	622	21.43	1
Clevis Hanger 419	**542258**	419	477	235	20	50	24	639	21.43	1
Clevis Hanger 423	**542259**	423	481	236	20	50	24	645	21.43	1
Clevis Hanger 456	**542260**	456	513	247	20	50	24	688	21.43	1
Clevis Hanger 470	**542261**	470	527	251	20	50	24	707	21.43	1
Clevis Hanger 506	**542262**	506	563	263	20	50	24	755	25.71	1
Clevis Hanger 630	--	630	692	305	20	50	24	925	25.71	--
Clevis Hanger 710	--	710	772	331	20	50	24	1031	25.71	--
Clevis Hanger 800	--	800	862	361	20	50	24	1151	25.71	--
Clevis Hanger 900	--	900	962	395	20	50	24	1285	25.71	--
Clevis Hanger 1000	--	1000	1062	428	20	50	24	1418	25.71	--
Clevis Hanger 1200	--	1200	1262	495	20	50	24	1685	25.71	--

Rubber Support Insert FRSI



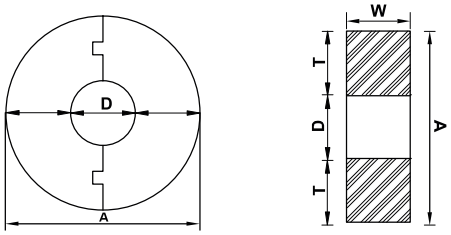


Chilled water pipe support

Properties

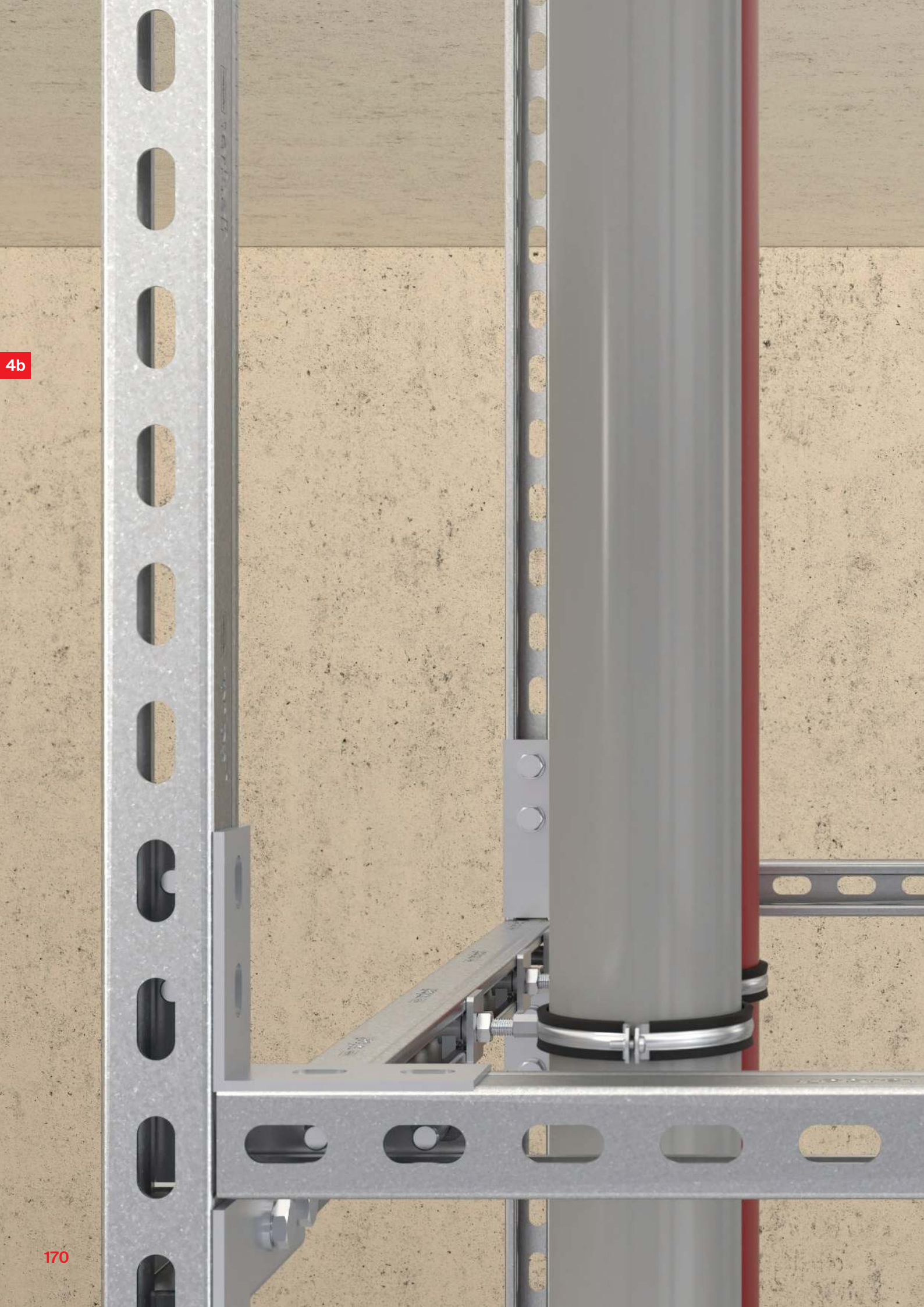
- Density: 1268 kg/m³
- Thermal conductivity: 0.219 W/m.k
- Temperature range: from 0o to 50o C
- BS-3974-1 : 1974

Technical data



Nom. Pipe size Schedule 40		Pipe O.D. D	T = 3/4" (19mm)				T = 1" (25mm)				T = 1 1/4" (32mm)				T = 1 1/2" (38mm)			
				Sales unit	W	A		Sales unit	W	A		Sales unit	W	A		Sales unit	W	A
(in)	[mm]	[mm]	Art.No.	[pcs]	[mm]	[mm]	Art.No.	[pcs]	[mm]	[mm]	Art.No.	[pcs]	[mm]	[mm]	Art.No.	[pcs]	[mm]	[mm]
1/2"	15	21.3	**549822**	250	25	59	**532357**	180	25	71	**549842**	108	25	85	**532833**	120	25	97
3/4"	20	26.7	**549823**	184	25	65	**532358**	160	25	77	**549843**	108	25	91	**532834**	90	25	103
1"	25	33.4	**549824**	160	25	71	**532359**	120	25	83	**549844**	90	25	97	**532835**	60	25	109
1-1/4"	32	42.1	**549825**	126	25	80	**532360**	100	25	92	**549845**	62	25	106	**532836**	50	25	118
1-1/2"	40	48.2	**549826**	108	25	86	**532361**	90	25	98	**549846**	62	25	112	**532837**	50	25	124
2"	50	60.3	**549827**	90	25	98	**532362**	60	25	110	**549847**	56	25	124	**532838**	40	25	136
2-1/2"	65	73.0	**549828**	44	38	111	**532363**	35	38	123	**549848**	28	38	137	**532839**	28	38	149
3"	80	89.9	**549829**	36	38	127	**532364**	28	38	139	**549849**	15	38	153	**532840**	13	38	165
3-1/2"	90	102.6	**549830**	32	38	140	**532365**	28	38	152	**549850**	13	38	166	**532841**	13	38	178
4"	100	114.3	**549831**	28	38	152	**532366**	24	38	164	**549851**	13	38	178	**532842**	13	38	190
5"	125	141.3	**549832**	13	38	179	**532367**	13	38	191	**549852**	11	38	205	**532843**	11	38	217
6"	150	168.3	**549833**	9	50	206	**532369**	7	50	218	**549853**	7	50	232	**532844**	7	50	244
8"	200	219.1	**549834**	5	50	257	**532370**	5	50	269	**549854**	5	50	283	**532845**	5	50	295
10"	250	273.0	**549835**	5	50	311	**532371**	5	50	323	**549855**	5	50	337	**532846**	5	50	349
12"	300	324.8	**549836**	5	50	362	**532373**	5	50	374	**549856**	5	50	388	**532847**	5	50	400
14"	350	356.6	**549837**	5	50	394	**532374**	5	50	406	**549857**	5	50	420	**532848**	5	50	432
16"	400	406.4	**549838**	1	50	444	**532375**	1	50	456	**549858**	1	50	470	**532849**	1	50	482
18"	450	457.2	**549839**	1	50	495	**532376**	1	50	507	**549859**	1	50	521	**532850**	1	50	533
20"	500	508.0	**549840**	1	50	546	**532377**	1	50	558	**549860**	1	50	572	**532851**	1	50	584
24"	600	610.6	**549841**	1	50	648	**532378**	1	50	660	**549861**	1	50	674	**532852**	1	50	686

Nom. Pipe size Schedule 40		Pipe O.D. D	T = 2” (50mm)				T = 2 1/2” (65mm)				T = 3” (75mm)			
(in)	[mm]	[mm]	Art.No.	Sales unit [pcs]	W [mm]	A [mm]	Art.No.	Sales unit [pcs]	W [mm]	A [mm]	Art.No.	Sales unit [pcs]	W [mm]	A [mm]
1/2”	15	21.3	**532853**	64	25	121	**533385**	40	25	151	**533405**	20	25	171
3/4”	20	26.7	**532854**	50	25	127	**533386**	40	25	157	**533406**	20	25	177
1”	25	33.4	**532855**	40	25	133	**533387**	20	25	163	**533407**	20	25	183
1-1/4”	32	42.1	**532856**	40	25	142	**533388**	18	25	172	**533408**	20	25	192
1-1/2”	40	48.2	**532857**	40	25	148	**533389**	18	25	178	**533409**	18	25	198
2”	50	60.3	**532858**	40	25	160	**533390**	18	25	190	**533410**	12	25	210
2-1/2”	65	73.0	**532859**	16	38	173	**533391**	13	38	203	**533411**	11	38	223
3”	80	89.9	**532860**	13	38	189	**533392**	11	38	219	**533412**	9	38	239
3-1/2”	90	102.6	**532861**	13	38	202	**533393**	9	38	232	**533413**	9	38	252
4”	100	114.3	**532862**	12	38	214	**533394**	9	38	244	**533414**	9	38	264
5”	125	141.3	**532863**	10	38	241	**533395**	7	38	271	**533415**	7	38	291
6”	150	168.3	**532864**	7	50	268	**533396**	5	50	298	**533416**	5	50	318
8”	200	219.1	**532865**	5	50	319	**533397**	5	50	349	**533417**	5	50	369
10”	250	273.0	**532866**	5	50	373	**533398**	5	50	403	**533418**	5	50	423
12”	300	324.8	**532867**	5	50	424	**533399**	5	50	454	**533419**	5	50	474
14”	350	356.6	**532868**	5	50	456	**533400**	1	50	486	**533420**	1	50	506
16”	400	406.4	**532869**	1	50	506	**533401**	1	50	536	**533421**	1	50	556
18”	450	457.2	**532870**	1	50	557	**533402**	1	50	587	**533422**	1	50	607
20”	500	508.0	**532871**	1	50	608	**533403**	1	50	638	**533423**	1	50	658
24”	600	610.6	**532872**	1	50	710	**533404**	1	50	740	**533424**	1	50	760



4b
Channel system universal

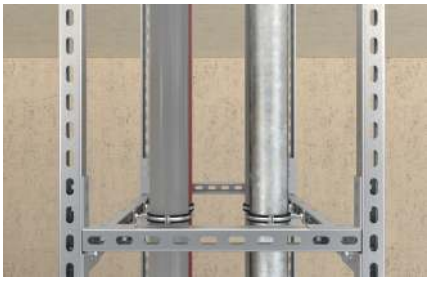
Channel FUS	172	
Slotted U channel	178	
Slotted L channel	180	
Channel connector FDCC	181	
Cantilever arm FCA	183	
Large cantilever arm FCAM	188	
Cover cap FEC	189	
Connector FCN Clix P and FCN Clix M	190	
T-head bolt FHS Clix S	192	
T-head bolt FCSN	194	
Channel nut FCN/FCN-L	196	
Channel washer HK 41	197	
Saddle flange SF L	198	
Mounting bracket UWS	199	
Angle bracket WK	200	
Bracket FFF	202	
Bracket FAF	203	
Flanges FZF	204	
Flanges FUF	205	

Variable bracket VB	206	
Universal mounting UHRS	207	
Universal hinge FUH	208	
Swivel clamp	210	
Threaded rod bracket FSB 45°	211	
Beam clamp TKR	212	
Push-through connector PFCN	214	
Saddle flange PSF	216	
Universal bracket PUWS	217	
Angle bracket PWK	218	
Variable bracket PVB	219	
Bracing elements PSAE	220	
Channel connector FUF OC and PFUF OC	222	
Bracket PFFF	223	
Bracket PFAF	224	
Bracket PFUF	226	
Bracket PFUF D	227	

Channel FUS

The universal and complete mounting channel system for a wide range of applications





3D-frame constructions



Solid frame construction

Applications

- Secure horizontal and vertical installations
- Fast and efficient fixing of pipelines and supporting structures

Certificates



Fire resistance classification R120



MLAR R30

Advantages/benefits

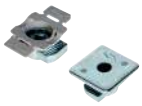
- The fire inspection report in line with MLAR/EN13501 guarantees independently tested functional safety.
- The basic channel geometry allows the usage of the complete extensive range of accessories.
- The stamped teeth in the channel give the sliding nuts a secure hold for high shear loads, e.g. for vertical installation.
- Different channel wall thicknesses allow economical choices for installation.
- The scale on the mounting channels simplifies the cutting and positioning of the fixtures during the installation.

Properties

- Material: pre-galvanised steel S-250-GD+Z275 (material no.: 1.0242) acc. to DIN EN 10346
- Zinc plating: hot-dip galvanised, min. 45 µm, acc. to DIN EN ISO 1461

See also

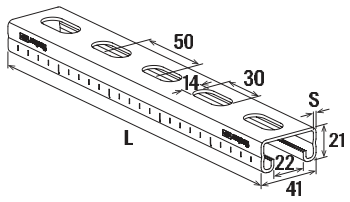
Connector FCN
Clix P/M



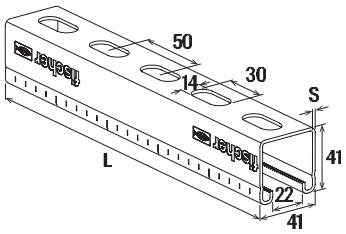
Rail rubber insert
EMS



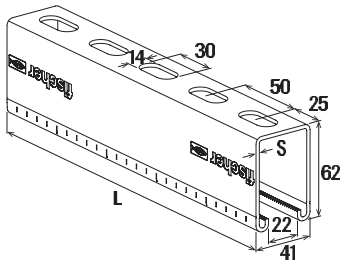
Technical data



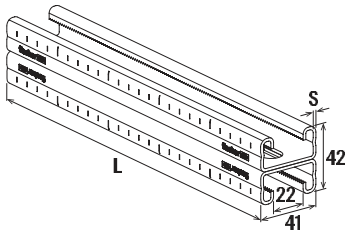
FUS 21



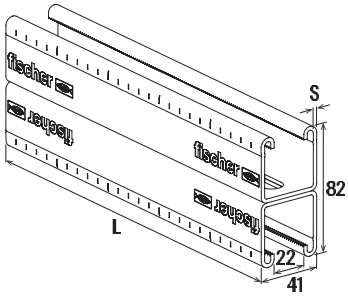
FUS 41



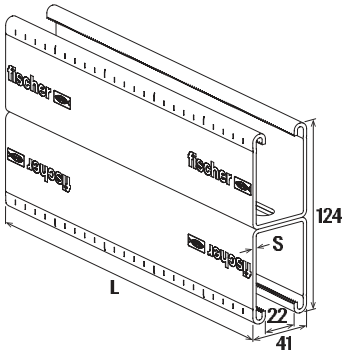
FUS 62



FUS 21D



FUS 41D

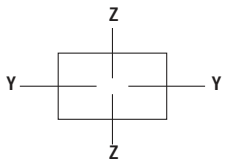


FUS 62D

Item	Item No.	Length L [mm]	Thickness S [mm]	Sales unit [pcs]
FUS 21/1,5 - 2 m	**545117**	2000	1.5	1
FUS 21/1,5 - 3 m	**545118**	3000	1.5	1
FUS 21/1,5 - 6 m	**545119** [1)]	6000	1.5	1
FUS 21/2,0 - 2 m	**040391**	2000	2	1
FUS 21/2,0 - 3 m	**097660**	3000	2	1
FUS 21/2,0 - 6 m	**097661**	6000	2	1
FUS 21/2,5 - 2 m	**092867**	2000	2.5	1
FUS 21/2,5 - 3 m	**077349**	3000	2.5	1
FUS 21/2,5 - 6 m	**077541**	6000	2.5	1
FUS 41/1,5 - 2 m	**545120**	2000	1.5	1
FUS 41/1,5 - 3 m	**545126**	3000	1.5	1
FUS 41/1,5 - 6 m	**545127**	6000	1.5	1
FUS 41/2,0 - 2 m	**040390**	2000	2	1
FUS 41/2,0 - 3 m	**097658**	3000	2	1
FUS 41/2,0 - 6 m	**097659**	6000	2	1
FUS 41/2,5 - 2 m	**092295**	2000	2.5	1
FUS 41/2,5 - 3 m	**077347**	3000	2.5	1
FUS 41/2,5 - 6 m	**077537**	6000	2.5	1
FUS 62/2,5 - 6 m	**504457**	6000	2.5	1
FUS 21D/2,0 - 3 m	**504458**	3000	2	1
FUS 21D/2,0 - 6 m	**535531**	6000	2	1
FUS 41D/2,5 - 6 m	**504459**	6000	2.5	1
FUS 62D/2,5 - 6 m	**504460**	6000	2.5	1

1) Delivery time on request.

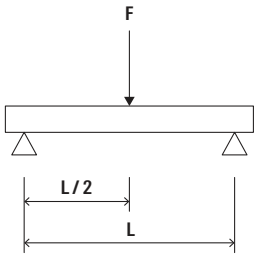
Loads



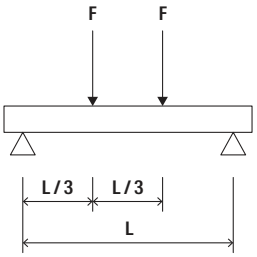
Item	Item No.	Profil weight [kg/m]	Profile cross section [cm²]	Moment of inertia I_y [cm⁴]	Moment of inertia I_z [cm⁴]	Section modulus W_y [cm³]	Section modulus W_z [cm³]	Max. recommended static load for 1m length F_{rec} [kN]	Max. recommended static load for 2m length F_{rec} [kN]	Max. recommended static load for 3m length F_{rec} [kN]
FUS 21/1,5 - 2 m	**545117**	1.20	1.35	0.8	3.69	0.75	1.80	0.41	0.10	–
FUS 21/1,5 - 3 m	**545118**	1.20	1.35	0.8	3.69	0.75	1.80	0.41	0.10	–
FUS 21/1,5 - 6 m	**545119** [1)]	1.20	1.35	0.8	3.69	0.75	1.80	0.41	0.10	–
FUS 21/2,0 - 2 m	**040391**	1.44	1.72	0.97	4.66	0.89	2.27	0.49	0.12	–
FUS 21/2,0 - 3 m	**097660**	1.44	1.72	0.97	4.66	0.89	2.27	0.49	0.12	0.05
FUS 21/2,0 - 6 m	**097661**	1.44	1.72	0.97	4.66	0.89	2.27	0.49	0.12	0.05
FUS 21/2,5 - 2 m	**092867**	1.67	1.99	1.03	5.28	0.93	2.58	0.52	0.13	–
FUS 21/2,5 - 3 m	**077349**	1.67	1.99	1.03	5.28	0.93	2.58	0.52	0.13	0.06
FUS 21/2,5 - 6 m	**077541**	1.67	1.99	1.03	5.28	0.93	2.58	0.52	0.13	0.06
FUS 41/1,5 - 2 m	**545120**	1.80	1.95	4.26	6.03	2.07	2.94	1.56	0.54	–
FUS 41/1,5 - 3 m	**545126**	1.80	1.95	4.26	6.03	2.07	2.94	1.56	0.54	0.24
FUS 41/1,5 - 6 m	**545127**	1.80	1.95	4.26	6.03	2.07	2.94	1.56	0.54	0.24
FUS 41/2,0 - 2 m	**040390**	2.06	2.52	5.33	7.69	2.58	3.75	1.94	0.67	–
FUS 41/2,0 - 3 m	**097658**	2.06	2.52	5.33	7.69	2.58	3.75	1.94	0.67	0.30
FUS 41/2,0 - 6 m	**097659**	2.06	2.52	5.33	7.69	2.58	3.75	1.94	0.67	0.30
FUS 41/2,5 - 2 m	**092295**	2.45	3.00	6.00	8.99	2.85	4.38	2.14	0.76	–
FUS 41/2,5 - 3 m	**077347**	2.45	3.00	6.00	8.99	2.85	4.38	2.14	0.76	0.34
FUS 41/2,5 - 6 m	**077537**	2.45	3.00	6.00	8.99	2.85	4.38	2.14	0.76	0.34
FUS 62/2,5 - 6 m	**504457**	3.27	4.05	17.70	12.90	5.62	6.29	4.22	2.10	0.99
FUS 21D/2,0 - 3 m	**504458**	2.87	3.44	5.49	9.31	2.61	4.54	1.96	0.69	0.31
FUS 21D/2,0 - 6 m	**535531**	2.87	3.44	5.49	9.31	2.61	4.54	1.96	0.69	0.31
FUS 41D/2,5 - 6 m	**504459**	4.89	6.00	35.01	17.90	8.76	8.78	6.58	3.28	1.96
FUS 62D/2,5 - 6 m	**504460**	6.55	8.09	111.00	25.80	17.90	12.58	13.45	6.72	4.47

1) Delivery time on request.

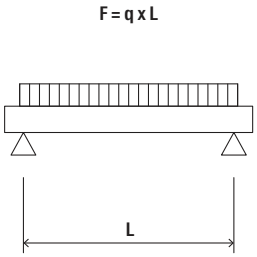
Load case 1



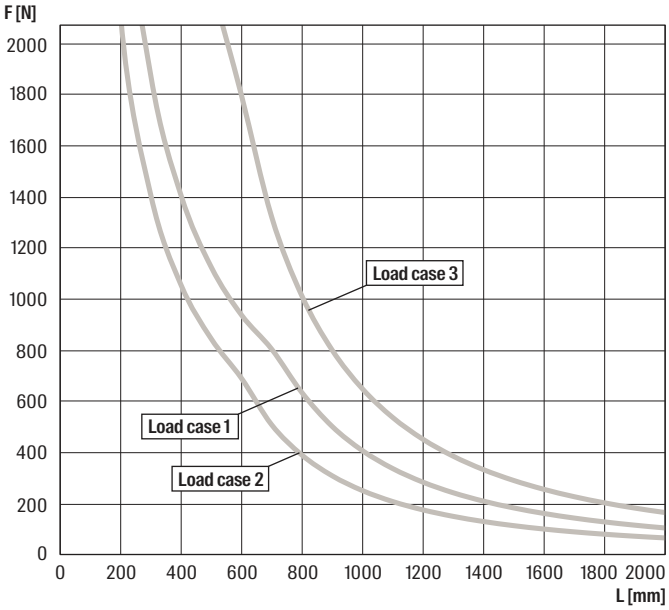
Load case 2



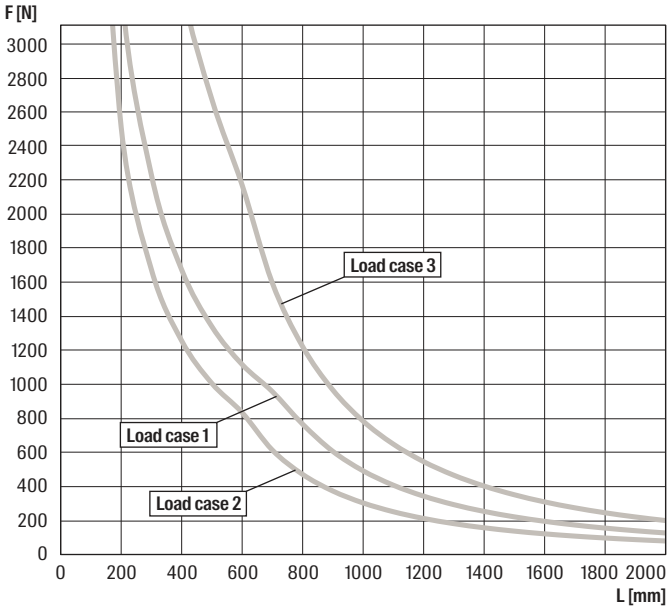
Load case 3



FUS 21/1,5

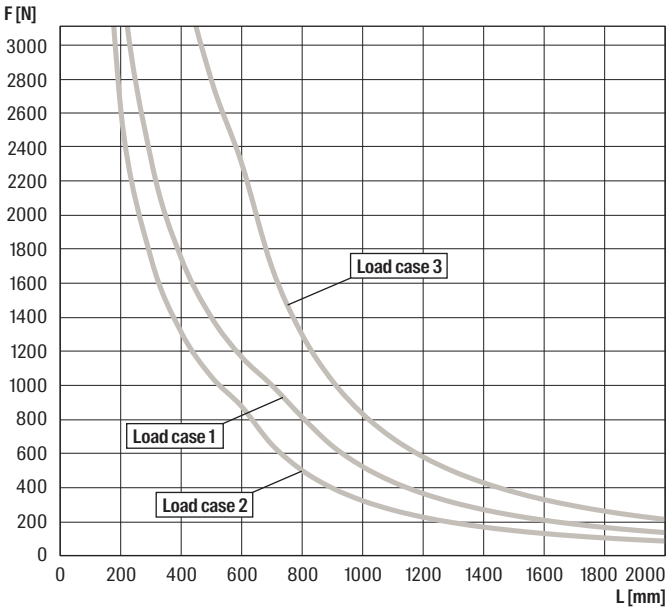


FUS 21/2,0

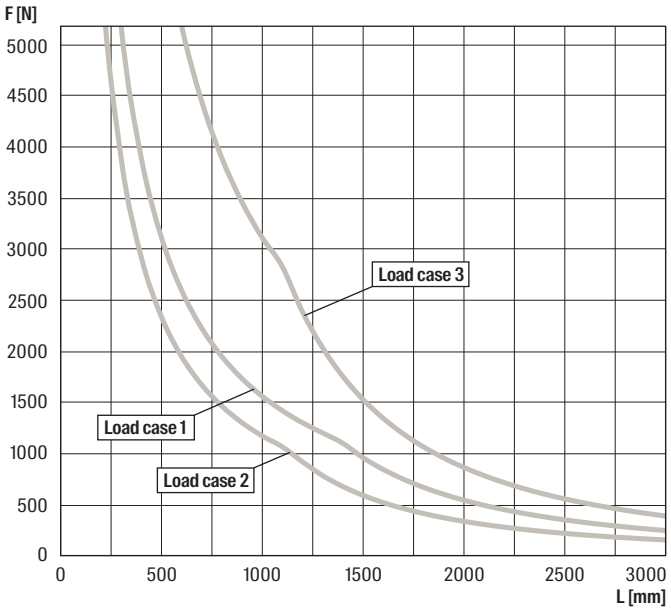


For the load curves, the permissible steel strain $\delta_{adm.}$ = 188 N/mm and the maximum deflection under load L/200 are not exceeded. Fixings and screw fastenings must be calculated accordingly. The increased yield strength is calcuated according DIN EN 1993-1-3:2010-12, sec. 3.2.2.

FUS 21/2,5

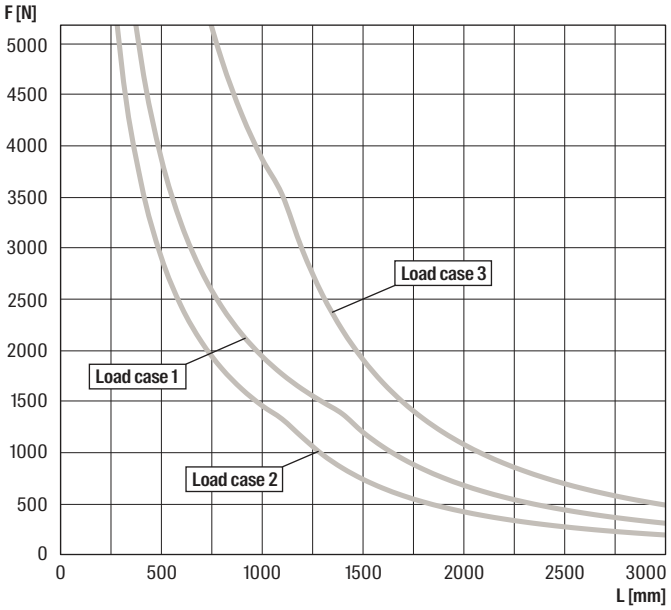


FUS 41/1,5

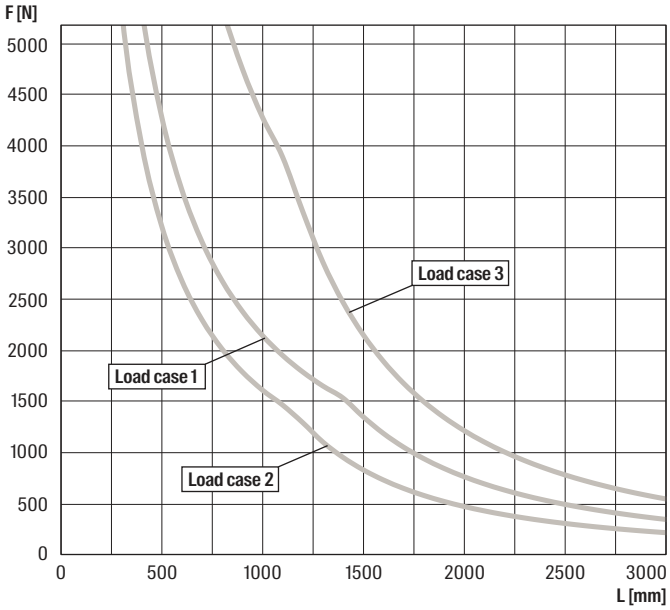


For the load curves, the permissible steel strain $\delta_{adm.}$ = 188 N/mm and the maximum deflection under load L/200 are not exceeded. Fixings and screw fastenings must be calculated accordingly. The increased yield strength is calcuated according DIN EN 1993-1-3:2010-12, sec. 3.2.2.

FUS 41/2,0

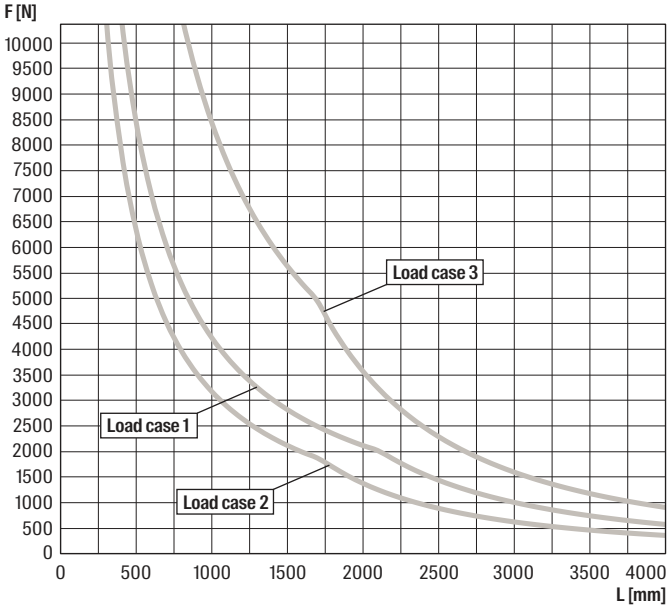


FUS 41/2,5

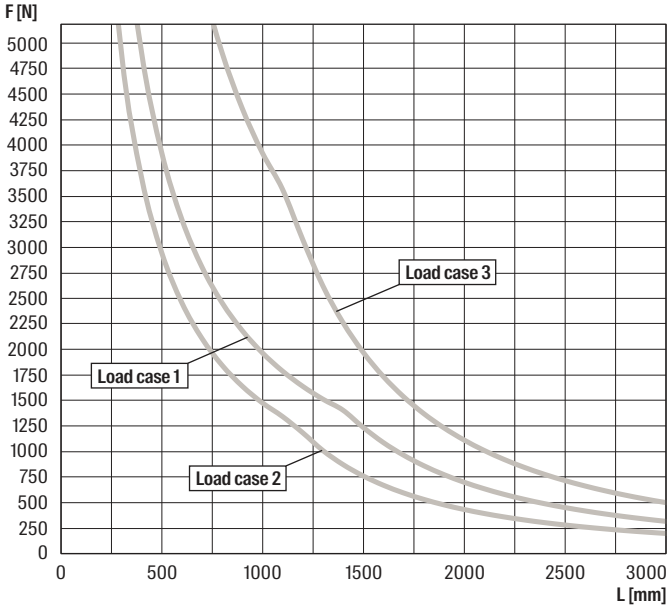


For the load curves, the permissible steel strain $\delta_{adm.}$ = 188 N/mm and the maximum deflection under load L/200 are not exceeded. Fixings and screw fastenings must be calculated accordingly. The increased yield strength is calcuated according DIN EN 1993-1-3:2010-12, sec. 3.2.2.

FUS 62/2,5

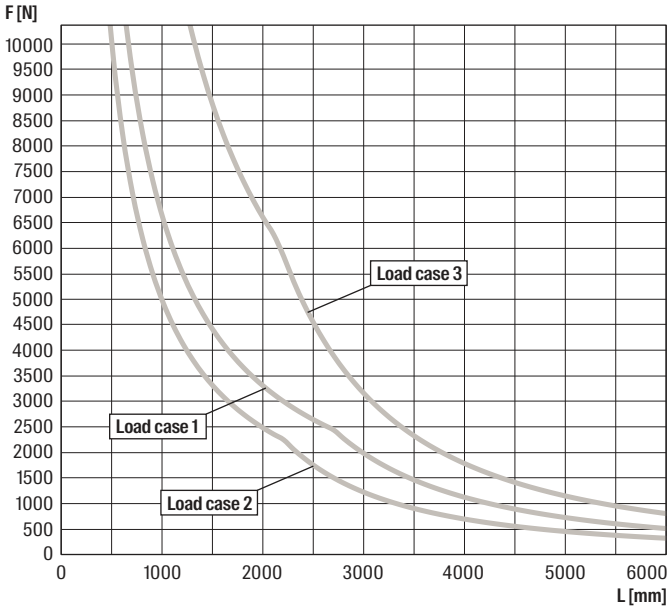


FUS 21D/2,0

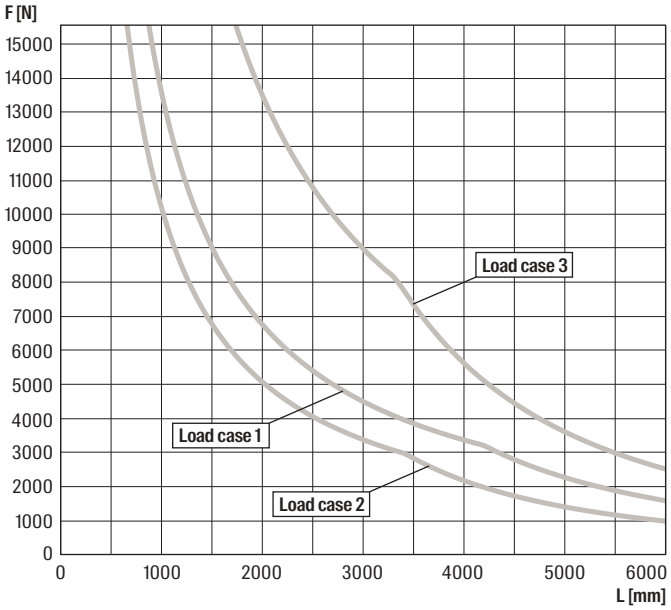


For the load curves, the permissible steel strain $\delta_{adm.}$ = 188 N/mm and the maximum deflection under load L/200 are not exceeded. Fixings and screw fastenings must be calculated accordingly. The increased yield strength is calcuated according DIN EN 1993-1-3:2010-12, sec. 3.2.2.

FUS 41D/2,5



FUS 62D/2,5



For the load curves, the permissible steel strain $\delta_{adm.}$ = 188 N/mm and the maximum deflection under load L/200 are not exceeded. Fixings and screw fastenings must be calculated accordingly. The increased yield strength is calcuated according DIN EN 1993-1-3:2010-12, sec. 3.2.2.

Slotted U channel

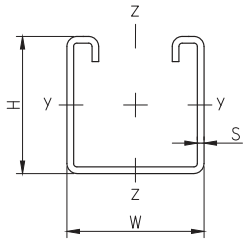




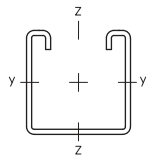
Properties

- Material U Channel: Steel S250 (GI), S235(HDG)
- Zinc plated Pre-galvanized ASTM B 633 Min. 15µm
- Hot-dip galvanized : DIN EN ISO 1461 Min. 45µm
- Stainless Steel also available upon request

Technical data



Item	Art.-NO.	Width W [mm]	Height H [mm]	Thickness S [mm]	Length l (M)	Coating
U Channel 41/21/1.2 pg	567453	41.0	21.0	1.2	3.0	Pre-Galvanized
U Channel 41/21/1.5 pg	545820	41.0	21.0	1.5	3.0	Pre-Galvanized
U Channel 41/21/1.5 pg	562786	41.0	21.0	1.5	6.0	Pre-Galvanized
U Channel 41/21/2 pg	545811	41.0	21.0	2.0	3.0	Pre-Galvanized
U Channel 41/21/2.5 pg	552729	41.0	21.0	2.5	3.0	Pre-Galvanized
U Channel 41/21/2.5 pg	552735	41.0	21.0	2.5	6.0	Pre-Galvanized
U Channel 41/41/1.5 pg	545822	41.0	41.0	1.5	3.0	Pre-Galvanized
U Channel 41/41/1.5 pg	562787	41.0	41.0	1.5	6.0	Pre-Galvanized
U Channel 41/41/2 pg	545815	41.0	41.0	2.0	3.0	Pre-Galvanized
U Channel 41/41/2 pg	564563	41.0	41.0	2.0	6.0	Pre-Galvanized
U Channel 41D/2 pg	569276	41.0	82.0	2.0	6.0	Pre-Galvanized
U Channel 41/41/2.5 pg	552730	41.0	41.0	2.5	3.0	Pre-Galvanized
U Channel 41/41/2.5 pg	552733	41.0	41.0	2.5	6.0	Pre-Galvanized
U Channel 41+21D/1.5 pg	570537	41.0	62.0	1.5	6.0	Pre-Galvanized
U Channel 41+21D/2.0 pg	570539	41.0	62.0	2.0	6.0	Pre-Galvanized
U Channel 41D/1.5 pg	570541	41.0	82.0	1.5	6.0	Pre-Galvanized
U Channel 41/21/1.5 HDG	545823	41.0	21.0	1.5	3.0	Hot Dipped Galvanized
U Channel 41/21/2 HDG	545817	41.0	21.0	2.0	3.0	Hot Dipped Galvanized
U Channel 41/21/2.5 HDG	552731	41.0	21.0	2.5	3.0	Hot Dipped Galvanized
U Channel 41/21/2.5 HDG	552736	41.0	21.0	2.5	6.0	Hot Dipped Galvanized
U Channel 41/41/1.5 HDG	545824	41.0	41.0	1.5	3.0	Hot Dipped Galvanized
U Channel 41/41/2 HDG	545819	41.0	41.0	2.0	3.0	Hot Dipped Galvanized
U Channel 41/41/2 HDG	561378	41.0	41.0	2.0	6.0	Hot Dipped Galvanized
U Channel 41/41/2.5 HDG	552732	41.0	41.0	2.5	3.0	Hot Dipped Galvanized
U Channel 41/41/2.5 HDG	552734	41.0	41.0	2.5	6.0	Hot Dipped Galvanized
U Channel 41+21D/1.5 HDG	570538	41.0	62.0	1.5	6.0	Hot Dipped Galvanized
U Channel 41+21D/2.0 HDG	570540	41.0	62.0	2.0	6.0	Hot Dipped Galvanized
U Channel 41D/2 HDG	568543	41.0	82.0	2.0	6.0	Hot Dipped Galvanized
U Channel 41D/1.5 HDG	570542	41.0	82.0	1.5	6.0	Hot Dipped Galvanized



Loads

Item	Profile weight [kg/m]	Profile cross section [mm²]	Profile Net section [mm²]	Moment of inertia Iy [mm⁴]	Moment of inertia Iz [mm⁴]	Section modulus Wy1 [mm³]	Section modulus Wz [mm³]
U Channel 41/21/1.2	0.81	119	103	6956	29029	568	2818
U Channel 41/21/1.5	1.00	147	128	8318	35409	678	3438
U Channel 41/21/2	1.28	190	164	10237	44940	834	4363
U Channel 41/21/2.5	1.56	232	200	11868	53857	964	5229
U Channel 41/41/1.5	1.48	209	190	47497	60013	2050	2906
U Channel 41/41/2	1.93	273	247	60325	76939	2599	3726
U Channel 41/41/2.5	2.36	335	303	72120	92864	3094	4497

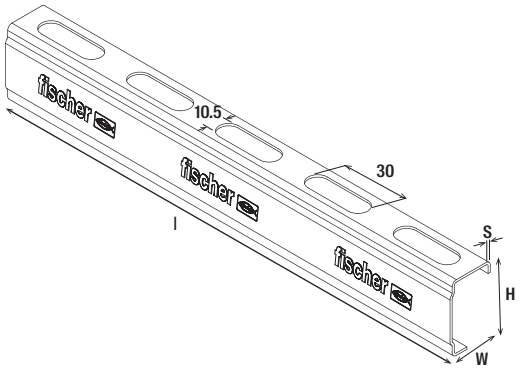
Slotted L channel



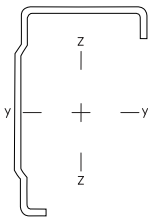
Properties

- Material L Channel: Steel S250
- Zinc plated Pre-galvanized ASTM B 633 Min. 15µm
- Design yield strength is 279.1 N/mm² according to EN 1993-1-3

Technical data



Item	Art.-NO.	Width W [mm]	Height H [mm]	Thickness S [mm]	Length l (M)	Coating
L Channel PG 21/33/1,0 mm	569774	21	33	1,0	3	Pre-Galvanized



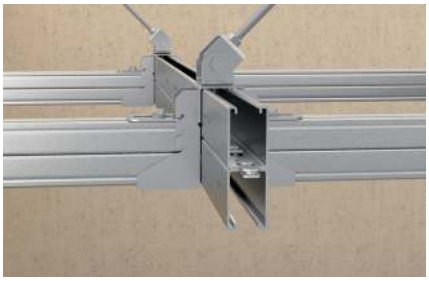
Loads

Item	Profile weight [kg/m]	Profile cross section [mm²]	Moment of inertia		Section modulus	
			Iy [mm⁴]	Iz [mm⁴]	Wy [mm³]	Wz [mm³]
L Channel PG 21/33/1,0 mm	0.45	52.11	6588	2472	321	155

Channel connector FDCC

Channel connector for easy preparation of FUS double channels





FUS double channel with channel connector

Applications

- Easy construction of double channels made from the FUS channel assortment.
- Suitable for FUS channels FUS 41 and FUS 62 with thickness 2,0 and 2,5 mm.
- The connection of two single channels is made with the channel connector inside the channel slots.
- Each double channel has to be equipped with an FDCC at both ends and additional FDCCs in the given installation distance as per load chart.

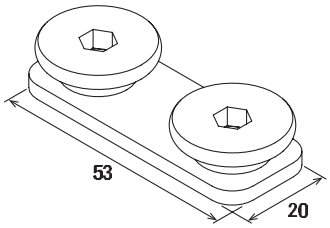
Advantages/Benefits

- Easy connection of single channels back to back to built double channels.
- Simple solution to create individual double channels on job site.
- For dry inside environment.

Properties

- Material base plate: JIS G3131-SPHE (similar to DD13 according to DIN EN 10111, material no.: 1.0335)
- Material screw: steel grade 8.8
- Zinc plating: electro zinc-plated, min. 5 µm
- Surface coating: Specialised, zinc flakebased coating approx. 8-10 µm
- Material base plate: A4 stainless steel (material no. 1.4401)
- Material screw: A4 stainless steel (material no. 1.4401)

Technical data

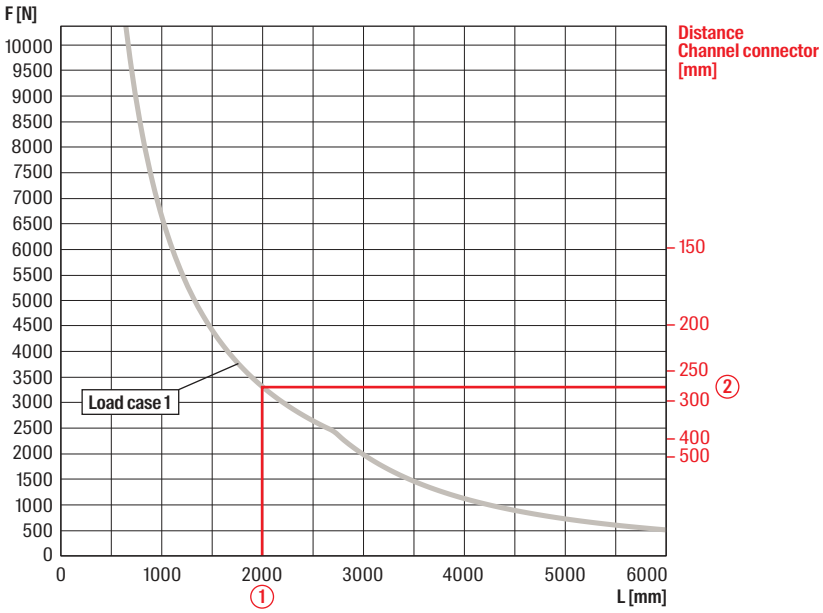


FDCC

Item	Item No.	Thread A	Drive	Tightening torque T_{inst} [Nm]	Sales unit [pcs]
FDCC	**546148**	M 10	Hexagon socket 5 mm	25	100
FDCC A4	**557376**	M 10	Hexagon socket 5 mm	25	100
FDCC zl	**557278**	M 10	Hexagon socket 5 mm	25	100

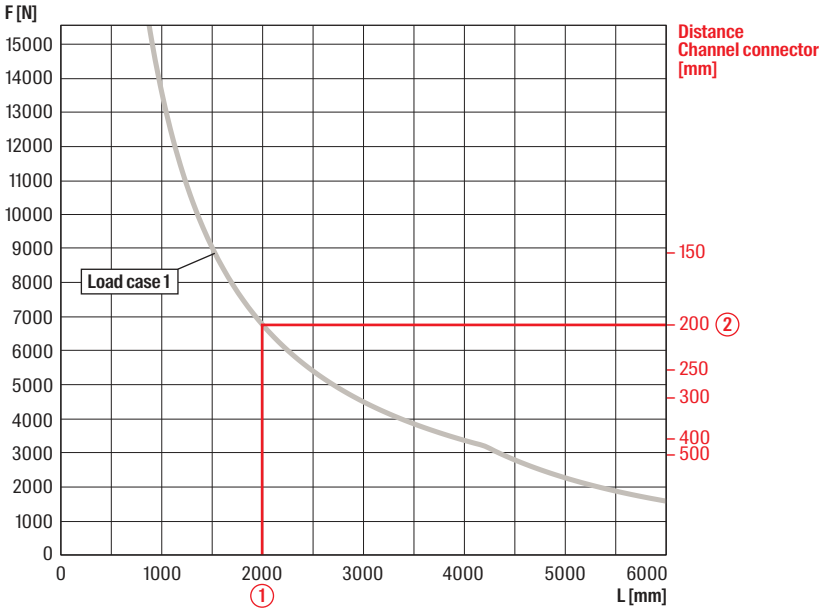
Technical data

FUS 41D/2,0 - 2,5



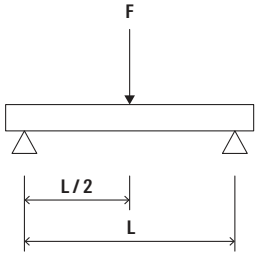
①Length of channel, i.e. 2000 mm for loadcase 1 (single load centric)
②Distance of channel connector (for intermediate values use the lower value, i.e. 250 mm)

FUS 62D/2,5



①Length of channel, i.e. 2000 mm for loadcase 1 (single load centric)
②Distance of channel connector (for intermediate values use the lower value, i.e. 250 mm)

Load case 1



Cantilever arm FCA

FUS profiles with welded base plate for direct mounting on the base material





Refrigerant pipe clamp on sliding element



Heavy pipe on cantilever

Applications

- Quick and easy installation of pipelines (e.g. along the wall)

Certificates



Fire resistance classification R120



MLAR R30

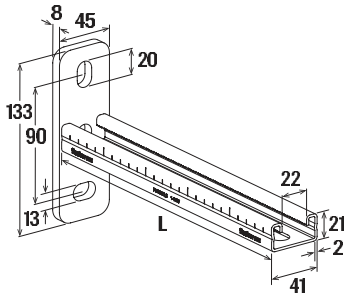
Advantages/benefits

- The fire inspection report in line with MLAR/EN13501 guarantees independently tested functional safety.
- The graduated range of lengths allows for an ideal adaptation to the application.
- The arm's solid base plate offers a secure hold for load-bearing construction.
- The base plate's long slots, which are at 90° to one another, allow the arm to be easily aligned.
- The stamped teeth in the channel gives the sliding nuts a secure hold for high shear loads, e.g. for vertical installation.

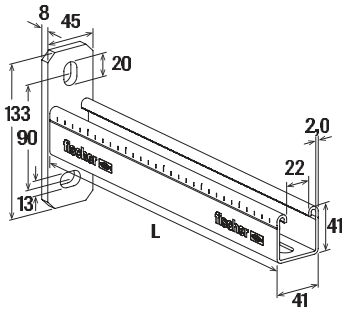
Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 8 µm

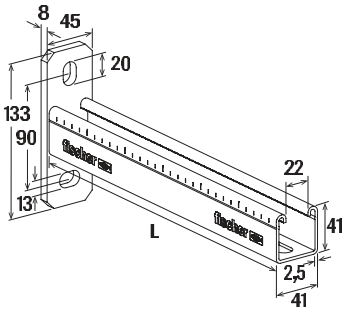
Technical data



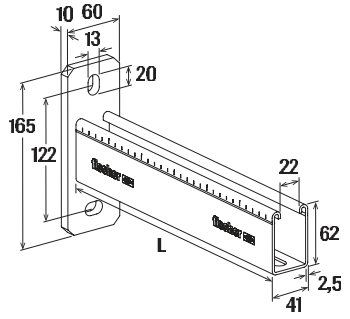
FCA 21



FCA 41/2,0



FCA 41

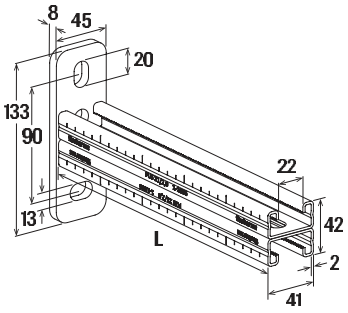


FCA 62

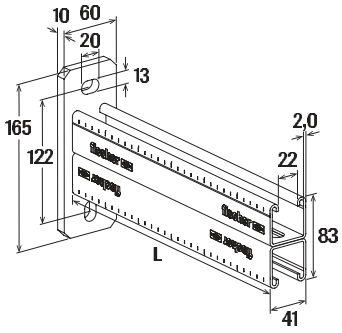
4b

Item	Item No.	Fire test report	Profile	Length L [mm]	Sales unit [pcs]
FCA 21 - 200	537207	–	21/2,0	200	1
FCA 21 - 300	537208	–	21/2,0	300	1
FCA 21 - 450	537209	–	21/2,0	450	1
FCA 41/2,0 - 300	559915	–	41/2,0	300	1
FCA 41/2,0 - 450	559916	–	41/2,0	450	1
FCA 41/2,0 - 600	559917	–	41/2,0	600	1
FCA 41/2,0 - 750	559918	–	41/2,0	750	1
FCA 41/2,0 - 1000	559919	–	41/2,0	1000	1
FCA 41 - 300	077359	X	41/2,5	300	1
FCA 41 - 450	077361	X	41/2,5	450	1
FCA 41 - 600	077363	X	41/2,5	600	1
FCA 41 - 750	077365	X	41/2,5	750	1
FCA 62 - 1000	504315	X	62/2,5	1000	1
FCA 41 - 300 hdg	517411	X	41 / 2.5	300	1
FCA 41 - 450 hdg	517412	X	41 / 2.5	450	1
FCA 41 - 600 hdg..	517413	X	41 / 2.5	600	1
FCA 41 - 750 hdg	517414	X	41 / 2.5	750	1
FCA 62 - 1000 hdg	538015	X	62 / 2.5	1000	1
FCA 41 A4 - 300	505487	X	–	300	1
FCA 41 A4 - 450	505488	X	–	300	1
FCA 41 A4 - 600	505489	X	–	600	1
FCA 21D - 300	536978	–	21D / 2.0	300	1
FCA 21D - 450	536979	–	21D / 2.0	450	1
FCA 21D - 600	536980	–	21 / 2.0	600	1
FCA 41D/2,0 - 750	559920	–	41D / 2,0	750	1
FCA 41D/2,0 - 1000	559921	–	41D / 2,0	1000	1
FCA 41D - 750	504317	–	41D / 2.5	750	1
FCA 41D - 1000	504319	–	41D / 2.5	1000	1
FCA 41D - 750 hdg	538016	–	41D / 2.5	750	1
FCA 41D - 1000 hdg	538017	–	41D / 2.5	1000	1

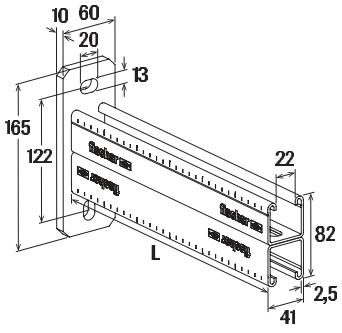
Technical data



FCA 21D



FCA 41D/2,0



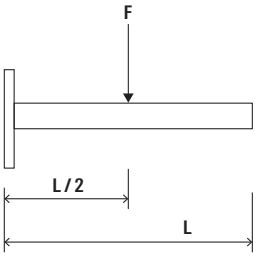
FCA 41D

Item	Item No.	Fire test report	Profile	Length L [mm]	Sales unit [pcs]
FCA 21D - 300	536978	–	21D/2,0	300	1
FCA 21D - 450	536979	–	21D/2,0	450	1
FCA 21D - 600	536980	–	21D/2,0	600	1
FCA 41D/2,0 - 750	559920	–	41D/2,0	750	1
FCA 41D/2,0 - 1000	559921	–	41D/2,0	1000	1
FCA 41D - 750	504317	–	41D/2,5	750	1
FCA 41D - 1000	504319	–	41D/2,5	1000	1

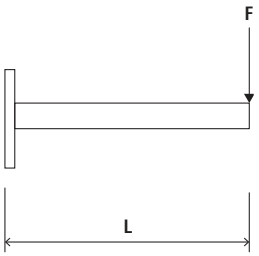
Loads

Item	Item No.	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Max. recommended static load load case 3 F_{rec} [kN]
FCA 21 - 200	537207	1.43	0.72	1.43
FCA 21 - 300	537208	0.95	0.45	0.95
FCA 21 - 450	537209	0.65	0.21	0.65
FCA 41/2,0 - 300	559915	1.8	0.9	1.8
FCA 41/2,0 - 450	559916	1.2	0.6	1.2
FCA 41/2,0 - 600	559917	0.9	0.45	0.9
FCA 41/2,0 - 750	559918	0.72	0.36	0.72
FCA 41/2,0 - 1000	559919	0.54	0.23	0.54
FCA 41 - 300	077359	1.8	0.9	1.8
FCA 41 - 450	077361	1.2	0.6	1.2
FCA 41 - 600	077363	0.9	0.45	0.9
FCA 41 - 750	077365	0.72	0.36	0.72
FCA 62 - 1000	504315	1.25	0.62	1.25
FCA 21D - 300	536978	1.83	0.92	1.83
FCA 21D - 450	536979	1.24	0.62	1.24
FCA 21D - 600	536980	0.92	0.46	0.92
FCA 41D/2,0 - 750	559920	2.5	1.25	2.5
FCA 41D/2,0 - 1000	559921	1.9	0.93	1.9
FCA 41D - 750	504317	2.5	1.25	2.5
FCA 41D - 1000	504319	1.9	0.93	1.9
FCA 41 - 300 hdg	517411	1.80	0.90	1.80
FCA 41 - 450 hdg	517412	1.20	0.60	1.20
FCA 41 - 600 hdg..	517413	0.90	0.45	0.90
FCA 41 - 750 hdg	517414	0.72	0.36	0.72
FCA 62 - 1000 hdg	538015	1.25	0.62	1.25
FCA 41D - 750 hdg	538016	2.5	1.25	2.5
FCA 41D - 1000 hdg	538017	1.9	0.64	1.9
FCA 41 A4 - 300	505487	1.83	0.92	1.83
FCA 41 A4 - 450	505488	1.24	0.62	1.24
FCA 41 A4 - 600	505489	0.92	0.46	0.92

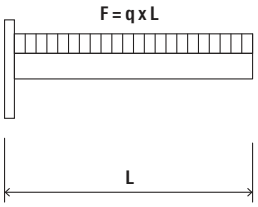
Load case 1



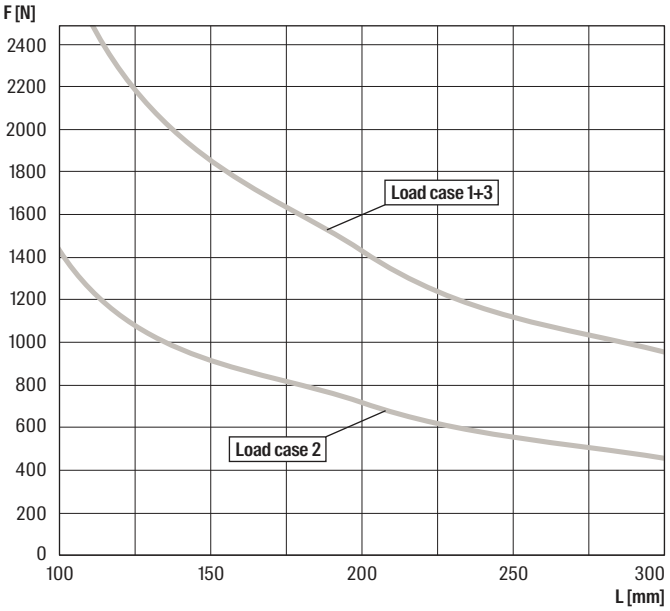
Load case 2



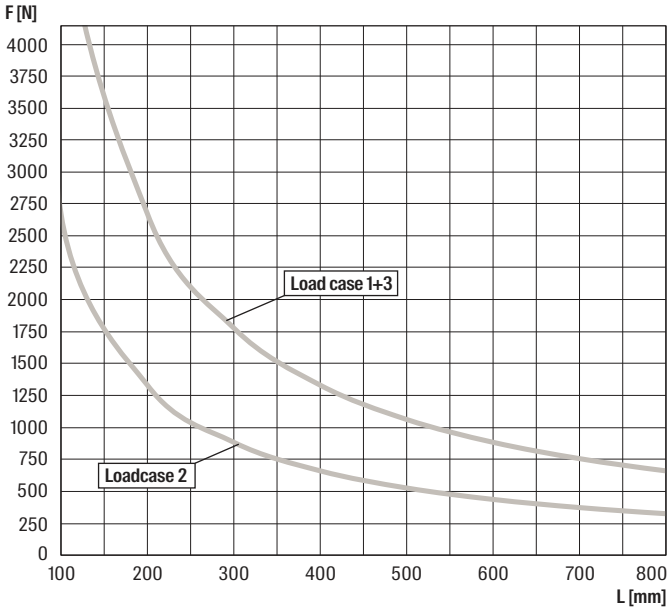
Load case 3



FCA 21

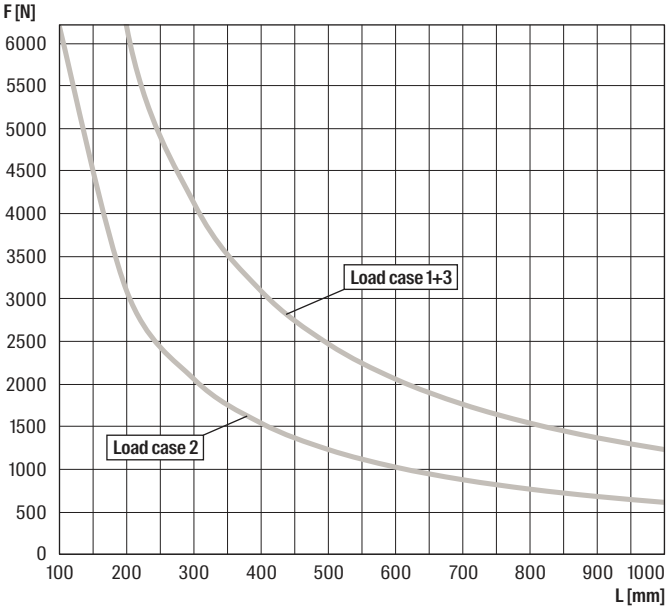


FCA 41



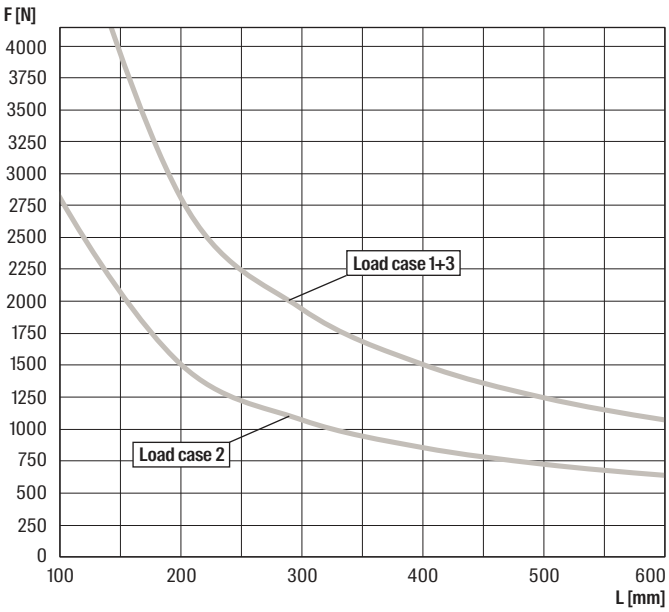
For the load curves, the permissible steel strain $\delta_{adm.}$ = 160 N/mm and the maximum deflection under load L/150 are not exceeded. Load values of the cantilever arms under consideration of the load capacity of the base plate. Fixings and screw fastenings must be calculated accordingly.

FCA 62

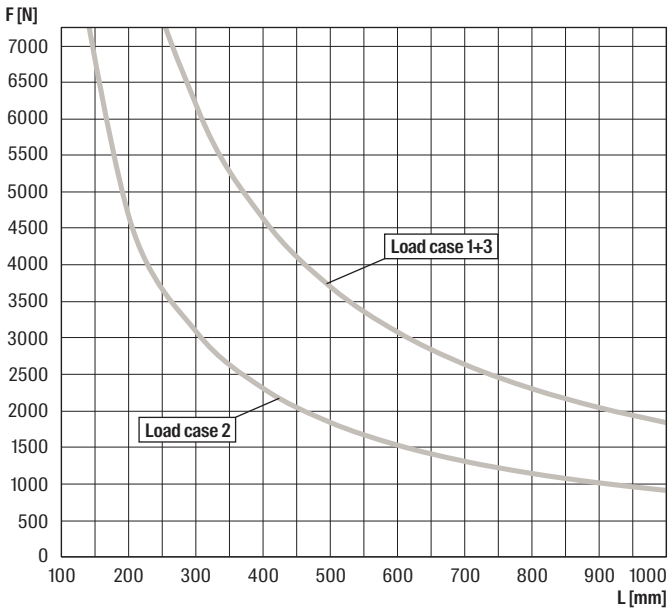


For the load curves, the permissible steel strain $\delta_{adm.}$ = 160 N/mm and the maximum deflection under load L/150 are not exceeded. Load values of the cantilever arms under consideration of the load capacity of the base plate. Fixings and screw fastenings must be calculated accordingly.

FCA 21D



FCA 41D



For the load curves, the permissible steel strain $\delta_{adm.}$ = 160 N/mm and the maximum deflection under load L/150 are not exceeded. Load values of the cantilever arms under consideration of the load capacity of the base plate. Fixings and screw fastenings must be calculated accordingly.

Large cantilever arm FCAM

The large cantilever arm for heavy loads





Sliding element on cantilever



Upright pipe on cantilever arm

Applications

- Quick and easy installation of pipelines with heavy loads, (e.g. along the wall)

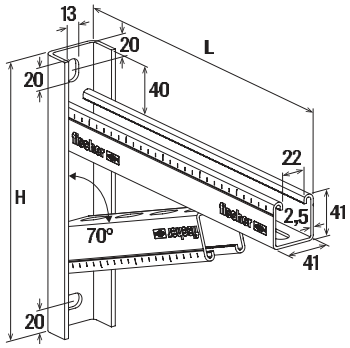
Advantages/benefits

- The robust construction, consisting of a basic and a support profile, allows for the bearing of heavy loads.
- The graduated range of lengths allows for an ideal adaptation to the application.
- The base plate's long slots, which are at 90° to one another, allow the arm to be easily aligned.
- The stamped teeth in the channel gives the sliding nuts a secure hold for high shear loads, e.g. for vertical installation.

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 8 µm

Technical data



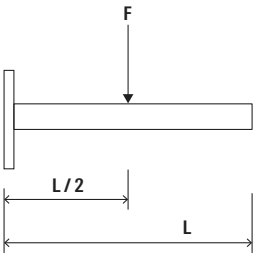
FCAM

Item	Item No.	Length L_1 [mm]	Height H [mm]	Sales unit [pcs]
FCAM 300	504477	300	246	1
FCAM 400	504479	400	270	1
FCAM 500	504480	500	284	1
FCAM 600	504482	600	319	1
FCAM 700	505460	700	343	1

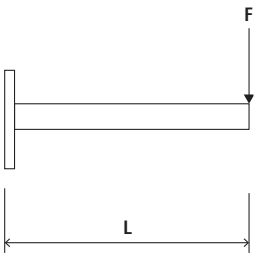
Loads

Item	Item No.	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Max. recommended static load load case 3 F_{rec} [kN]
FCAM 300	**504477**	7.0	3.7	7.0
FCAM 400	**504479**	7.5	2.8	7.5
FCAM 500	**504480**	6.5	2.3	6.5
FCAM 600	**504482**	6.0	1.9	6.0
FCAM 700	**505460**	5.5	1.3	5.5

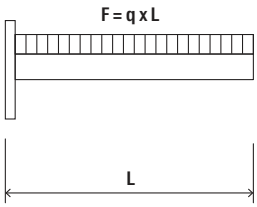
Load case 1



Load case 2



Load case 3



Cover cap FEC



FEC 21 B



FEC 41 B



FEC 62 B

Item	Item No.	For profile	Material	Sales unit [pcs]
FEC 21 B	**077357**	41/21	Polyethylene, black	100
FEC 41 B	**077355**	41/41	Polyethylene, black	100
FEC 62 B	**505551**	41/62	Polyethylene, black	100
FEC 21	**545930**	41/21	Polyethylene, black	200
FEC 41	**545929**	41/41	Polyethylene, black	200

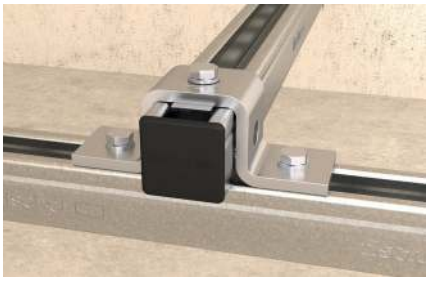
Connector FCN Clix P and FCN Clix M

Channel nut for quick and easy fixing in FUS profiles





Connection on channel



Cross connection

Applications

- FCN Clix P: connection of FUS channels and fixtures
- FCN Clix M: connection of pipe clamps to FUS channel under the use of threaded rods

Certificates

Fire resistance classification R120

MLAR R30

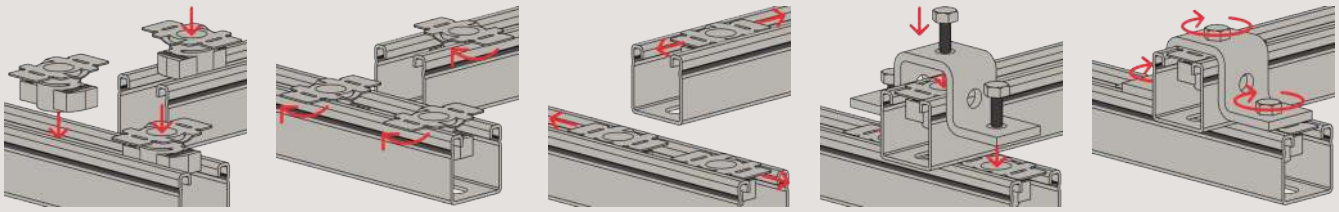
Advantages/benefits

- The sliding nut design enables a quick and easy setting in the channel.
- The spring effect of the plastic clasp guarantees simple and precise positioning in the channel.
- The FCN Clix P's flat plastic mounting with wings offers a good hold and a convenient mounting.
- The teeth on the sliding nut provide a secure hold in the FUS channel.
- Installation by rotating 90° enables post-installation in installed channel.

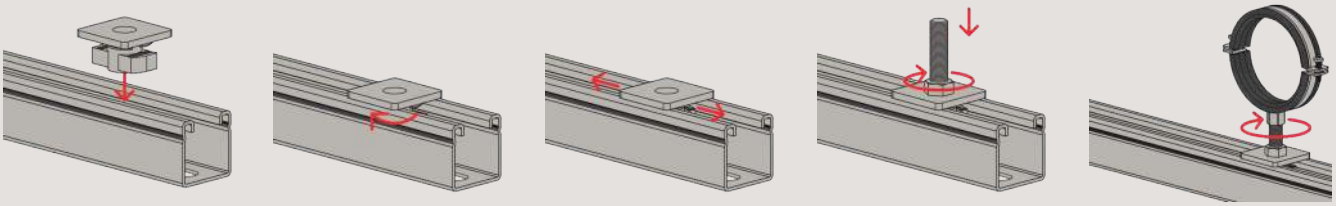
Properties

- Material: steel S235 JR (material no. 1.0037) acc. to DIN EN 10025, plastic Nylon PA6
- Zinc plating: electro zinc-plated, min. 5 µm

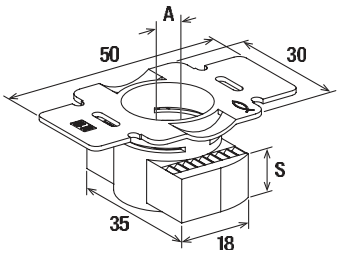
Installation FCN Clix P



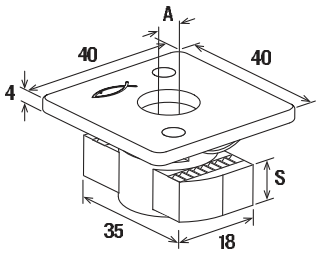
Installation FCN Clix M



Technical data



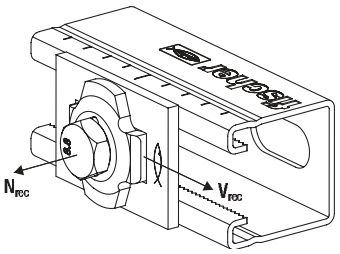
FCN Clix P



FCN Clix M

Item	Art.-NO.	Qty. per box [pcs]	Thread M	Thickness S [mm]	Max. tension load for FUS 2.0 mm N_{rec} [kN]	Max. tension load for FUS 2.0 mm N_{design} [kN]	Max. tension load for FUS 2.5 mm N_{rec} [kN]	Max. tension load for FUS 2.5 mm N_{design} [kN]	Max. shear load V_{rec} [kN]	Max. shear load V_{design} [kN]	Tightening torque for screw grade≥ 8.8 T_{inst} [Nm]
FCN Clix P 6	**504326**	100	M 6	6.0	3.0	4.2	3.0	4.2	1.0	1.4	10
FCN Clix P 8	**504327**	100	M 8	6.0	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN Clix P 10	**504329**	100	M 10	8.0	5.0	7.0	8.0	11.2	2.5	3.5	40
FCN Clix P 12	**504331**	100	M 12	9.5	5.0	7.0	8.0	11.2	3.0	4.2	50
FCN Clix M 6	**504344**	100	M 6	6.0	3.0	4.2	3.0	4.2	1.0	1.4	10
FCN Clix M 8	**504345**	100	M 8	6.0	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN Clix M 10	**504346**	100	M 10	8.0	5.0	7.0	8.0	11.2	2.5	3.5	40
FCN Clix M 12	**504347**	100	M 12	9.5	5.0	7.0	8.0	11.2	3.0	4.2	50
FCN Clix P 8 HDG	**538106**	100	M 8	6.0	4.0	5.6	4.0	5.6	1.0	1.4	20
FCN Clix P 10 HDG	**538107**	100	M10	8.0	5.0	7.0	8.0	11.2	1.5	2.1	40
FCN Clix P 12 HDG	**517420**	100	M 12	9.5	5.0	7.0	8.0	11.2	1.5	2.1	50
FCN Clix M 8 HDG	**538108**	100	M 8	6.0	4.0	5.6	4.0	5.6	1.0	1.4	20
FCN Clix M 10 HDG	**538109**	100	M10	8.0	5.0	7.0	8.0	11.2	1.5	2.1	40
FCN Clix M 12 HDG	**538110**	100	M 12	9.5	5.0	7.0	8.0	11.2	1.5	2.1	50
FCN Clix P 8 A4	**504436**	100	M 8	6.0	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN Clix P 10 A4	**504437**	100	M 10	8.0	5.0	7.0	8.0	11.2	2.5	3.5	40
FCN Clix P 12 A4	**504439**	100	M 12	9.5	5.0	7.0	8.0	11.2	3.0	4.2	50
FCN Clix M 8 A4	**504440**	100	M 8	6.0	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN Clix M 10 A4	**504447**	100	M 10	8.0	5.0	7.0	8.0	11.2	2.5	3.5	40

Loads



FCN Clix P and FCN Clix M

Item	Item No.	Max. recommended tension load for FUS 1,5 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,0 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,5 mm N_{rec} [kN]	Max. recommended shear load for FUS 1,5 mm V_{rec} [kN]	Max. recommended shear load for FUS 2,0/2,5 mm V_{rec} [kN]	Tightening torque for screw grade ≥ 8.8 T_{inst} [Nm]	Tightening torque for screw grade ≥ 4.6 T_{inst} [Nm]
FCN Clix P 6	**559757**	2.5	3.0	3.0	1.0	1.0	10	–
FCN Clix P 8	**559758**	3.0	4.0	4.0	1.5	2.0	20	–
FCN Clix P 10	**559759**	4.0	5.0	8.0	2.0	2.5	40	–
FCN Clix P 12	**559760**	4.0	5.0	8.0	2.0	3.0	50	–
FCN Clix M 6	**559761**	–	3.0	3.0	–	–	–	5
FCN Clix M 8	**559762**	–	4.0	4.0	–	–	–	10
FCN Clix M 10	**559763**	–	5.0	8.0	–	–	–	15
FCN Clix M 12	**559764**	–	5.0	8.0	–	–	–	20

T-head bolt FHS Clix S

Hammer-head bolt for quick and easy fixing in FUS profiles





Leightweight installation on cantilever



Bracings with UHRS

Applications

- Connection of pipe clamps to the channel

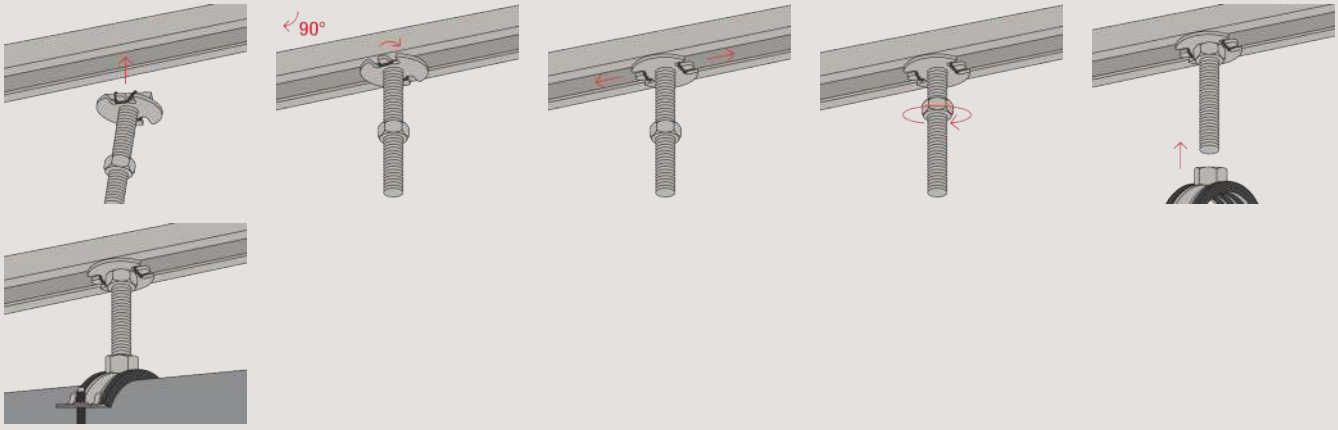
Advantages/benefits

- The hammer-head nut design for a quick and easy setting in the channel.
- The spring effect of the plastic bands guarantees simple and precise positioning in the channel.
- Installation by rotating 90° enables post-installation in installed channel.

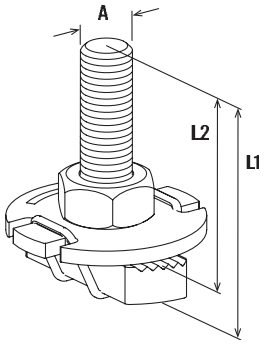
Properties

- Material washer: steel DC01-C490 (material no.1.0330) acc. to DIN EN 10139
- Hammer head bolt: resistance class 8.8
- Nut DIN 934: resistance class min. 4
- Zinc plating: electro zinc-plated, min. 5 µm

Installation FHS Clix S



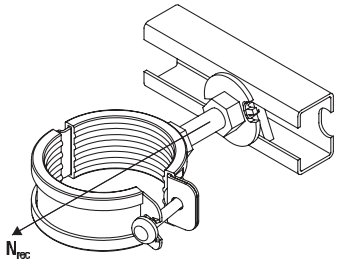
Technical data



FHS Clix S

Item	Item No.	Thread A	Length L_1 [mm]	Length L_2 [mm]	Sales unit [pcs]
FHS CLIX S 8 x 30	**020914**	M 8	36	30	50
FHS CLIX S 8 x 40	**020915**	M 8	46	40	50
FHS CLIX S 8 x 60	**020916**	M 8	66	60	50
FHS CLIX S 10 x 30	**020917**	M 10	37	30	50
FHS CLIX S 10 x 40	**020918**	M 10	47	40	50
FHS CLIX S 10 x 60	**020919**	M 10	67	60	50
FHS CLIX S 12 x 30	**020969**	M 12	38	30	50
FHS CLIX S 12 x 40	**047316**	M 12	48	40	50
FHS CLIX S 12 x 60	**504320**	M 12	68	60	50

Loads



FHS Clix S

Item	Item No.	Max. recommended tension load for FUS 1,5 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,0 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,5 mm N_{rec} [kN]	Tightening torque T_{inst} [Nm]
FHS CLIX S 8 x 30	**020914**	3.0	4.0	4.0	5
FHS CLIX S 8 x 40	**020915**	3.0	4.0	4.0	5
FHS CLIX S 8 x 60	**020916**	3.0	4.0	4.0	5
FHS CLIX S 10 x 30	**020917**	3.0	4.0	5.0	10
FHS CLIX S 10 x 40	**020918**	3.0	4.0	5.0	10
FHS CLIX S 10 x 60	**020919**	3.0	4.0	5.0	10
FHS CLIX S 12 x 30	**020969**	3.0	4.0	5.0	10
FHS CLIX S 12 x 40	**047316**	3.0	4.0	5.0	10
FHS CLIX S 12 x 60	**504320**	3.0	4.0	5.0	10

T-head bolt FCSN

Hammer-head bolt for easy fixing in FUS profiles





Leightweight installation on cantilever

Applications

- Connection of pipe clamps to the channel

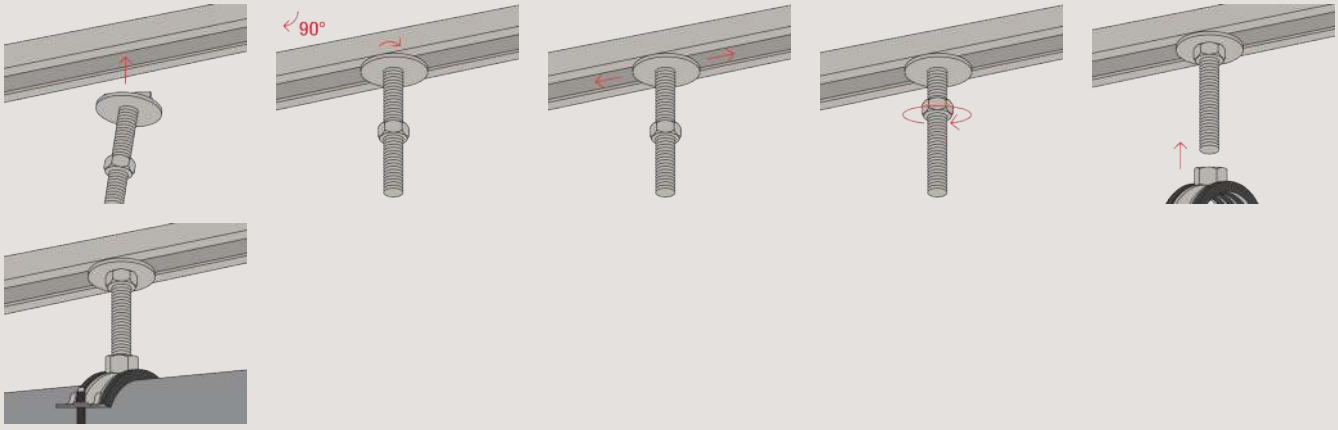
Advantages/benefits

- The hammer-head nut design for an easy setting in the channel.
- Installation by rotating 90° enables post-installation in installed channel.

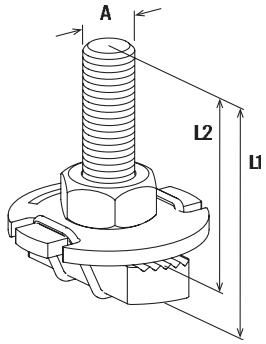
Properties

- Material washer: steel acc. to DIN EN 10139
- Hammer head bolt: steel with min. 400 N/mm²
- Material nut: strength category 4
- Zinc plating: electro zinc-plated, min. 5 µm

Installation FCSN



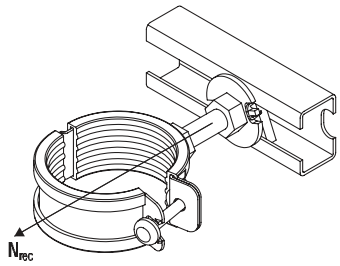
Technical data



FCSN

Item	Item No.	Thread A	Length L_1 [mm]	Length L_2 [mm]	Sales unit [pcs]
FCSN M 8 x 30	**092960**	M 8	36	30	50
FCSN M 8 x 40	**092961**	M 8	46	40	50
FCSN M 8 x 50	**093354**	M 8	56	50	50
FCSN M 8 x 60	**093355**	M 8	66	60	50
FCSN M 10 x 30	**093360**	M 10	38	30	50
FCSN M 10 x 40	**093361**	M 10	48	40	50
FCSN M 10 x 50	**093362**	M 10	58	50	50
FCSN M 10 x 60	**093363**	M 10	68	60	50
FCSN M 12 x 30	**093366**	M 12	39	30	50
FCSN M 12 x 40	**093367**	M 12	49	40	50

Loads



FSCN

Item	Item No.	Max. recommended tension load for FUS 2,0 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,5 mm N_{rec} [kN]	Tightening torque T_{inst} [Nm]
FCSN M 8 x 30	**092960**	4.0	4.0	5
FCSN M 8 x 40	**092961**	4.0	4.0	5
FCSN M 8 x 50	**093354**	4.0	4.0	5
FCSN M 8 x 60	**093355**	4.0	4.0	5
FCSN M 10 x 30	**093360**	4.0	5.0	10
FCSN M 10 x 40	**093361**	4.0	5.0	10
FCSN M 10 x 50	**093362**	4.0	5.0	10
FCSN M 10 x 60	**093363**	4.0	5.0	10
FCSN M 12 x 30	**093366**	4.0	5.0	10
FCSN M 12 x 40	**093367**	4.0	5.0	10

Channel nut FCN/FCN-L

Connector - Channel nut FCN



Applications

- Simple hammer-head nut for installation in FUS channels
- The FCN is suitable for the connection of different fixtures and pipe clamps with the channel

Advantages/benefits

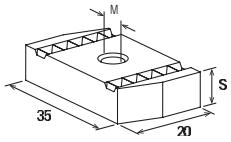
- The teeth on the sliding nut provide a secure hold in the FUS channel.

Properties

- Material: steel with min. tensile strength of 415 N/mm²
- Zinc plating: electro zinc-plated, min. 5 µm

4b

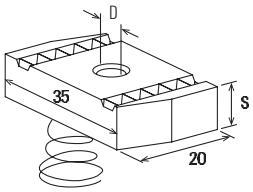
Technical data



FCN

Item	Art.-NO.	Qty. per box [pcs]	Thread M	Thickness S [mm]	Max. tension load for FUS 2.0 mm N_{rec} [kN]	Max. tension load for FUS 2.0 mm N_{design} [kN]	Max. tension load for FUS 2.5 mm N_{rec} [kN]	Max. tension load for FUS 2.5 mm N_{design} [kN]	Max. shear load V_{rec} [kN]	Max. shear load V_{design} [kN]	Tightening torque for screw grade≥ 8.8 T_{inst} [Nm]
FCN 6	77405	100	M 6	6.0	3.0	4.2	3.0	4.2	1.0	1.4	10
FCN 8	77407	100	M 8	6.0	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN 10	77409	100	M 10	8.0	5.0	7.0	8.0	11.2	2.5	3.5	40
FCN 12	77411	100	M 12	9.0	5.0	7.0	8.0	11.2	2.5	3.5	50

Technical data



FCN

Item	Art.-NO. GI	Art.-NO. HDG	Art.-NO. SS316	Thickness [mm]	Thread D	Max. tension load for FUS 2.0 mm N_{rec} [kN]	Max. tension load for FUS 2.0 mm N_{design} [kN]	Max. tension load for FUS 2.5 mm N_{rec} [kN]	Max. tension load for FUS 2.5 mm N_{design} [kN]	Max. shear load V_{rec} [kN]	Max. shear load V_{design} [kN]	Tightening torque for screw grade≥ 8.8 T_{inst} [Nm]
FCN-L6	516750	516765	516774	6.0	M 6	3.0	4.2	3.0	4.2	1.0	1.4	10
FCN-L8	516751	516766	516775	6.0	M 8	4.0	5.6	4.0	5.6	2.0	2.8	20
FCN-L10	516752	516767	516776	8.0	M 10	5.0	7.0	8.0	11.2	2.5	3.5	40
FCN-L12	516753	516768	--	9.0	M 12	5.0	7.0	8.0	11.2	2.5	3.5	50
FCN-L12	--	--	516777	9.2	M 12	5.0	7.0	8.0	11.2	2.5	3.5	50
FCN-L12	--	516769	--	9.0	M 12	5.0	7.0	8.0	11.2	2.5	3.5	50

Channel washer HK 41

Connector - Channel washer HK





Lateral pipe mounting at channel



Channel installation at wall

Applications

- Channel washer to strengthen the profile

Certificates

Fire resistance classification R120

MLAR R30

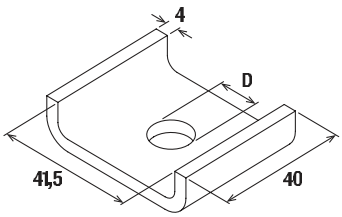
Advantages/benefits

- The U-shape of the channel washer prevents the profile from bending effectively.
- The shape of the channel washer makes the push-through installations of channel profiles quick and easy.

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Zinc plating: hot-dip galvanised, min. 45 µm, acc. to DIN EN ISO 14611.4401, acc. DIN EN 10088-1
- Material: stainless steel A4: material-no 1.4401, acc. DIN EN 10088-1

Technical data

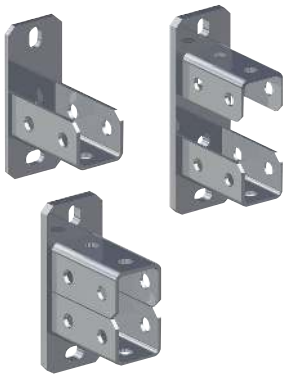


HK 41

Item	Item No.	Hole-Ø D [mm]	Sales unit [pcs]
HK 41 8,5	547492	8.5	50
HK 41 10,5	547493	10.5	50
HK 41 12,5	547494	12.5	50
HK 41 17	561253	17.0	50
HK 41 10.5 hdg	547495	10.5	50
HK 41 12,5 hdg	547496	12.5	50
HK 41 17 hdg	561254	17.0	50
HK 41 12.5 - A4	559750	12.5	25
HK 41 17 - A4	562665	17.0	25

Saddle flange SF L

Construction element - Saddle flange SF





Pipe installation in escape route



Cantilever with saddle flange

Applications

- For solid connections between the massive profile and building structures

Certificates



Fire resistance classification R120



MLAR R30

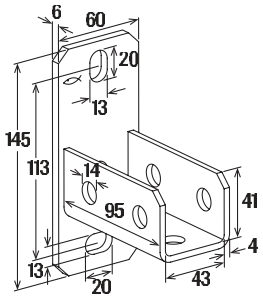
Advantages/benefits

- The perfect-fit saddle of the SF enables a simple installation by inserting the channel.
- The saddle flange's stable design offers a secure hold for a load-bearing construction.

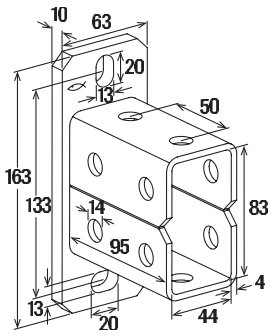
Properties

- Material base plate: steel DC01 (material no.1.0330) acc. to DIN EN 10139
- Zinc plating base plate: electro zinc-plated, min. 8 µm
- Material U-Profile: steel S235 JR (material no. 1.0037) nach DIN EN 10025
- Zinc plating HDG: Hot-dip galvanized, - approx 45 m acc. to DIN EN ISO 1461
- Material A4: Stainless steel of corrosion resistance class III, e.g. A4

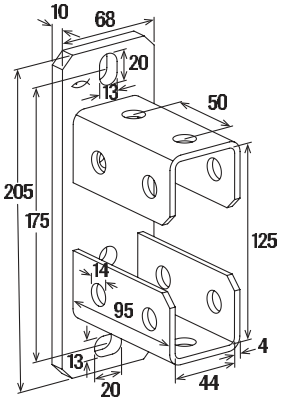
Technical data



SF L 41



SF L 82



SF L 124

Item	Item No.	For profile	Sales unit [pcs]
SF L 41	504355	21, 41, 21D, 62	10
SF L 82	504357	41 D	5
SF L 124	504358	62 D	5
SF L 41 hdg.	517421	21; 41; 21D; 62	10
SF L 82 hdg.	538125	41D	5
SF L 124 hdg.	538126	62D	5
SF L 41 A4	504522	FUS 21 + FUS 41	10

Mounting bracket UWS

Construction element - Universal bracket UWS





3D-frame constructions



Support systems for ventilation

Applications

- Universal angle bracket for the reinforcement of supporting structures

Certificates



Fire resistance classification R120



MLAR R30

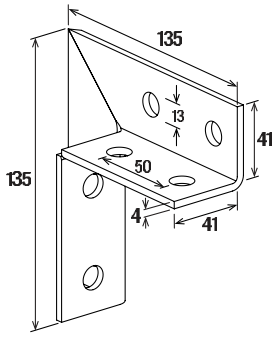
Advantages/benefits

- The universal bracket for the connection of fischer channels gives a supporting structure, great stability and safety (we recommend using in pairs).

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm thick

Technical data



UWS

Item	Item No.	Sales unit [pcs]
UWS	049479	10
UWS hdg.	538115	10

Angle bracket WK

Construction element - Angle bracket WK





Heavy drainage pipe under angle bracket



Solid frame construction

Applications

- Reinforcement and fixing of pipelines and pipe components

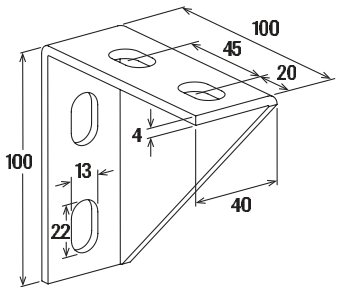
Advantages/benefits

- The design of the angle bracket allows for the fixing of pipe clamps or channels.
- The stable angle ensures a very high level of stability and safety to the structure.

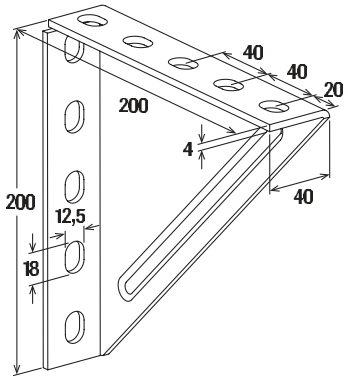
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, min. 8 µm
- Hot dip galvanized, min zinc layer is 45 µm thick

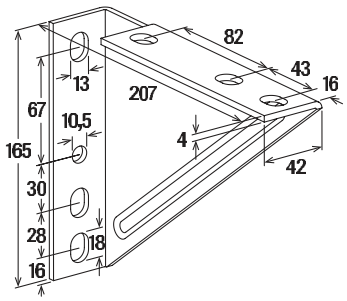
Technical data



WK 100/100



WK 200/200



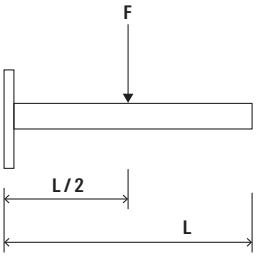
WK 207/165

Item	Item No.	Sales unit [pcs]
WK 100/100	063559	5
WK 200/200	079570	5
WK 207/165	079571	6
WK 100/100 hdg.	538117	5
WK 200/200 hdg.	538118	5

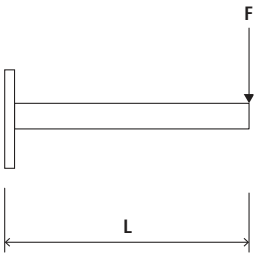
Loads

Item	Item No.	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]
WK 100/100	063559	–	4.0
WK 200/200	079570	4.0	1.8
WK 207/165	079571	–	1.8
WK 100/100 hdg.	538117	–	4.0
WK 200/200 hdg.	538118	4.0	1.8

Load case 1



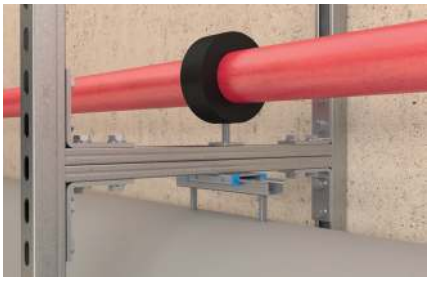
Load case 2



Bracket FFF

Construction elements - Brackets FFF





Frame constructions



Connection on channel

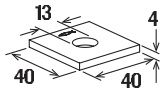
Applications

- Connecting elements for the joining or strengthening of simple channel constructions

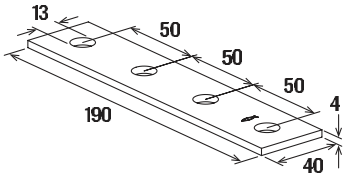
Properties

- Material: steel S235 JR (material no.10037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm

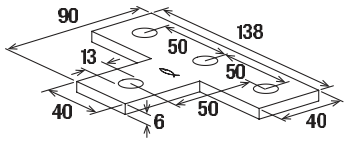
Technical data



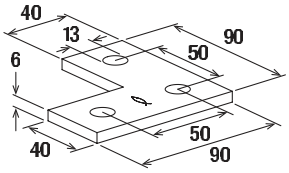
FFF 1



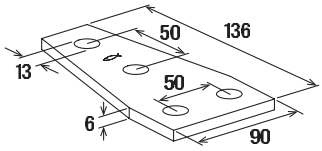
FFF 4



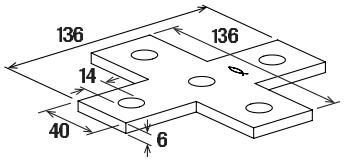
FFF 4T



FFF 3L



FFF 4D



FFF 5C

Item	Item No.	Sales unit [pcs]
FFF 1	547500	25
FFF 3L	504498	25
FFF 4	547501	25
FFF 4T	504500	25
FFF 4D	504368	25
FFF 5C	553073	20
FFF 1 hdg	547506	25
FFF 3 L hdg	537581	25
FFF 4 hdg	547507	25
FFF 4 T hdg	537583	25
FFF 4 D hdg	537584	25
FFF 5 C hdg	553075	20

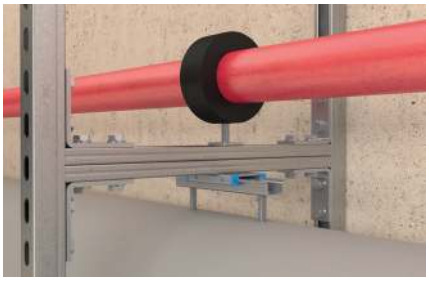
Loads

See Channel nut FCN Clix P

Bracket FAF

Construction elements - Mounting bracket FAF





Frame constructions



Connection on channel

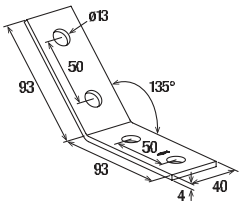
Applications

- Connecting elements for the joining or strengthening of simple channel constructions

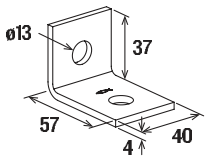
Properties

- Material: steel S235 JR (material no.10037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm

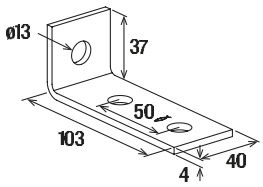
Technical data



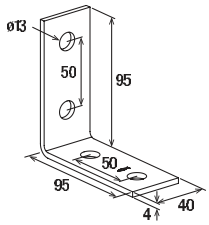
FAF 4/135°



FAF 2



FAF 3



FAF 4

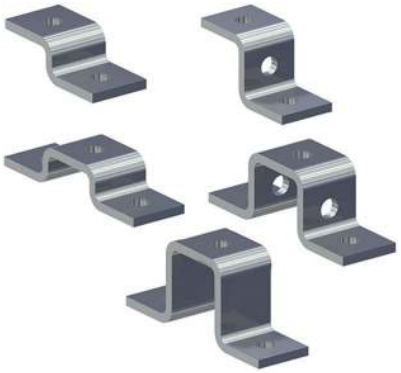
Item	Item No.	Sales unit [pcs]
FAF 4/135°	547505	25
FAF 2	553048	25
FAF 3	547503	25
FAF 4	552349	25
FAF 2 A4	547512	25
FAF 4 A4	547513	25
FAF 4/135° A4	547514	25
FAF 4/135° hdg	547511	25
FAF 2 hdg	547508	25
FAF 3 hdg	547509	25
FAF 4 hdg	547510	25

Loads

See Channel nut FCN Clix P

Flanges FZF

Construction elements - Mounting brackets FZF, FUF





Cross connection on channel

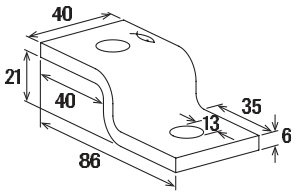
Applications

- Connecting elements for multi-dimensional channel constructions

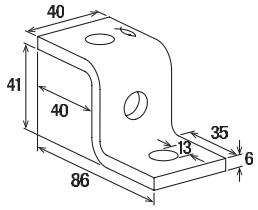
Properties

- Material: steel S235 JR (material no.10037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm

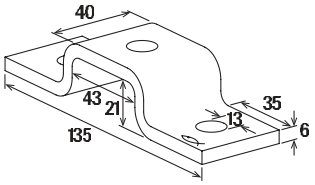
Technical data



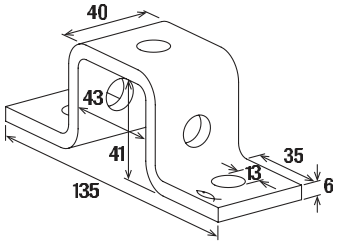
FZF 21



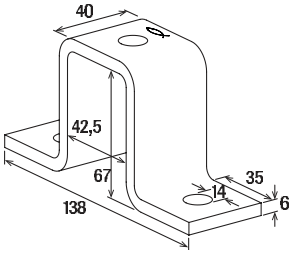
FZF 41



FUF 21



FUF 41



FUF 62

Item	Item No.	Sales unit [pcs]
FZF 21	504375	25
FZF 41	504515	25
FUF 21	504376	25
FUF 41	504377	25
FUF 62	553076	15
FUF 21 hdg	537588	25
FUF 41 hdg	537589	25
FUF 62 hdg	553083	15

Loads

See Channel nut FCN Clix P

Flanges FUF

Construction elements - Mounting brackets FUF





3D-frame constructions

Applications

- Connecting elements for multi-dimensional channel constructions

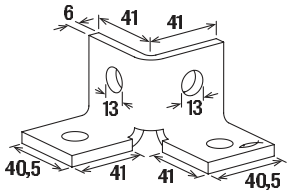
Advantages/benefits

- The various shapes of the connecting elements offer flexibility during the installation of channel constructions.
- The holes in the connecting elements make them compatible with the FCN Clix P.

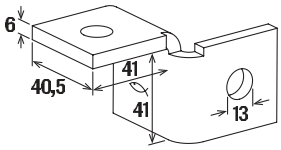
Properties

- Material: steel S235 JR (material no.10037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm

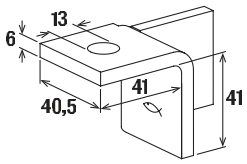
Technical data



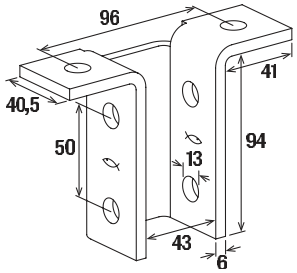
FUF 4Y



FUF 180°L



FUF 180°R



FUF 8T

Item	Item No.	Sales unit [pcs]
FUF 4Y	504378	20
FUF 180°L	504379	20
FUF 180°R	504383	20
FUF 8T	504387	10
FUF 4Y hdg	537585	20
FUF 8T hdg	537590	10
FUF 180°L hdg	537586	20
FUF 180°R hdg	537587	20

Loads

See Channel nut FCN Clix P

Variable bracket VB

Construction element - Variable bracket VB





Massive bracing of cantilever arm

Applications

- Variable bracket for FUS channel profiles to built up supporting structures
- Bracket for installation with FUS channels from 0° to 180°

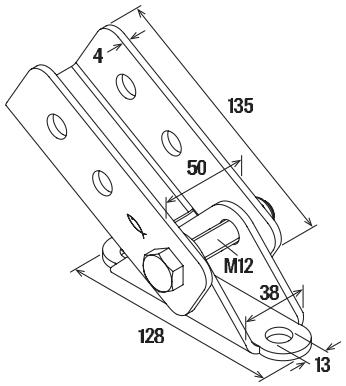
Advantages/Benefits

- The design of the variable bracket VB enables the fixation of mounting channels at an angle of 0° to 180°.
- Due to the holes on all three sides, the channels can be installed with the slot lateral.
- The punched holes in the base plate allow the direct fixing to the substructure or onto a mounting channel.

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 5 µm
- Material: stainless steel A4: material-no 1.4401, acc. DIN EN 10088-1
- Hot dip galvanized, min zinc layer is 45 µm

Technical data



VB

Item	Item No.	Sales unit [pcs]
VB	545650	5
VB hdg	545771	5
VB A4	563574	5

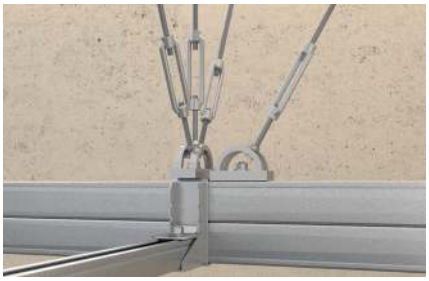
Loads

See Channel nut FCN Clix P

Universal mounting UHRS

Construction element - Universal mounting UHRS





Channel bracing for installation grid



Bracings with UHRS

Applications

- Variable anchor bracket for anchoring with threaded rods
- Can be used together with FHS Clix S M 12

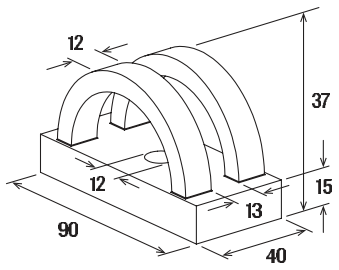
Advantages/benefits

- The design of the universal mount allows the anchoring by using threaded rods at all angles.
- The hole in the base plate enables the direct fixing onto a wall or ceiling, or onto a channels.

Properties

- Material: steel S235 JRG (material no. 1.0038) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 3 µm

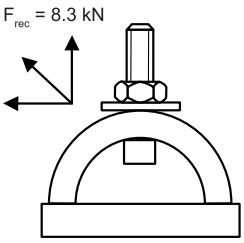
Technical data



UHRS

Item	Item No.	Sales unit [pcs]
UHRS	**063938**	6

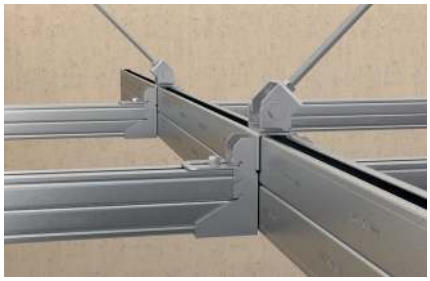
Loads



Universal hinge FUH

Construction element - Universal hinge FUH





Inclined bracing for installation grid

Applications

- Variable construction element for bracing with threaded rods or to fix pipelines to sloped substructures.
- Can be attached directly to the underground or to FUS channels.
- Flexible use especially for sloped substructures or undergrounds.

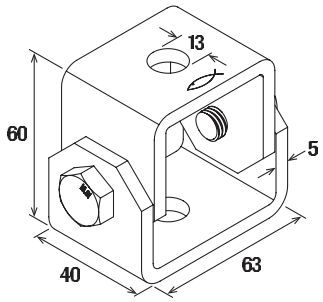
Advantages/Benefits

- Flexible solution for many applications such as fixing of pipelines to sloped undergrounds or bracing with threaded rods.
- Free adjustable angle up to 90°.
- Easy to use.

Properties

- Material: steel S235 JR (material no.: 1.0037)
- Zinc plating: electro zinc-plated, min. 5 µm

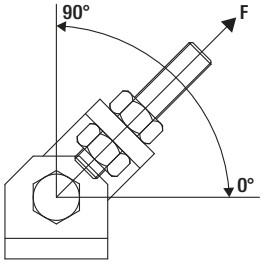
Technical data



FUH

Item	Item No.	Sales unit [pcs]
FUH 13	543065	6

Loads



Angle	90°	75°	60°	45°	30°	0°
Maximum recommendet load [kN]	6	5,5	5	4	3	2,5

Intermediate values can be interpolated.

Swivel clamp



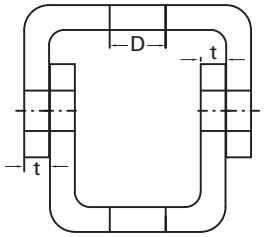


Height adjustable pipe installation

4b Properties

- Material: Steel DD11 (material no. 1.0332) acc. to DINEN10111
- Zinc plating: Electro zinc plated, min. 5 µm
  Zinc plating: Hot-dip galvanized, approx. 45 µm

Technical data



Hammerset anchor EA II



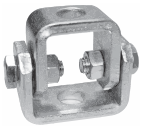
SWIVEL Type 10-3



SWIVEL Type 12-4



SWIVEL Type 16-5



SWIVEL Type 16-8

Type	Finish	Art.No	Thickness [mm]	D [mm]	Width [mm]	Recommendation				Pack size
						Tensile Load [N]	Max. Inclination	Rotation	Torque [Nm]	
SWIVEL Type 10-3	G.I	548734	3	13	35	2750	60°	90°	40	50
SWIVEL Type 12-4	G.I	548735	4	13	35	4300	60°	90°	40	50
SWIVEL Type 16-5	G.I	548736	5	18	35	5800	60°	90°	40	25
SWIVEL Type 16-8	G.I	548737	8	18	40	10000	60°	90°	40	25
SWIVEL Type 10-3	HDG	548738	3	13	35	2750	60°	90°	40	50
SWIVEL Type 12-4	HDG	548739	4	13	35	4300	60°	90°	40	50
SWIVEL Type 16-5	HDG	548740	5	18	35	5800	60°	90°	40	25
SWIVEL Type 16-8	HDG	548741	8	18	40	10000	60°	90°	40	25

Threaded rod bracket FSB 45°

Construction element - Threaded rod bracket FSB 45°





Heavy pipe on cantilever



Cantilever with saddle flange

Applications

- 45°-element for bracing with M10 threaded rods

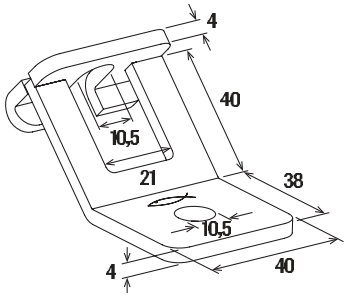
Advantages/benefits

- The anchoring element's socket allows the fast insertion of a pre-mounted M10 threaded rod with nut.
- The hole in the base plate enables the direct fixing onto a wall or ceiling or onto a channel.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm

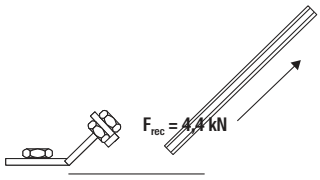
Technical data



FSB 45°

Item	Item No.	Sales unit [pcs]
FSB 45°	071269	20
FSB 45° hdg.	538120	20

Loads



Beam clamp TKR

Clamp for fixing of profiles to steel girders





Channel to steelbeam

Applications

- Fixing to steel girders requires two clamps per connection

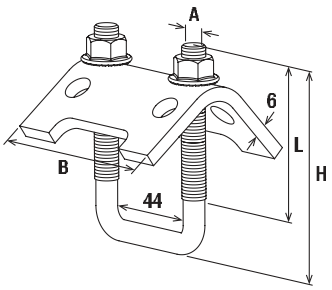
Advantages/benefits

- The design of the beam clamp allows fixing without drilling or welding.
- The various lengths of the beam clamp enable the fixing on most standard beams.
- The shape of the beam clamp allows the simple adjustment of the channel connection.

Properties

- Material plate/U-bolt pipe hanger: steel S235 JR (material no.10037) acc. to DIN EN 10025
- Material hexagon nut: steel resistance class 8
- Zinc plating: electro zinc-plated, min. 5 µm
- Hot dip galvanized, min zinc layer is 45 µm
- Material: stainless steel A4: material-no 1.4401, acc. DIN EN 10088-3

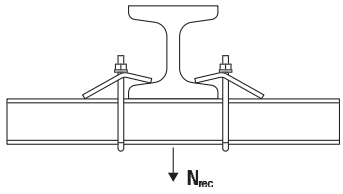
Technical data



TKR

Item	Item No.	For profile	Thread A	Width B [mm]	Height H [mm]	Length L [mm]	Sales unit [pcs]
TKR 21 - 42	504363	21/41	M 8	79	97	50	20
TKR 82	504366	62, 41D	M 10	79	137	80	20
TKR 124	504367	62 D	M 10	79	179	80	10
TKR 21 – 41 HDG	568028	21, 41	M 10	79	97	48	20
TKR 82 HDG	568029	62. 41D	M 10	79	137	80	20
TKR 124 HDG	538124	62 D	M 10	79	179	80	10
TKR 21 – 42 A4	559751	FUS 21 + FUS 41	M 8	79	–	50	10
TKR 82 A4	562666	FUS 62 + FUS 41D	–	–	–	–	10

Loads



TKR

Item	Item No.	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Tightening torque T_{inst} [Nm]	Max. clamping range on girders [mm]
TKR 21 - 42	**504363**	5.00	15	30
TKR 82	**504366**	10.0	20	30
TKR 124	**504367**	10.0	20	30

Push-through connector PFCN

Push-through connector for the quickest and easiest connection of FUS profiles





Cross connection on channel



Cantilever with saddle flange

Applications

- Connection of FUS channels and construction elements by push-through principle
- Universal fitting for all push-through connection elements and FUS profiles

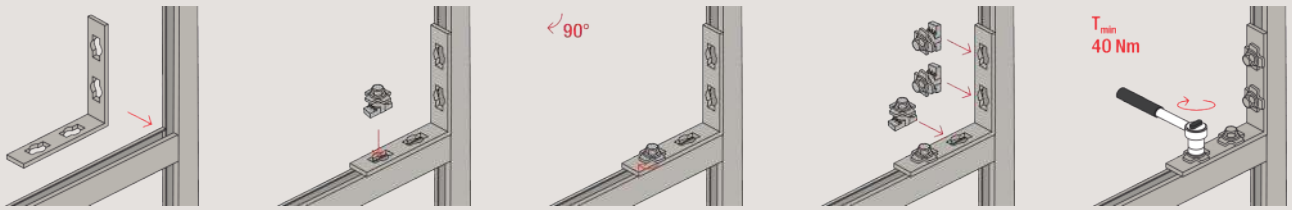
Advantages/benefits

- The correct fit of the push-through connector and connection elements allows the quickest and easiest channel connection.
- The spring effect of the PFCN in set state guarantees a simple and precise positioning in the channel.
- The teeth on the push through connector provide a secure hold in the FUS channel.
- Installation by rotating 90° enables generally the post-installation in set channels.

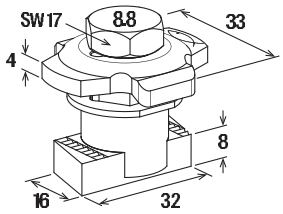
Properties

- Material Cap: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Material Sliding nut: steel S420MC, EN 10149-2
- Material Hexagon screw: 8.8 M10-28, DIN 933
- Material Plastic parts: polypropylene
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

Installation PFCN 41



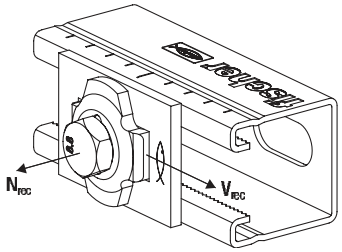
Technical data



PFCN

Item	Item No.	Thread A	Sales unit [pcs]
PFCN 41	**533739**	M 10	50

Loads



PFCN 41

Item	Item No.	Max. recommended tension load for FUS 1,5 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,0 mm N_{rec} [kN]	Max. recommended tension load for FUS 2,5 mm N_{rec} [kN]	Max. recommended shear load for FUS 1,5 mm V_{rec} [kN]	Max. recommended shear load for FUS 2,0 mm [kN]	Max. recommended shear load for FUS 2,5 mm [kN]	Tightening torque for screw grade ≥ 8.8 T_{inst} [Nm]
PFCN 41	**533739**	4.0	5.0	7.0	4.0	4.5	5.0	40

Saddle flange PSF

Construction element - Saddle flange PSF





Pipe installation in escape route



Cantilever with saddle flange

Applications

- Stable construction of connections between channels and building structures for the push-through system

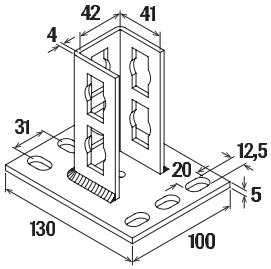
Advantages/benefits

- The perfect-fit saddle allows a simple installation by inserting the mounting channels
- The saddle flange's stable design offers a secure hold for a load-bearing construction

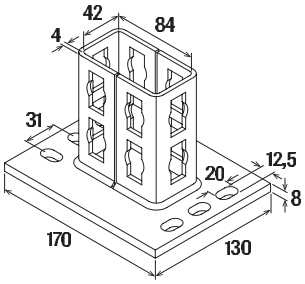
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

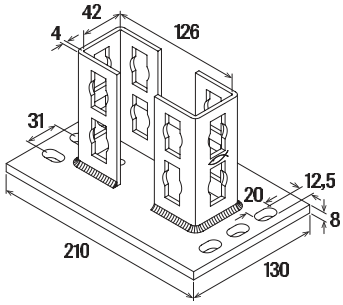
Technical data



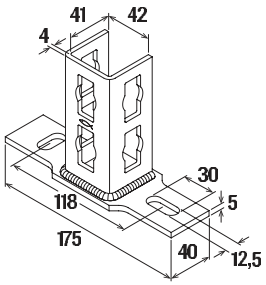
PSF 41



PSF 82



PSF 124



PSFQ 41

Item	Item No.	For profile	Sales unit [pcs]
PSF 41	**533740**	21D, 41, 62	10
PSF 82	**533741**	41 D	5
PSF 124	**533742**	62 D	5
PSFQ 41	**535266**	41	10

Loads

See Push-through connector PFCN

Universal bracket PUWS

Construction element - Universal bracket PUWS





3D-frame constructions



Support systems for ventilation

Applications

- Reinforcement of supporting structures for the push-through system

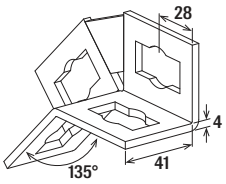
Advantages/benefits

- The universal brackets for the connection of FUS channels gives a supporting structure, great stability and safety (we recommend using in pairs).

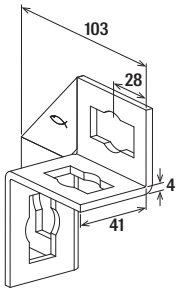
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

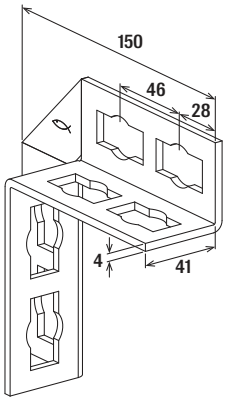
Technical data



PUWS 2 x 2/135°



PUWS 2 x 2



PUWS 4 x 4

Item	Item No.	Sales unit [pcs]
PUWS 2 x 2/135°	**533731**	10
PUWS 2 x 2	**533733**	10
PUWS 4 x 4	**533734**	8

Loads

See Push-through connector PFCN

Angle bracket PWK

Construction element - Angle bracket PWK





Solid frame construction

Applications

- Reinforcement in the push-through system and for lateral fixing to the substrate

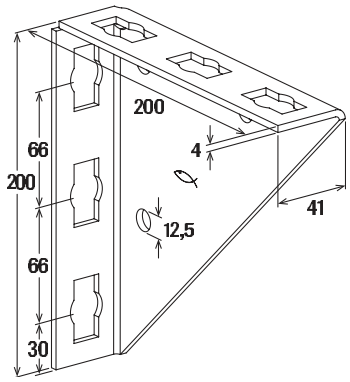
Advantages/benefits

- The stable angle bracket ensures a supporting structure with a very high level of stability and safety.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

Technical data



PWK 200

Item	Item No.	Sales unit [pcs]
PWK 200/200	533744	15

Loads

See Push-through connector PFCN

Variable bracket PVB

Construction element – Variable bracket PVB





Massive bracing of cantilever arm

Applications

- Variable angular positioning of profile support in the push-through system
- Bracket for installation with FUS channels from 0° to 180°

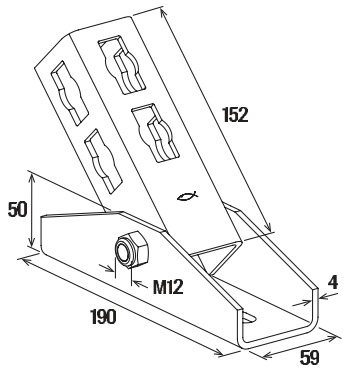
Advantages/Benefits

- The design of the variable bracket PVB enables the fixation of mounting channels at an angle of 0° to 180°.
- The holes in the connecting element make it compatible with the push-through connector PFCN.
- The punched holes in the base plate allow the direct fixing onto a wall, ceiling or onto a mounting channel by screw or anchor.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

Technical data



PVB

Item	Item No.	Sales unit [pcs]
PVB	534960	5

Loads

See Push-through connector PFCN

Bracing elements PSAE

Construction elements – Bracing elements PSAE 300 and 500





Supported channel

Applications

- Elements for stable cantilever constructions made of FUS channels or FCA cantilever arms with push-through connector PFCN

Advantages/benefits

- The stable bracing element PSAE gives the supporting structure very high stability and safety.
- The holes in the base plate of the element make it compatible with the push-through connector PFCN.
- An additional PU-washer allows for fixing of elements with formholes directly onto a wall or ceiling by anchor or screw.

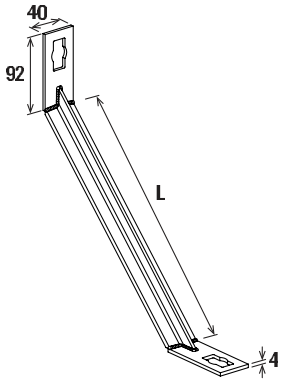
Properties

- Material: steel P235TR2 (material no. 1.0255) acc. to EN 10216-1
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

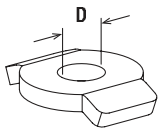
Installation PSAE



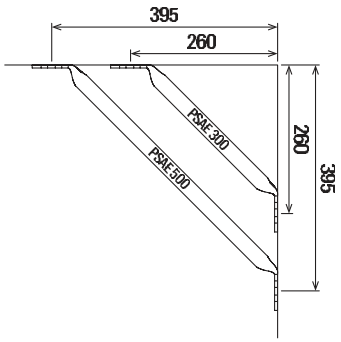
Technical data



PSAE



PU



PSAE 300 and PSAE 500

Item	Item No.	Length L [mm]	Sales unit [pcs]
PSAE 300 Brace element	**535269**	300	10
PSAE 500 Brace element	**535270**	500	10
PU 10,5 Washer	**535271**	–	50
PU 12,5 Washer	**535272**	–	50

Loads

See Push-through connector PFCN

Channel connector FUF OC and PFUF OC

Construction element - Channel connector FUF OC and PFUF OC





Connector for installation grid



Longitudal channel connection

Applications

- Connection and precise alignment of channel

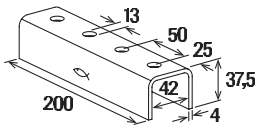
Advantages/benefits

- The FUF OC connector in combination with FCN Clix P allows a simple and time-saving installation.
- The PFUF OC connector in combination with PFCN allows a simple and time-saving installation.

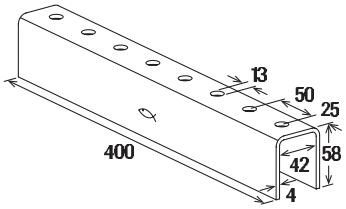
Properties

- Material FUF OC: steel S235 JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating FUF OC: electro zinc-plated, min. 5 µm
- Material PFUF OC: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating PFUF OC: electro zinc-plated acc. DIN 50979, min. 8 µm
- Hot dip galvanized, min zinc layer is 45 µm
- Material: stainless steel A4 material no. 1.4401, acc. DIN EN 10088-3

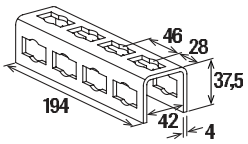
Technical data



FUF OC 41



FUF OC 62



PFUF OC

Item	Item No.	Length L [mm]	Sales unit [pcs]
FUF OC 41	569460	200	20
FUF OC 62	569461	400	10
PFUF OC	533743	194	6
FUF OC 41 hdg.	517415	200	20
FUF OC 62 hdg.	537591	400	10
PFUF OC zl	542719	194	6
PFUF OC A4	562846	194	6

Bracket PFFF

Construction elements - Brackets PFFF





Waste water pipe

Applications

- Arrangement of simple channel constructions in the push-through system

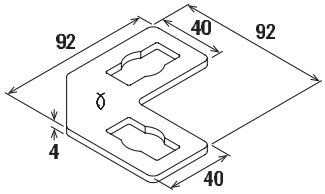
Advantages/benefits

- The holes in the connecting elements make them compatible with the push-through connector PFCN.

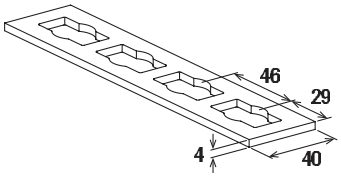
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

Technical data



PFFF 2L



PFFF 4I

Item	Item No.	Sales unit [pcs]
PFFF 2L	**533745**	20
PFFF 4I	**535268**	25

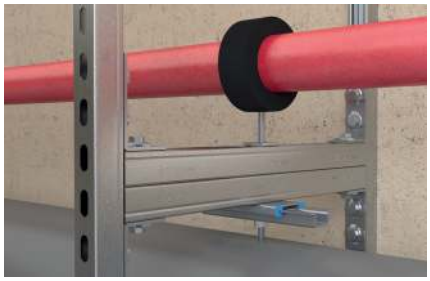
Loads

See Push-through connector PFCN

Bracket PFAF

Construction elements - Brackets PFAF





Frame constructions



Leightweight installation on cantilever

Applications

- Arrangement of simple channel constructions in the push-through system

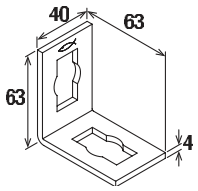
Advantages/benefits

- The holes in the connecting elements make them compatible with the push-through connector PFCN.

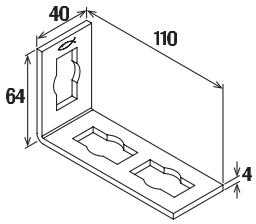
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

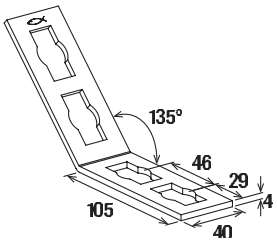
Technical data



PFAF 2



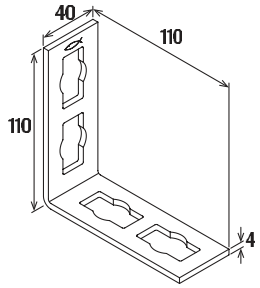
PFAF 3



PFAF 4/135°

Item	Item No.	Sales unit [pcs]
PFAF 2	**533735**	25
PFAF 3	**533736**	25
PFAF 4/135°	**533737**	20

Technical data



PFAF 4

Item	Item No.	Sales unit [pcs]
PFAF 4	**535267**	25

Loads

See Push-through connector PFCN

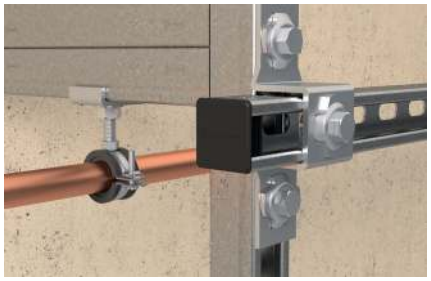
Bracket PFUF

Construction elements - Brackets PFUF





Cross connection on channel



Cross connection on channel

Applications

- Connecting elements for multi-dimensional channel constructions

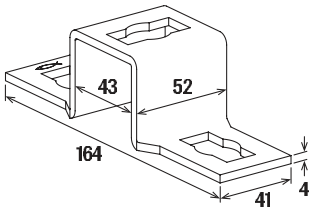
Advantages/benefits

- The various shapes of the connecting elements offer flexibility during the installation of channel constructions.
- The holes in the connecting elements make them compatible with the push-through channel nut PFCN.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

Technical data



PFUF 41

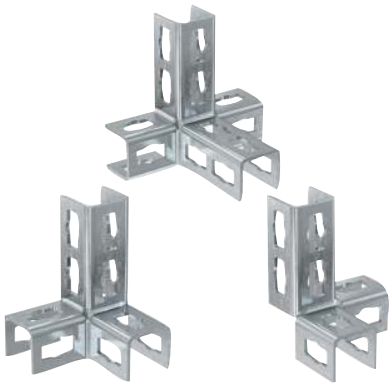
Item	Item No.	Sales unit [pcs]
PFUF 41	**533738**	25

Loads

See Push-through connector PFCN

Brackets PFUF D

Construction elements - Bracket PFUF 3D and 4D





Frame constructions

Applications

- Element for multidimensional constructions with FUS channels connected by the push-through connector PFCN

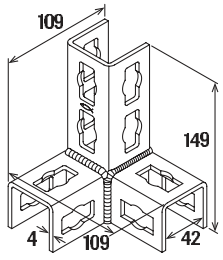
Advantages/Benefits

- The 3D PFUF construction elements enable multidimensional constructions in a very short time.
- The holes in the construction elements make them compatible with the push-through connector PFCN.
- The different shapes of the construction elements generate a high flexibility for channel constructions.

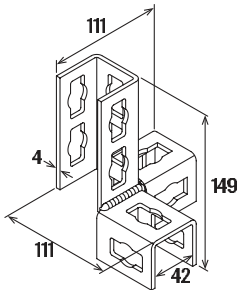
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated acc. to DIN 50979, min. 8 µm

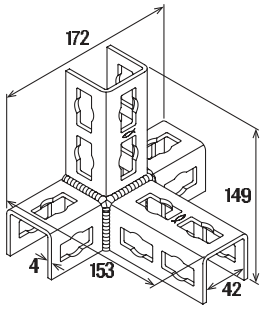
Technical data



PFUF 3DL



PFUF 3DR

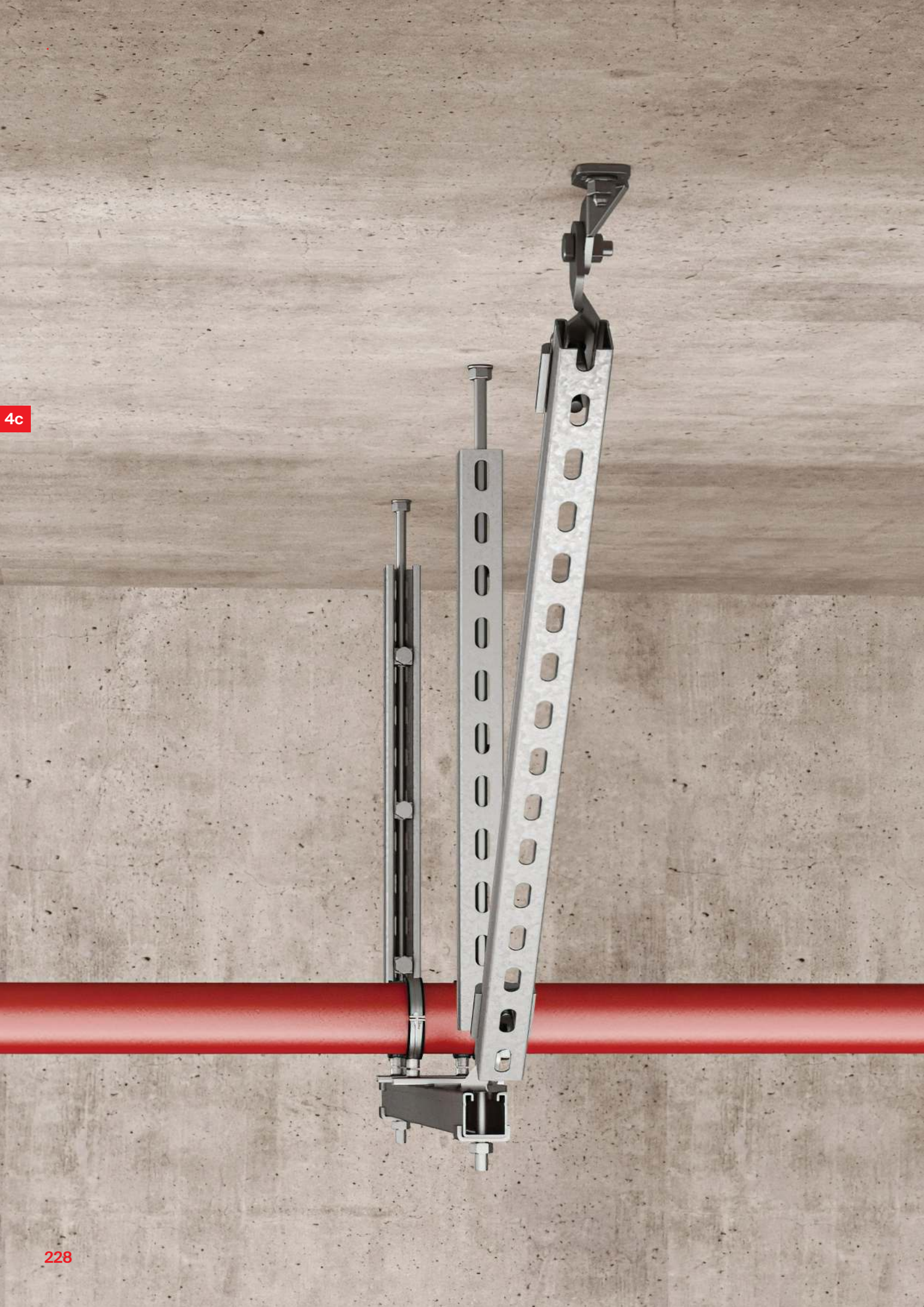


PFUF 4D

Item	Item No.	Sales unit [pcs]
PFUF 3DL	**535273**	10
PFUF 3DR	**535274**	10
PFUF 4D	**535275**	10

Loads

See Push-through connector PFCN



4c
Seismic bracing assortment

PIPE CLAMPS		
Seismic pipe clamp FSSC	230	
CHANNEL BRACING ELEMENTS		
Channel clamp FUSF	231	
Sway brace bracket FSF	232	
Shaped reinforcement strut SAE	233	
Threaded rod brace connector S-VA	234	
Channel brace connector S-VB	235	
90° angle connector S-FAF	236	
ACCESSORIES		
Threaded rod connector S-ROD	237	
Rod stiffener FTRC M12 gvz	238	
Torque bolt SKS M12x30	239	

Seismic pipe clamp FSSC

Seismic pipe clamp with FM approval for fixing and bracing of pipes





Pipe installation with seismic pipe clamp

Applications

- For the secure fixation and bracing of pipeline systems

Certificates

FM APPROVED

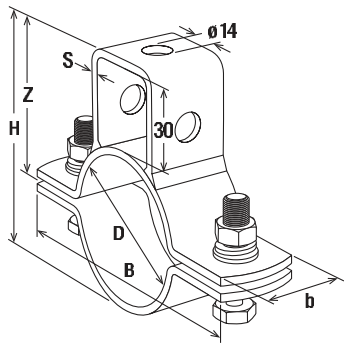
Advantages/Benefits

- Both lateral and longitudinal forces are optimally absorbed for a secure and reliable installation.
- The FM approval of the FSSC guarantees objectively tested functional safety.

Properties

- Material: steel Q235B
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



FSSC-FM

Item	Item No.	FM approved	Clamping range D [mm]	Width B [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Height Z [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
FSSC-FM 73 gvz	547765	X	73	161	127	40 x 4,0	87	5.0	24
FSSC-FM 76 gvz	547766	X	76	164	130	40 x 4,0	88	6.00	24
FSSC-FM 89 gvz	547767	X	89	177	143	40 x 4,0	95	6.00	15
FSSC-FM 108 gvz	547768	X	108	196	162	40 x 4,0	104	6.00	15
FSSC-FM 114 gvz	547769	X	114	202	172	40 x 6	109	12.00	12
FSSC-FM 133 gvz	547770	X	133	221	191	40 x 6	119	12.00	12
FSSC-FM 139 gvz	547771	X	139	227	197	40 x 6	122	12.00	12
FSSC-FM 159 gvz	547772	X	159	247	217	40 x 6	132	13.00	10
FSSC-FM 168 gvz	547773	X	168	256	226	40 x 6	136	13.00	10

Channel clamp FUSF

Channel clamp FUSF for a safe installation and bracing of FUS channel profiles





Bracing of channel construction

Applications

- Channel clamp FUSF for a safe installation and bracing of FUS channel profiles

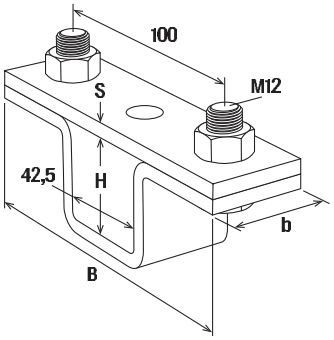
Advantages/Benefits

- The channel clamp FUSF increases the load capacity of channel constructions.
- The seismic braces can be fixed to the channel clamp at different angles to provide maximum flexibility during subsequent fixing and bracing.

Properties

- Material: steel Q235B
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



FUSF

Item	Item No.	For profile	Width B [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Sales unit [pcs]
FUSF 41 gvz	**547783**	FUS 41	140	41	40 x 6	20
FUSF 62 gvz	**547784**	FUS 62	140	62	40 x 6	15
FUSF 41D gvz	**547785**	FUS 41 D	140	82	40 x 6	15
FUSF 62D gvz	**547786**	FUS 62 D	140	124	40 x 6	10

Sway brace bracket FSF

Sway brace bracket FSF with FM approval for both lateral and longitudinal sway brace applications





Bracing of pipeline with channel profiles

Applications

- Connecting element for stable connections between two channel profiles or one channel profile and the substrate
- For bracing frame constructions with FUS channel profiles

Certificates

FM APPROVED

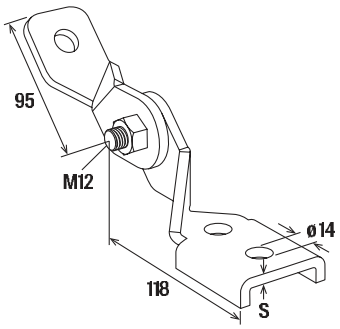
Advantages/Benefits

- The sway brace bracket for connecting FUS channel profiles provides very high stability and safety to a supporting structure.
- The exact fit of the sway brace bracket and the FUS channel profiles enables quick and easy channel connection.
- The FM-approval of the FSF sway brace bracket guarantees objectively tested functional safety.

Properties

- Material: steel Q235B
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



FSF-FM

Item	Item No.	FM approved	For profile	Material thickness [mm]	Sales unit [pcs]
FSF-FM gvz	**547763**	X	FUS 21, 41, 62, 21D, 41D, 62D	6	10

Shaped reinforcement strut SAE

Shaped reinforcement strut for bracing FUS channel profiles and FCA cantilevers





Bracing of cantilever construction

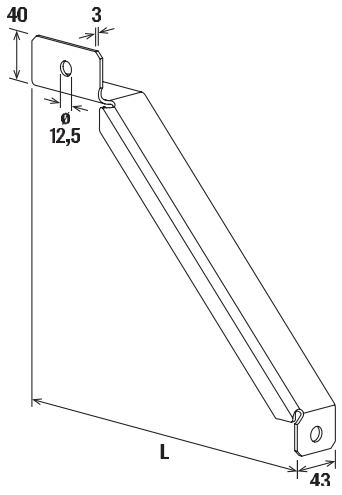
Applications

- Seismic bracing of framework constructions with FUS channels and FCA cantilevers

Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



SAE

Item	Item No.	Thickness [mm]	Length L [mm]	Sales unit [pcs]
SAE 300	512114	3	300	10
SAE 500	512115	3	500	10

Threaded rod brace connector S-VA

Threaded rod brace connector S-VA with maximum installation flexibility for seismic bracing with threaded rods





Bracing of frame construction with threaded rods

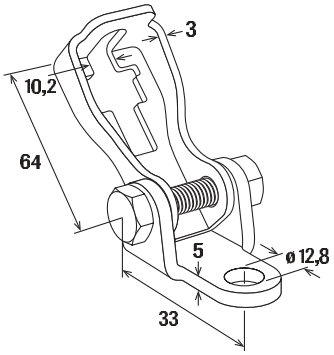
Advantages/Benefits

- The design of the threaded rod brace connector S-VA allows a variable fixation at angles between 30° and 65° for a flexible adaptation to new and already existing construction.
- The design of the bracing element allows easy and quick insertion of a pre-mounted threaded rod with nut.
- The possibility to mount two bracing elements on top of each other offers the option to clamp the same point in different directions.

Properties

- Material bracket: steel S275JR (material-no. 1.0044) according to DIN EN 10025-2
- Material supporting plate: steel S355MC (material no. 1.0976) according to DIN EN 10149-2
- Screw: M10x45, strength class 8.8, galvanised steel
- Nut: M10, strength class 8, galvanised steel

Technical data



S-VA

Item	Item No.	For profile	Material thickness [mm]	Thickness base [mm]	Threaded rod Ø x length [mm]	Sales unit [pcs]
S-VA	**552360**	FUS, FLS	3	5		10

Channel brace connector S-VB

Channel brace connector for seismic bracing of framework constructions with FUS channel profiles





Bracing of frame construction with channel profiles

Applications

- For seismic bracing of new as well as already installed framework constructions with FUS channel profiles

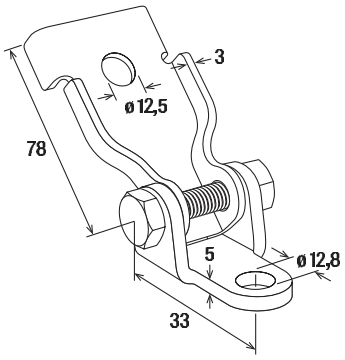
Advantages/Benefits

- The design of the channel brace connector S-VB allows a variable fixation at angles between 30° and 65° for a flexible adaptation to new and already existing construction.
- The lamellae bent upwards and downwards allow the easy installation of the channel profile to the channel brace connector.
- The possibility to mount two channel brace connectors on top of each other offers the option to clamp the same point in different directions.

Properties

- Material bracket: steel S275JR (material-no. 1.0044) according to DIN EN 10025-2
- Material supporting plate: steel S355MC (material no. 1.0976) according to DIN EN 10149-2
- Screw: M10x45, strength class 8.8, galvanised steel
- Nut: M10, strength class 8, galvanised steel

Technical data



S-VB

Item	Item No.	Thickness [mm]	Thickness base [mm]	For profile	Sales unit [pcs]
S-VB	**552362**	3	5	FUS	10

90° angle connector S-FAF

90° angle connector to connect two FUS channel profiles and install seismic bracing elements S-VA and S-VB





Connection of channel profiles and bracing elements

Applications

- 90° angle connector for the connection of channel profiles and the installation of bracing elements

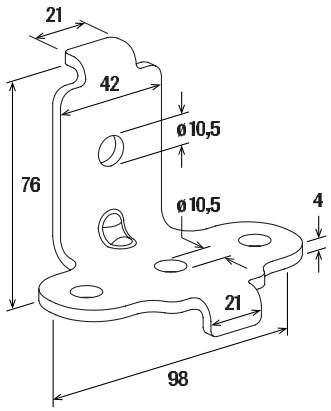
Advantages/Benefits

- Perforated wings allow an easy and quick installation of the brace connectors S-VA and S-VB on the angle connector S-FAF.
- The seismic angle connector allows an easy and flexible installation of the brace connectors S-VA and S-VB at different angles.

Properties

- Material: steel S275JR (material-no. 1.0044) according to DIN EN 10025-2
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



S-FAF

Item	Item No.	For profile	Material thickness [mm]	Sales unit [pcs]
S-FAF	**552363**	FUS	4	10

Threaded rod connector S-ROD

Threaded rod brace connector with increased angle adjustability to install threaded rods for seismic bracing





Bracing of pipeline with threaded rods

Applications

- For the seismic bracing of supended threaded rods as well as new and existing frame constructions with threaded rods M10

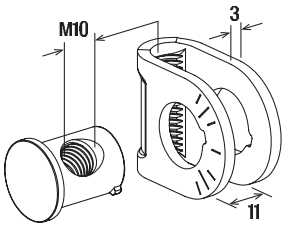
Advantages/Benefits

- The design of the threaded rod brace connector allows a variable installation at angles between 30° and 65°.
- The threaded rod connector can be installed quickly and easily without having to dismantle already existing installations.
- By tilting the side rod by 90°, the threaded rod connector slides very easily, allowing easy and quick adjustment of the assembly height on the vertical threaded rod.
- The threaded rod connectors can be mounted on top of each other to brace the same point in different directions.

Properties

- Material U-shaped brackets: steel S275JR (material-no. 1.0044) according to DIN EN 10025-2
- Material threaded rod: steel 11SMnPb37 (material-no. 1.0737) according to DIN EN 10277-3
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



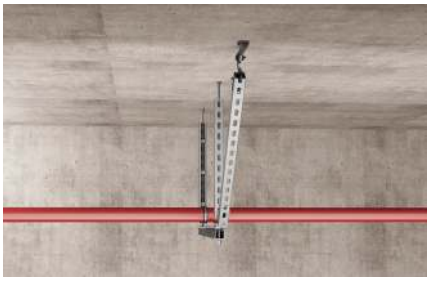
S-ROD

Item	Item No.	Material thickness [mm]	Sales unit [pcs]
S-ROD	**552361**	3	10

Rod stiffener FTRC M12 gvz

Rod stiffener FTRC M12 gvz for attaching strut channel to a threaded rod to accomodate compression loads





Rod stiffing for vertical seismic support

Applications

- For the reinforcement of existing suspended constructions due to bracing of threaded rods M10 or M12 to FUS channel profiles
- For attaching strut channel to a threaded rod to accommodate compression loads

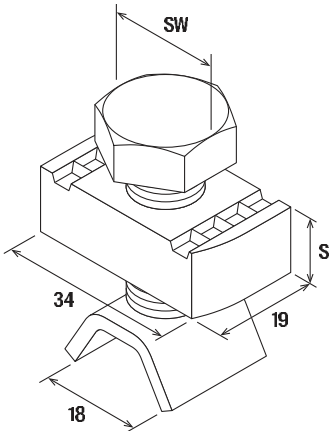
Advantages/Benefits

- The pronounced interlocking of the rod stiffeners gives a secure hold in the channel profile and holds the threaded rod in the desired position.
- The exact fit of the rod stiffeners enables quick and easy assembly.
- The assembly enables subsequent insertion in already installed channel profiles by 90° rotation.

Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



FTRC

Item	Item No.	Thread M	Material thickness [mm]	Width across nut SW [mm]	Tightening torque T_{inst} [Nm]	Sales unit [pcs]
FTRC M12 gvz	**547791**	M 12	12	19	20	50

Torque bolt SKS M12x30

Torque bolt for secure fixing of connection elements on mounting channels



Applications

- Torque bolt for secure fixing of connection elements on channel profiles

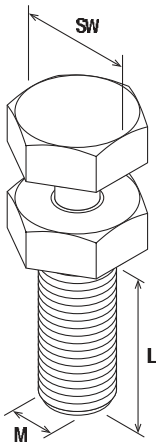
Advantages/Benefits

- The torque bolt SKS can be mounted quickly and easily.
- The attached hexagon head ensures that the optimum torque is applied and the screw is tightened to the maximum.

Properties

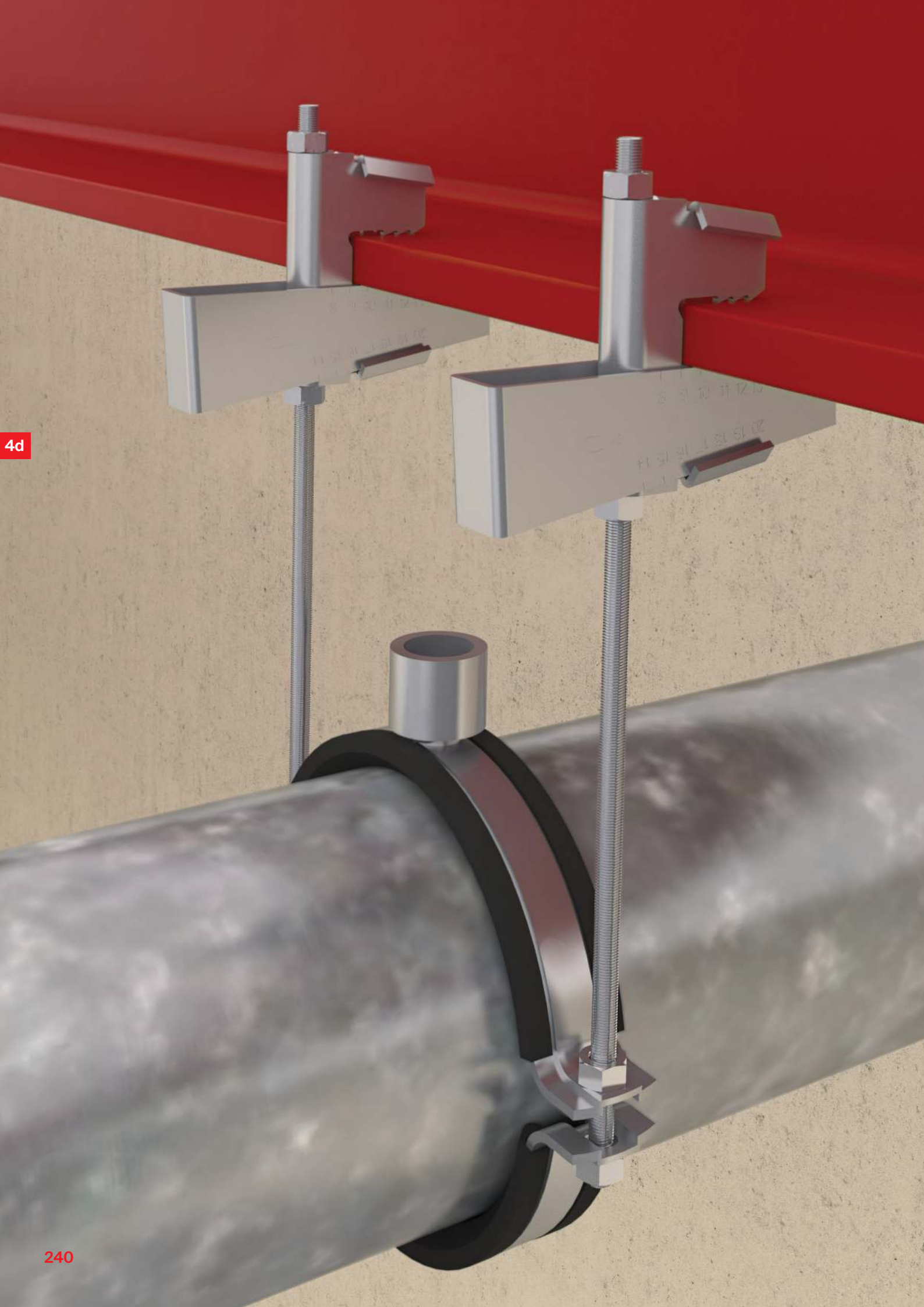
- Zinc plating: electro zinc-plated, min. 5 µm
- Material: steel SAE J403 according to DIN EN 10132-4
- Torque range: 50-60 Nm

Technical data



SKS M12

Item	Item No.	Thread M	Length L [mm]	Width across nut SW [mm]	Sales unit [pcs]
SKS TB M12x30	**552441**	M 12	30	19	100



4d

4d
Accessories

Clamp hanger TKL	242	
Beam Clamp Steel TKLS Steel Bite	244	
Threaded rod G	246	
Threaded rod G / Threaded stud GS	248	
Threaded rod TRSL	250	
Base plate GPL	251	
Stud screw STST with TX star recess	252	
Support hanger AHB	254	
Multi connector MW	255	
Parallel connector PV	256	
Double connector plate DPP, DPF	257	
Bolt connector SBB	258	
Turnbuckle SPS, Bolt BLR	258	
Hexagonal screw SKS	259	
Hexagonal Bolt SKS	259	
Hexagonal Bolt SKSL	260	

Washer U	262	
Washer MW	262	
Hexagonal nut MU	263	
Hexagonal nut HN	263	
Hexagonal connector VM	264	
Eyebolt AG	265	
Thread hanger RAH	265	
Reduction piece RD	266	
Reduction socket RDM and GRD	266	
Flat eye screw LLS	267	
Textile web strapping GWB	268	
Perforated steel banding LBV / LBK	269	
Impact nail ED	271	
Beam clamp FHBC	273	
Wire System FWI	274	

Clamp hanger TKL





Heavy drainage pipe on beam clamp

Applications

- Clamp hangers allow for simple fixing by clamping direct to steel girders

Certificates

from M10

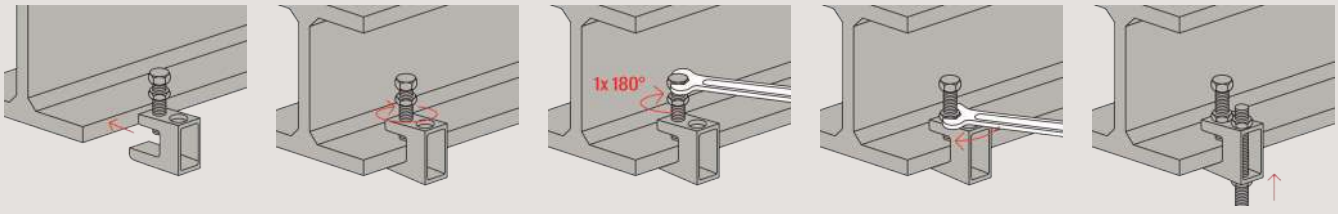
Advantages/benefits

- The TKL design with its clamping screw allows for fixing to steel girders without the need for welding and drilling.
- The design of the clamping screw prevents it from slipping from the steel girder.
- FM/UL certificates guaranty independently tested safety.
- The solid TKL design guarantees a high load-bearing capacity.
- The TKL with locking screw guarantees quick and easy installation.
- The TKL with through-hole allows for height adjustment after installation.

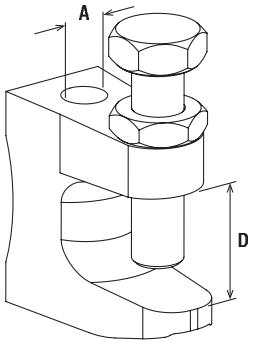
Properties

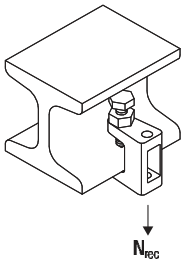
- Material TKL: malleable cast iron EN-GJMB-350-10 acc. to DIN 1562
- Material bolt: steel 8.8 acc. to ISO 4017
- Material nut: steel acc. to ISO 4035, Strength category 4
- Zinc plating: electro zinc-plated, min. 5 µm
- HDG also available

Installation TKL



Technical data





TKL

Item	Item No.	VdS approved	FM approved	UL approved	Clamping range D [mm]	Thread A	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
TKL L M 8	**064055**	X	–	–	0 - 18	M 8	1.20	50
TKL M 8	**079687**	X	–	–	0 - 23	M 8	2.50	50
TKL L Ø 9	**077605**	X	–	–	0 - 18	Ø 9	1.20	50
TKL M 10	**079688**	X	X	X	0 - 20	M 10	2.50	50
TKL Ø 11	**079689**	X	X	X	0 - 20	Ø 11	2.50	50
TKL M 12	**020949**	X	X	X	0 - 26	M 12	3.50	50
TKL Ø 13	**043275**	X	X	X	0 - 26	Ø 13	3.50	50
TKL L M8 hdg	**569343**	X	–	–	0 - 18	M8	1.20	50
TKL M10 hdg	**569344**	X	–	–	0 - 20	M 10	2.50	50
TKL M12 hdg	**569345**	X	–	–	0 - 26	M 12	3.50	50

Beam Clamp Steel TKLS Steel Bite

Clamp hangers for easy fixing to steel girders with just one tool





Heavy steel pipe suspended on steel beam

Applications

- All kind of fixings by threaded rods to steel beams with sloping flange plate up to 14%
- Safety plates SS-TKL are required for VdS equipment over Ø 65 mm

Certificates

FM APPROVED

from M10

VdS

G 410037 / G 410034

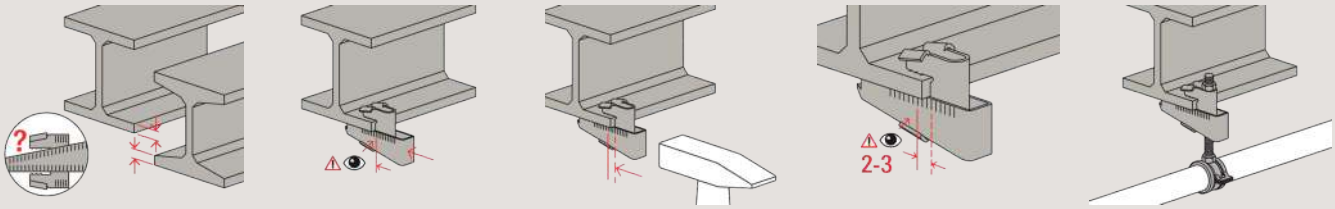
Advantages/benefits

- The TKLS design with hammering wedge allows fixing to steel beams without the need of welding and drilling.
- The teeth of the TKLS Steel Bite effectively prevent from slipping of the steel beam.
- VdS and FM approval guarantees objectively tested functional safety.
- The TKLS Steel Bite made of steel guarantees highest load-bearing capacity.
- The TKLS Steel Bite allows pre-assembling of threaded rods and for retrospective height adjustment.

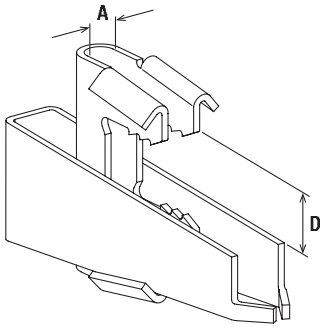
Properties

- TKLS: material: steel HX420LAD+ZAD, material no. 1.0935, DIN EN 10346
- TKLS: Zinc plating: electro zinc-plated, min. 7 µm
- SS-TKL: Material: steel DX51D acc. to EN 10214, material no.1.0226
- SS-TKL: Zinc plating: electro zinc-plated, min. 5 µm

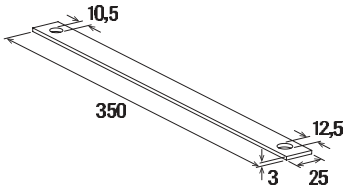
Installation TKLS



Technical data



TKLS



SS-TKL

Item	Item No.	VdS approved	FM approved	Hole-Ø D [mm]	Clamping range D [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Max. recom. pipe-Ø acc. VDS CEA 4001	Sales unit [pcs]
TKLS Ø 9	**531134**	X	–	9	8 - 20	2.00	≤ DN 50	25
TKLS Ø 11	**531136**	X	X	11	8 - 20	3.50	> DN 50 ≤ DN 100	25
TKLS Ø 13	**531137**	X	X	13	8 - 20	5.00	> DN 100 ≤ DN 200	25
TKLS Ø 17	**531138**	X	X	17	11 - 26	10.0	> DN 200 ≤ DN 250	16
SS-TKL M10/M12	**048154**	X	–	–	–	–	–	25

Threaded rod G

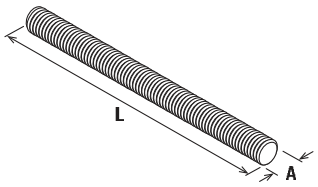


Properties

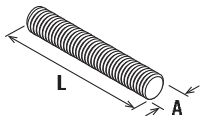
- Material threaded rod G (G 6 - G 24): DIN 976 steel 4.8 acc. to DIN EN ISO 898-1
- Material threaded pipe G (G 1/2" - G 3/4"): steel S235 JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 3 µm

4d

Technical data



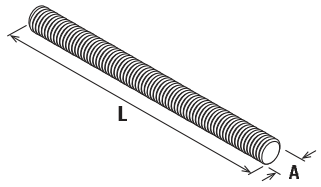
G



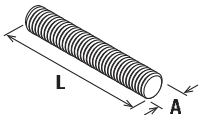
GS

Item	Item No.	Length L [mm]	Thread A	Sales unit [pcs]
G 6	020956	1000	M 6	50
G 8	079740	1000	M 8	25
G 10	079744	1000	M 10	25
G 12	020957	1000	M 12	20
G 16	020958	1000	M 16	10
G 20	557295	1000	M 20	5
G 24	557270	1000	M 24	5
G 8/2	079741	2000	M 8	25
G 10/2	079745	2000	M 10	25
G 12/2	579746	2000	M 12	25
G 10/3	557092	3000	M 10	5
G 12/3	064056	3000	M 12	5
G 1/2"	064093	2000	1/2"	10
G 3/4"	077580	2000	3/4"	5
GS 6/25	544589	25	M 6	100
GS 6/40	544590	40	M 6	100
GS 6/50	544591	50	M 6	100
GS 6/70	544592	70	M 6	100
GS 6/80	544593	80	M 6	100
GS 6/100	544594	100	M 6	100
GS 8/25	079750	25	M 8	100
GS 8/40	079751	40	M 8	100
GS 8/50	079752	50	M 8	100
GS 8/60	079753	60	M 8	100
GS 8/70	079754	70	M 8	100
GS 8/80	079755	80	M 8	100
GS 8/100	079757	100	M 8	100
GS 8/120	535535	120	M 8	50
GS 8/150	079758	150	M 8	50
GS 8/180	535536	180	M 8	50
GS 8/200	079759	200	M 8	50

Technical data



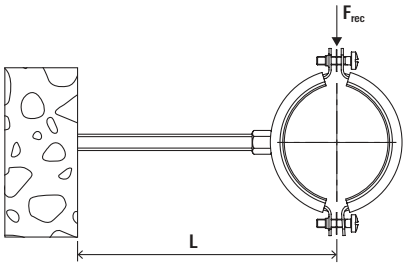
G



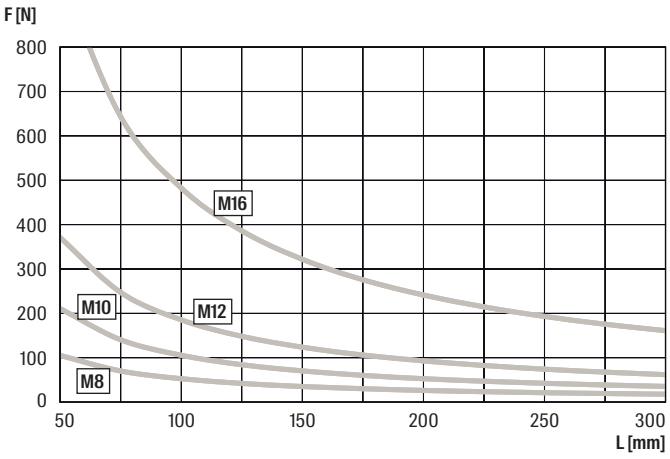
GS

Item	Item No.	Length L [mm]	Thread A	Sales unit [pcs]
GS 10/25	079765	25	M 10	100
GS 10/40	079766	40	M 10	100
GS 10/60	079767	60	M 10	100
GS 10/80	079768	80	M 10	100
GS 10/100	079769	100	M 10	100
GS 10/120	079770	120	M 10	50
GS 10/150	079771	150	M 10	50
GS 10/200	079772	200	M 10	50
GS 12/40	091442	40	M 12	100
GS 12/60	091443	60	M 12	100
GS 12/80	091444	80	M 12	100
GS 12/100	091461	100	M 12	100
GS 12/120	091462	120	M 12	50
GS 12/150	091463	150	M 12	50
GS 12/200	091464	200	M 12	50

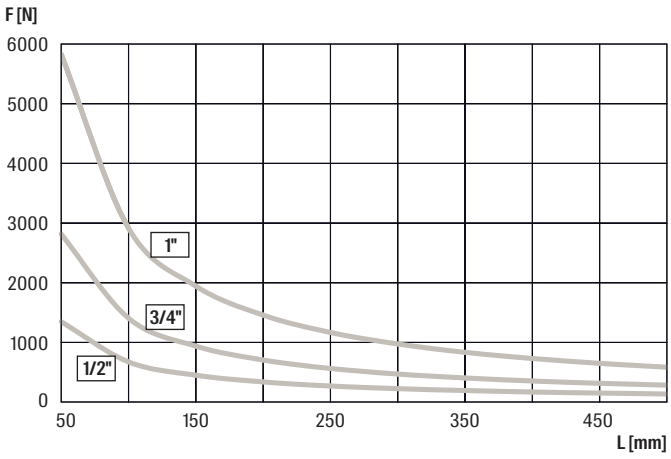
Loads



Threaded rods (4.6)



Threaded pipes



Threaded rod G / Threaded stud GS



Properties Threaded Rod G

- Material (G 6 – G 24): DIN 976 Steel 4.8 acc. to DIN EN ISO 898-1
- Material (G 1/2" – G 3/4"): Steel S235 JR (material no. 1.0037) acc. to
- DIN EN 10025 Zinc plating: Electro zinc plated, 5 - 8 µm

Properties Threaded Stud Gs

- Material: DIN 976 Steel 4.6 acc. to DIN EN ISO 898-1
- Zinc plating: Electro zinc plated, 3 - 8 µm

Properties Threaded Stud Gs A4

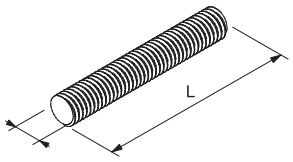
- Material A4: Stainless steel of the corrosion resistance class III, e.g. A4

4d

Properties Threaded Rod G A2/a4

- Material A2: Stainless steel of the corrosion resistance class II, e.g. A2
- Material A2: Stainless steel of the corrosion resistance class III, e.g. A4

Technical data



Item	Art No.	Qty. per box (pcs.)	Length L (mm)	Thread M
Threaded rod G				
G 6	020956	50	1000	M 6
G 8	079740	25	1000	M 8
G 10	079744	25	1000	M 10
G 12	020957	20	1000	M 12
G 16	020958	10	1000	M 16
G 20	557295	5	1000	M 20
G 24	557270	5	1000	M 24
G 8/2	079741	25	2000	M 8
G 10/2	079745	25	2000	M 10
G 12/2	579746	25	2000	M 12
G 10/3	557092	5	3000	M 10
G 12/3	064056	5	3000	M 12
G 1/2"	064093	10	2000	1/2"
G 3/4"	077580	5	2000	3/4"
Stainless Steel A2				
G 8 A2	77644	5	1000	M 8
G 10 A2	65173	5	1000	M 10
Stainless Steel A4				
G 8 A4	77645	5	1000	M 8
G 10 A4	65174	5	1000	M 10

Item	Art No.	Qty. per box (pcs.)	Length L (mm)	Thread M
Threaded stud GS A4				
GS 8/40 A4	505536	100	40	M 8
GS 8/60 A4	505537	100	60	M 8
GS 10/40 A4	505538	100	40	M 10
GS 10/60 A4	505539	100	60	M 10
Threaded stud GS				
G S 8/25	079750	100	25	M 8
GS 8/40	079751	100	40	M 8
GS 8/50	079752	100	50	M 8
GS 8/60	079753	100	60	M 8
GS 8/70	079754	100	70	M 8
GS 8/80	079755	100	80	M 8
GS 8/100	079757	100	100	M 8
GS 8/150	079758	50	150	M 8
GS 8/200	079759	50	200	M 8
GS 10/25	079765	100	25	M 10
GS 10/40	079766	100	40	M 10
GS 10/60	079767	100	60	M 10
GS 10/80	079768	100	80	M 10
GS 10/100	079769	100	100	M 10
GS 10/120	079770	50	120	M 10
GS 10/150	079771	50	150	M 10
GS 10/200	079772	50	200	M 10
GS 12/40	091442	100	40	M 12
GS 12/60	091443	100	60	M 12
GS 12/80	091444	100	80	M 12
GS 12/100	091461	100	100	M 12
GS 12/120	091462	50	120	M 12
GS 12/150	091463	50	150	M 12
GS 12/200	091464	50	200	M 12

Loads

Technical Data - Threaded Rod GS

Item	Weight (kg/m¹)	Stressed (mm^2)	Moment of inertia (mm^4)	Section modulus (mm^2)	Permissible tensile force (kN)
Threaded rod G					
GS 8	0.39	37	201	50	5.3
GS 10	0.61	58	491	98	8.4
GS 12	0.88	84	1018	170	12.1

(1) - Yield strength = 240 Mpa (2) -Material safety factor = 1.2 & Load safety factor 1.4 are included

Technical Data - Threaded Rod G

Item	Weight (kg/m¹)	Stressed (mm^2)	Moment of inertia (mm^4)	Section modulus (mm^2)	Permissible tensile force (kN)
Threaded rod G					
G 6	0.22	20	64	21	3.9
G 8	0.39	37	201	50	7.0
G 10	0.61	58	491	98	11.1
G 12	0.88	84	1018	170	16.2
G 14	1.20	115	1885	269	22.2
G 16	1.57	157	3216	402	30.1
G 18	1.99	192	5152	572	37.0
G 20	2.45	245	7853	785	47.0
G 22	2.97	303	11497	1045	58.3
G 24	3.53	353	16283	1357	67.7

(1) - Yield strength = 320 Mpa (2) -Material safety factor = 1.2 & Load safety factor 1.4 are included

Threaded rod TRSL



TRSL

Properties

- Material SS316: DIN EN ISO 3506-1
- Material: ISO 898-1, DIN 975 & 976 (Steel Grades: 8.8 & Steel: 4.8)
- Finish: Electro Galvanized 5 µm (as per ASTM B633), Hot Dip Galvanized (as per ASTM A153)
- Steel Grade 8.8
  Yield strength 640 MPa, Tensile strength 800 MPa
- Steel Grade 4.8
  Yield strength 320 MPa, Tensile strength 400 MPa
- Material safety factor = 1.2 & Load safety factor 1.4 are included
- Vickers hardness, HV between (250 and 320 ≤ 16 mm) & Between (255 & 335 > 16 mm)

Technical data

4d

Item	Art.-NO. GI 4.8	Art.-NO. HDG 4.8	Art.-NO. SS 316	Art.-NO. GI 8.8	Art.-NO. HDG 8.8	Length	Thread
TRSL 6x2 mtr	545025	--	516584	543687	--	2000	M 6
TRSL 8x2 mtr	545026	516578	516585	543688	543698	2000	M 8
TRSL 10x2 mtr	545027	516579	516586	543689	543699	2000	M 10
TRSL 12x2 mtr	545028	516580	516587	543690	543700	2000	M 12
TRSL 16x2 mtr	545029	516582	516647	543691	543701	2000	M 16
TRSL 20x2 mtr	545031	--	--	543692	543702	2000	M 20
TRSL 24x2 mtr	545032	--	--	543693	543703	2000	M 24
TRSL 27x2 mtr	--	--	--	543694	543704	2000	M 27
TRSL 30x2 mtr	--	--	--	543695	543705	2000	M 30
TRSL 33x2 mtr	--	--	--	543696	543706	2000	M 33
TRSL 36x2 mtr	--	--	--	--	--	2000	M 36
TRSL 6x3 mtr	545033	--	--	--	--	3000	M 6
TRSL 8x3 mtr	545034	516583	516589	--	--	3000	M 8
TRSL 10x3 mtr	545035	516557	516590	--	--	3000	M 10
TRSL 12x3 mtr	545036	516558	516591	--	--	3000	M 12
TRSL 16x3 mtr	545037	--	--	--	--	3000	M 16
TRSL 20x3 mtr	545038	--	--	--	--	3000	M 20
TRSL 24x3 mtr	545041	--	--	--	--	3000	M 24

Characteristics

Item	Pitch mm	Stressed Diameter mm	Weight kg/m¹	Grade 4.8		Grade 8.8	
				Permissible Tensile Force (KN)	Permissible Shear Force (KN)	Permissible Tensile Force (KN)	Permissible Shear Force (KN)
TRSL 6	1.00	5.00	0.22	3.8	2.3	7.7	4.6
TRSL 8	1.25	6.75	0.39	7.4	4.4	14.1	8.4
TRSL 10	1.50	8.50	0.61	11.6	7.0	22.3	13.4
TRSL 12	1.75	10.25	0.88	16.8	10.0	32.4	19.4
TRSL 14	2.00	12.00	1.20	23.0	13.8	44.3	26.6
TRSL 16	2.00	14.00	1.57	31.4	18.8	60.2	36.1
TRSL 18	2.50	15.50	1.99	38.4	23.0	73.9	44.3
TRSL 20	2.50	17.50	2.45	49.0	29.4	94.0	56.4
TRSL 22	2.50	19.50	2.97	60.6	36.4	116.5	69.9
TRSL 24	3.00	21.00	3.55	70.6	42.4	135.4	81.2
TRSL 27	3.00	24.00	4.49	91.8	55.1	172.0	103.0
TRSL 30	3.50	26.50	5.55	112.2	67.3	214.0	127.0
TRSL 33	3.50	29.50	6.71	138.8	83.3	259.0	154.0
TRSL 36	4.00	32.00	7.99	163.4	98.0	309.0	183.0

Base plate GPL

Base plates GPL / GPS for dimensionally stable connections between the substrate and pipeline





Baseplate on installation channel



Plastic pipe with fixpoint installation

Applications

- Creation of dimensionally stable connections between the substrate and pipeline

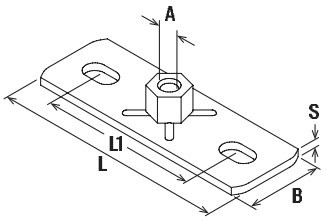
Advantages/benefits

- The base plate´s slots allow easy alignment.

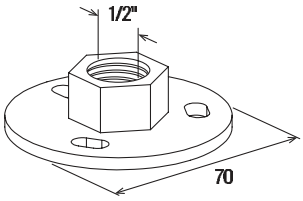
Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, min. 8 µm

Technical data



GPL / GPS



GPR

Item	Item No.	Thread A	Length L [mm]	Width B [mm]	Hole spacing L1 [mm]	Slot l x s [mm]	Thickness S [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
GPL M 8	**079665**	M 8	80	30	54	9 x 16	3	2.40	25
GPL M 10	**079666**	M 10	80	30	54	9 x 16	3	2.40	25
GPL M 8/M 10	**553637**	M8 / M10	80	30	54	9 x 18	3	2.40	25
GPL 1/2"	**079667**	1/2"	80	30	54	9 x 16	3	4.00	25
GPS M 10	**079671**	M 10	120	40	79	11 x 19	4	6.00	25
GPS M 12	**040398**	M 12	120	40	79	11 x 19	4	6.00	25
GPS M 16	**504408**	M 16	120	40	79	11 x 19	4	8.00	25
GPS 1/2"	**079672**	1/2"	120	40	79	11 x 19	4	8.00	25
GPS 3/4"	**020968**	3/4"	120	40	79	11 x 19	4	8.00	25
GPR 1/2"	**037289**	1/2"	–	–	–	11 x 7	4	4.00	25

Stud screw STST with TX star recess

Stud screw STST for the direct mounting of pipe clamps to the substrate



4d

Applications

- Threaded connectors stud screw STST
- Wood and metric screw combination for direct installation of clamps onto a wall

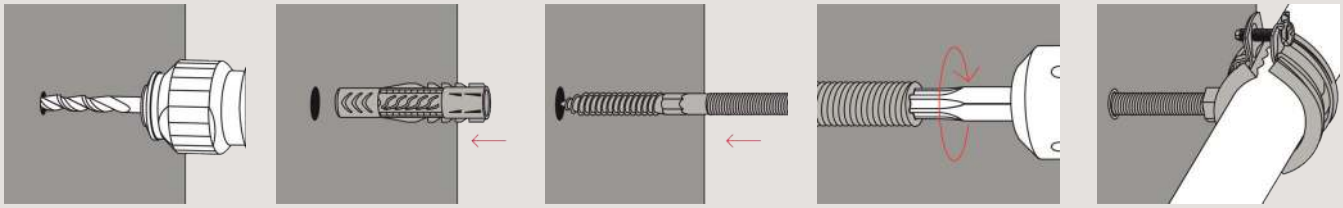
Advantages/benefits

- Fixing with a Nylon plug to brick or direct into timber construction is simple with the TX drive or the integrated hexagon.

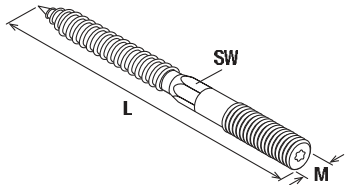
Properties

- Material: steel 4.6 acc. to DIN EN ISO 898-1
- Zinc plating: electro zinc-plated, min. 3 µm

Installation STST



Technical data



STST

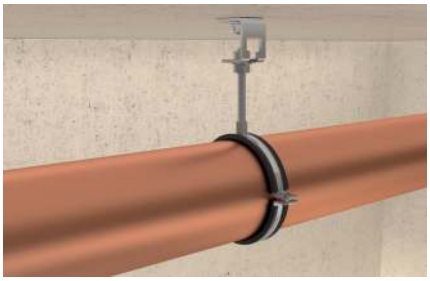
Item	Item No.	Length L [mm]	Thread M	Drive	Width across nut SW [mm]	Sales unit [pcs]
STST 6 x 60	**504400** 1)	60	M 6	T15	–	100
STST 6 x 80	**077714** 1)	80	M 6	T15	–	100
STST 8 x 50	**079780** 1)	50	M 8	T25	–	100
STST 8 x 60	**079781**	60	M 8	T25	6	100
STST 8 x 80	**079782**	80	M 8	T25	6	100
STST 8 x 100	**079783**	100	M 8	T25	6	100
STST 8 x 120	**079784**	120	M 8	T25	6	100
STST 8 x 140	**079785**	140	M 8	T25	6	50
STST 8 x 180	**079786**	180	M 8	T25	6	50
STST 10 x 60	**077689**	60	M 10	T25	8	100
STST 10 x 80	**077707**	80	M 10	T25	8	100
STST 10 x 100	**077708**	100	M 10	T25	8	100
STST 10 x 120	**077709**	120	M 10	T25	8	100
STST 10 x 140	**077711**	140	M 10	T25	8	50
STST 10 x 180	**077712**	180	M 10	T25	8	50
STST 12 x 100	**535541**	100	M 12	T30	10	100
STST 12 x 160	**535542**	160	M 12	T30	10	50

1) without hex shank

Support hanger AHB

Support hanger AHB for the fixing and height regulation of pipe clamps





Height adjustable pipe installation

Applications

- Component for height adjustment
- A washer should be used when using size M8 threaded rods
- Use of washer when using threaded rods of size M8

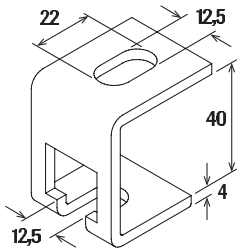
Advantages/benefits

- The seat of the support hanger allows subsequent height regulation at any time.
- The base plate's long slot allows the support hanger to be easily aligned.
- The perforated opening means that a component can be simply hung and adjusted using a threaded rod and nut.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



AHB

Item	Item No.	For thread	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
AHB	**079675**	M8, M10, M12	1.20	25

Multi connector MW

Multi connector MW for the flexible connection of up to three pipe clamps





Fixation with multi-connector

Applications

- Cube with four threaded drill holes for simple connection
- Ideal for connecting threaded rod and bolts at 90°

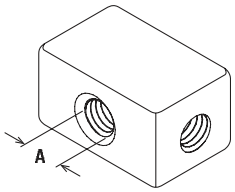
Advantages/benefits

- The design of the mounting cube provides flexibility when it comes to connecting pipe clamps or threaded rods.
- The mounting cube allows for the simultaneous fixing of 3 pipelines.

Properties

- Material: diecasting

Technical data



MW

Item	Item No.	Thread A	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
MW M 8	**079717**	M 8	2.50	50

Parallel connector PV

Parallel connector PV for the easy extension and connection of threaded rods





Longitudal channel connection

Applications

- Simple, quick-mount connector for extending and connecting threaded rods
- Parallel connector for extending threaded rods
- Secure using locking nut

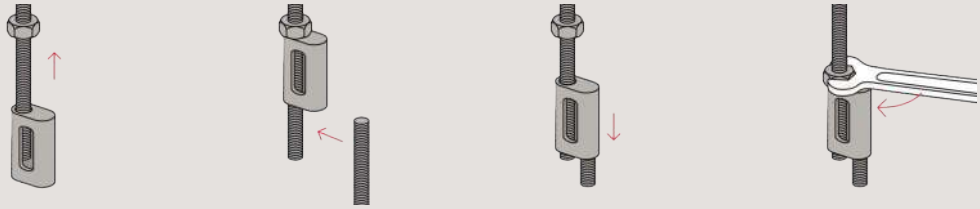
Advantages/benefits

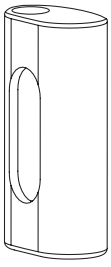
- The parallel connector's design allows the threaded rods to be installed quickly.
- Designed for simple and fast height adjustment.
- The PV allows the height to be adjusted during installation.

Properties

- Material: diecast

Installation PV





PV

Item	Item No.	For thread	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
PV M 6	**020947**	M 6	0.30	100
PV M 8	**079678**	M 8	2.00	100

Double connector plate DPP, DPF

Base plate - double connector plate for the fixing of two parallel pipelines



Applications

- Fastening element for the installation of two parallel pipelines with just one fastening point

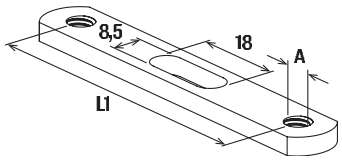
Advantages/benefits

- The double connector plate design saves a fastening point for the fastening of two pipelines.
- The two-part double connector plate DPF is suitable for variable pipe spacing.
- The base plate's long slots allow the double connector plate to be easily aligned.
- The rounded design of the connector plate is ideal for a visual installation.

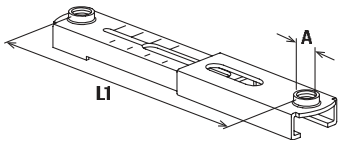
Properties

- Material DPP: DC04 (material no. 1.0338) acc. to DIN EN 10130
- Material DPF: DC01 (material no. 1.0330) acc. to DIN EN 10130
- Zinc plating: electro zinc-plated, min. 5 µm

Technical data



DPP



DPF

Item	Item No.	Length L_1 [mm]	Thread A	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
DPP 65	**079702**	65	M 8	1.50	50
DPP 85	**079703**	85	M 8	1.00	50
DPP 105	**079704**	105	M 8	0.75	50
DPF 60 - 105	**024648**	60 - 105	M 8	1.5 - 0.5	50

Bolt connector SBB

Technical data



SBB

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, min. 8 µm

Item	Item No.	Length L [mm]	Thread A	Sales unit [pcs]
SBB 35	**079705**	35	M 8	100
SBB 45	**079706**	45	M 8	100
SBB 55	**079707**	55	M 8	100

Turnbuckle SPS, Bolt BLR

Technical data



SPS, BLR

Properties

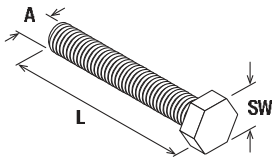
- Material SPS: steel ≥ 330 N/mm² acc. to DIN 1480
- Material BLR: steel acc. to DIN 976, resistance 4.6
- Zinc plating: electro zinc-plated, min. 5 µm

Item	Item No.	Length L [mm]	Thread Ø x length [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
SPS M 10	**537211**	125	M 10	10.0	25
BLR 100 M10	**537210**	100	M 10	10.0	25
SPS M 12	**064090**	125	M 12	15.00	25
BLR 100 M12	**064091**	100	M 12	15.00	25

Hexagonal screw SKS

Technical data





SKS

Properties

- Material: steel acc. to DIN-EN-ISO 4017, steel 8.8
- Zinc plating: electro zinc-plated, min. 3 µm

Item	Item No.	Length L [mm]	Thread A	Width across nut SW [mm]	Sales unit [pcs]
SKS 6 x 20	079711	20	M 6	10	100
SKS 8 x 16	079415	16	M 8	13	100
SKS 8 x 30	079713	30	M 8	13	100
SKS 8 x 45	079714	45	M 8	13	100
SKS 8 x 55	079715	55	M 8	13	100
SKS 8 x 100	079827	100	M 8	13	100
SKS 10 x 20	079416	20	M 10	17	100
SKS 10 x 30	079417	30	M 10	17	100
SKS 10 x 55	079721	55	M 10	17	100
SKS 10 x 65	535537	65	M 10	17	50
SKS 10 x 85	505552	85	M 10	17	100
SKS 12 x 25	535538	25	M 12	19	100
SKS 12 x 55	077611	55	M 12	19	100
SKS 12 x 65	535539	65	M 12	19	50
SKS 12 x 85	505553	85	M 12	19	100

Hexagonal Bolt SKS



Properties

- Zinc plating: Electro zinc plated, 3 – 8 µm acc. DIN-EN-ISO 4017, steel 8.8
- Material A4: Stainless steel of the corrosion resistance class III, e.g. A4

Technical data

Item	Art.-NO.	Qty. per box (pcs.)	Length L (mm)	Thread D	Width across nut sw
SKS 6 x 20	079711	100	20	M 6	10
SKS 8 x 16	079415	100	16	M 8	13
SKS 8 x 30	079713	100	30	M 8	13
SKS 8 x 45	079714	100	45	M 8	13
SKS 8 x 55	079715	100	55	M 8	13
SKS 8 x 100	079827	100	100	M 8	13
SKS 10 x 20	079416	100	20	M 10	17
SKS 10 x 30	079417	100	30	M 10	17
SKS 10 x 55	079721	100	55	M 10	17
SKS 10 x 85	505552	100	85	M 10	17
SKS 12 x 20	077610	100	20	M 12	19
SKS 12 x 55	077611	100	55	M 12	19
SKS 12 x 85	505553	100	85	M 12	19
Stainless steel A4					
SKS M 10 x 30 A4	505547	100	--	M 10	17
SKS M 12 x 30 A4	505548	100	--	M 12	19

Hexagonal Bolt SKSL



Properties

- Material: DIN 933 (Steel: 8.8)
- Finish: Electro Galvanized (as per ASTM B633), Hot Dip Galvanized (as per ASTM A153)
- Material SS316: DIN EN ISO 3506-1

Technical data

Item	Art.-NO. GI 8.8	Art.-NO. HDG 8.8	Art.-NO. SS 316	Length L (mm)	Thread D
SKSL M 6x16	516755	--	--	16	M 6
SKSL M 6x20	--	516797	--	20	M 6
SKSL M 6x25	516756	516798	516606	25	M 6
SKSL M 6x40	516757	--	--	40	M 6
SKSL M 6x50	--	--	516607	50	M 6
SKSL M 8x16	516758	--	--	16	M 8
SKSL M 8x20	516759	516799	--	20	M 8
SKSL M 8x25	516761	--	--	25	M 8
SKSL M 8x30	516763	--	--	35	M 8
SKSL M 8x35	516762	516800	--	30	M 8
SKSL M 8x45	516764	--	--	45	M 8
SKSL M 8x55	516778	--	--	55	M 8
SKSL M 8x80	--	516552	--	80	M 8
SKSL M 10x16	516779	--	--	16	M 10
SKSL M 10x20	516780	516553	--	20	M 10
SKSL M 10x25	516781	516554	516608	25	M 10
SKSL M 10x30	516782	516555	--	30	M 10
SKSL M 10x35	516783	--	--	35	M 10
SKSL M 10x40	--	516556	--	40	M 10
SKSL M 10x50	--	516592	516609	50	M 10
SKSL M 10x55	516784	--	--	55	M 10
SKSL M 10x60	--	516593	516610	60	M 10
SKSL M 10x70	--	--	516611	70	M 10
SKSL M 10x90	--	--	516612	90	M 10
SKSL M 10x100	--	516594	--	100	M 10
SKSL M 10x110	--	--	516613	110	M 10
SKSL M 10x120	--	--	516614	120	M 10
SKSL M 12x20	516785	--	--	20	M 12
SKSL M 12x25	516786	--	--	25	M 12
SKSL M 12x30	--	516595	--	30	M 12
SKSL M 12x35	516787	--	--	35	M 12
SKSL M 12x40	516788	--	516615	40	M 12
SKSL M 12x50	516789	--	516616	50	M 12
SKSL M 12x55	--	516596	516617	55	M 12
SKSL M 12x60	516790	--	516618	60	M 12
SKSL M12X75	--	--	516619	75	M 12
SKSL M12X100	--	--	516620	100	M 12
SKSL M12X110	--	--	516621	110	M 12
SKSL M12x120	--	--	516622	120	M 12
SKSL M 16x30	516791	--	--	30	M 16
SKSL M 16x35	516792	--	--	35	M 16
SKSL M 16x40	516793	--	--	40	M 16

Technical data

Item	Art.-NO. GI 8.8	Art.-NO. HDG 8.8	Art.-NO. SS 316	Length L (mm)	Thread D
SKSL M 16x50	516794	--	--	50	M 16
SKSL M 16x55	--	516597	--	55	M 16
SKSL M 16x70	516795	--	--	70	M 16
SKSL M 16x80	--	516598	516623	80	M 16
SKSL M 16x100	--	516599	516624	100	M 16
SKSL M 20x40	516796	--	--	40	M 20
SKSL M 20X90	--	516600	--	90	M 20
SKSL M 20X125	--	516601	516625	125	M 20
SKSL M 20X130	--	516602	--	130	M 20
SKSL M 22X80	--	--	516626	80	M 22
SKSL M 22X100	--	516603	--	100	M 22
SKSL M 24X150	--	516604	516627	150	M 24
SKSL M 24X180	--	516605	--	180	M 24

Washer U

Technical data



U

Properties

- Material: steel acc. to DIN 10139
- Zinc plating: electro zinc-plated, min. 3 µm

Item	Item No.	Thickness S [mm]	Hole-Ø D [mm]	External-Ø d [mm]	Sales unit [pcs]
U 6 x 12	544595	1.6	6.4	12	100
U 8 x 17	091477	1.6	8.4	17	100
U 8 x 28	079725	2	8.4	28	100
U 8 x 40	079729	3	8.4	40	100
U 10 x 21	091478	2	10.5	21	100
U 10 x 28	079726	2	10.5	28	100
U 10 x 40	079730	3	10.5	40	100
U 12 x 24	557301	2.5	12.5	24	100
U 12 x 40	024649	3	12.5	40	100
U 16 x 30	557303	3	16.5	30	50
U 16 x 40	535540	3	17	40	50

Washer MW

Technical data



MW

Properties

- Material: DIN 125
- Finish: Electro Galvanized (as per ASTM B633), Hot Dip Galvanized (as per ASTM A153)
- Material A4: Stainless steel of the corrosion resistance class III, e.g. A4

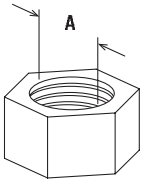
Item	Art.-NO. GI	Art.-NO. HDG	Art.-NO. SS316	Thread D (mm)
MW M6X12	516816	516832	516824	M 6
MW M8X16	516817	516833	516825	M 8
MW M8X30	516818	516834	516826	M 8
MW M8X40	516819	516835	516827	M 8
MW M10x20	516820	516836	516828	M 10
MW M10x30	516821	516837	516829	M 10
MW M10x40	516822	516838	516830	M 10
MW M12x24	516823	516839	516831	M 12
MW M16x30	516770	516745	516748	M 16
MW M16x40	516771	--	--	M 16
MW M20x37	516772	516746	516749	M 20
MW M24x44	516773	516747	516760	M 24

Hexagonal nut MU

Technical data



MU



Properties

- Zinc plating: electro zinc-plated, 3 - 8 µm
- Quality: acc. DIN 934, resistance class 8

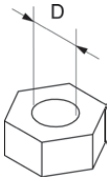
Item	Item No.	Thread A	Width across nut SW [mm]	Sales unit [pcs]
MU M 6	079733	M 6	10	100
MU M 8	079734	M 8	13	100
MU M 10	079735	M 10	17	100
MU M 12	024650	M 12	19	100
MU M 16	557297	M 16	24	50
MU M 20	535532	M 20	30	15
MU M 24	535534	M 24	36	15

Hexagonal nut HN

Technical data



HN



HN

Properties

- Material: DIN 934 CLS 8
- Finish: Electro Galvanized (as per ASTM B633), Hot Dip Galvanized (as per ASTM A153)
- Material A4: Stainless steel of the corrosion resistance class III, e.g. A4

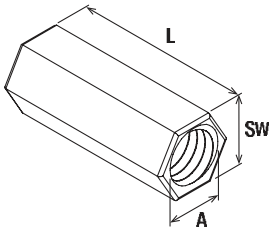
Item	Art.-NO. GI	Art.-NO. HDG	Art.-NO. D SS316	Thread D (mm)
HN M6	516801	516806	516811	M 6
HN M8	516802	516807	516812	M 8
HN M10	516803	516808	516813	M 10
HN M12	516804	516809	516814	M 12
HN M16	516805	516810	516815	M 16
HN M20	516739	516741	516743	M 20
HN M24	516740	516742	516744	M 24

Hexagonal connector VM

Technical data



VM



VM

Properties

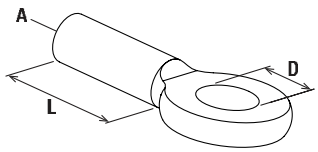
- Material: C8C (material no. 1.0213) acc. to DIN EN 10263-2
- Zinc plating: electro zinc-plated, 3 - 8 µm

Item	Item No.	Length L [mm]	Thread A	Width across nut SW [mm]	Sales unit [pcs]
VM M 6	**014319**	25	M 6	10	100
VM M 8	**079690**	30	M 8	11	100
VM M 10	**079691**	30	M 10	13	100
VM M 12	**020971**	40	M 12	17	100
VM M 16	**508833**	40	M 16	24	50
VM M 8 A4	**505540**	100	30	M 8	11
VM M 10 A4	**505541**	100	30	M 10	13

Eyebolt AG

Technical data





AG

Properties

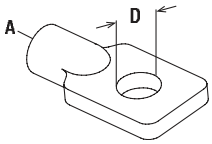
- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, 3 - 8 µm

Item	Item No.	Length L [mm]	Thread A	Eye-Ø D [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
AG 8 x 20	**079696**	20	M 8	8.5	5.00	100
AG 10 x 25	**079697**	25	M 10	12.0	8.00	100

Thread hanger RAH

Technical data





RAH

Properties

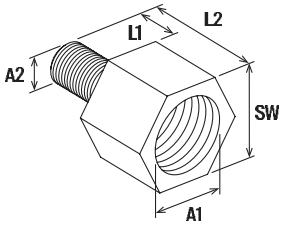
- Material: 11SMnPb30 (material no. 1.0718) acc. to DIN EN 10087
- Zinc plating: electro zinc-plated, 3 - 8 µm

Item	Item No.	Thread A	Eye-Ø D [mm]	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Sales unit [pcs]
RAH M 8	**079698**	M 8	12.0	4.00	50
RAH M 10	**079699**	M 10	12.0	4.00	50

Reduction piece RD

Technical data





Properties

- Material: 11SMnPb30 (material no. 1.0718) acc. to DIN EN 10087
- Zinc plating: electro zinc-plated, 3 - 8 µm

RD

Item	Item No.	Internal thread A1	External thread A 2	Length L_1 [mm]	Length L_2 [mm]	Width across nut SW [mm]	Sales unit [pcs]
RD M 8 / M 6	**020936**	M 8	M 6	7	19	13	100
RD M 10 / M 8	**079692**	M 10	M 8	8	23	13	50
RD M 12 / M 10	**079693**	M 12	M 10	10	25	17	100
RD M 12 / M 16	**504397**	M 12	M 16	14	32	19	50
RD M 16 / M 12	**504399**	M 16	M 12	10	32	24	50
RD 1/2" / M10	**079695**	1/2"	M 10	10	29	24	10
RD M 16 / M 12 long	**538080**	M 16	M 12	25	46.5	24	10
RD 1/2" / M10 long	**537215**	1/2"	M 10	20	39	24	10
RD 3/4" / M 12 long	**537213**	3/4"	M 12	25	46.5	30	10
RD 3/4" / M 16 long	**537214**	3/4"	M 16	25	46.5	30	10

Reduction socket RDM and GRD

Technical data



Properties

- Material RDM: SAE 1008
- Material GRD: 11SMnPb30 (material no. 1.0718) acc. to DIN EN 10277
- Zinc plating: electro zinc-plated, 3 - 8 µm

RDM / GRD

Item	Item No.	Thread A	Thread A2	Sales unit [pcs]
RDM M 10 / M 8	**079413**	M 8	M 10	50
RDM M 12 / M 10	**079414**	M 10	M 12	100
GRD 1/2" / M 10	**077609**	1/2"	M 10	100
GRD 1/2" / M 12	**077608**	1/2"	M 12	100
GRD 3/4" / M 10	**077607**	3/4"	M 10	100
GRD 3/4" / M 12	**077606**	3/4"	M 12	100

Flat eye screw LLS

Technical data



LLS

Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated, 3 - 8 µm

Item	Item No.	Length L [mm]	Thread [mm]	Eye-Ø D [mm]	Sales unit [pcs]
LLS 6 x 50	**079700**	50	6	8.5	100
LLS 8 x 50	**079701**	50	8	10.5	100

Textile web strapping GWB

Perforated steel banding LBV / LBK for the fast fixing of pipelines





Flexible and rigid plastic insulation pipes

Applications

- Pipelines
- Flexible and rigid plastic pipes
- Compound pipes

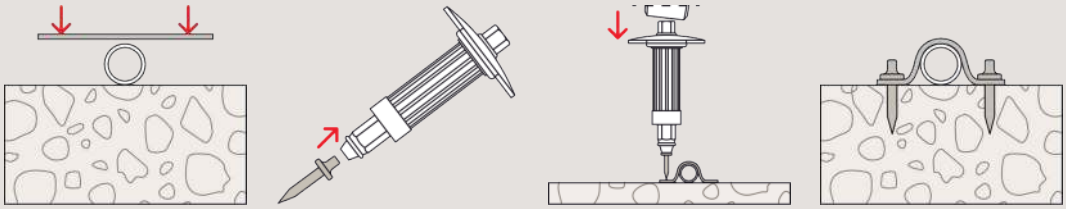
Advantages/benefits

- Pipe fastening using textile tape allows cheap and simple installation.
- The textile tape roll allows the correct tape length to be chosen to suit the diameter in question.
- Hangings with textile tape are a fast solution for temporary fixings.

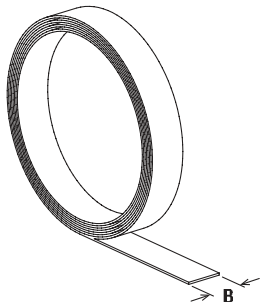
Properties

- Material: polypropylene

Installation GWB



Technical data



GWB

Item	Item No.	Total length l [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
GWB	**020959**	10000	15	1.1	10

Perforated steel banding LBV/LBK

Perforated steel banding LBV / LBK for the fast fixing of pipelines





Plastic pipes

Applications

- Steel tape with stamped holes for simple installation; available zinc-plated LBV or plastic-covered LKB
- The fischer nail anchor FNA II is suitable for ceiling fixing in concrete
- Use fischer thread hanger RAH for fastening to threaded rods

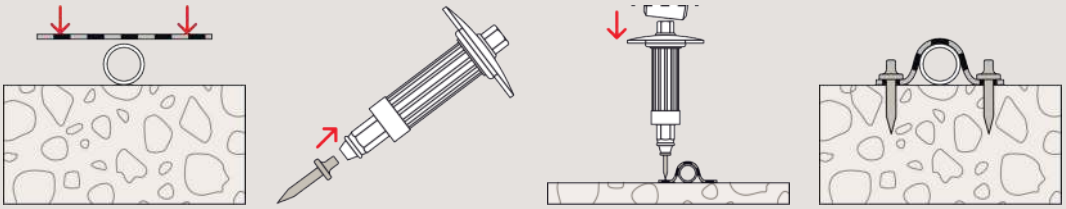
Advantages/benefits

- The perforated tape's material thicknesses and plastic covering allows the tapes to be easily cut to size using metal shears.
- The perforated tape's hole geometry enables concrete fixing using the fischer impact nail ED.

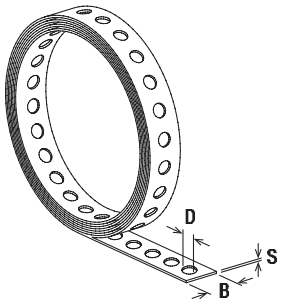
Properties

- Material: DX51D+Z 100 (material no. 1.0917) acc. to DIN EN 10.346For Type LBW17: Q235
- Zinc plating: electro zinc-plated, min. 5 µm
- Protective coating LBK: PE

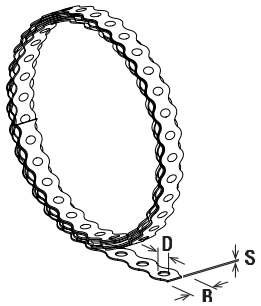
Installation LBV/LBK



Technical data



LBV/LBK



LBW

Item	Item No.	Total length l [mm]	Width B [mm]	Thickness S [mm]	Eye-Ø D [mm]	Sales unit [pcs]
LBV 12	**079549**	10000	12	0.75	5	10
LBV 17	**079550**	10000	17	0.75	6.5	10
LBV 25	**079551**	10000	25	0.88	8.5	8
LBK 14	**079553**	10000	14	2.6	5	10
LBK 19	**079554**	10000	19	2.4	6.5	8
LBK 27	**079555**	10000	27	2.4	8.5	5
LBW 17	**507435**	10000	27	0.87	7	10

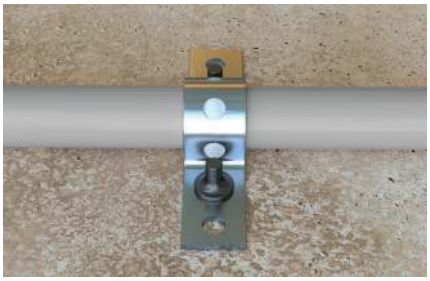
Impact nail ED

Fixing in concrete without pre-drilling





Fixing armoured conduits



Fixing perforated tapes

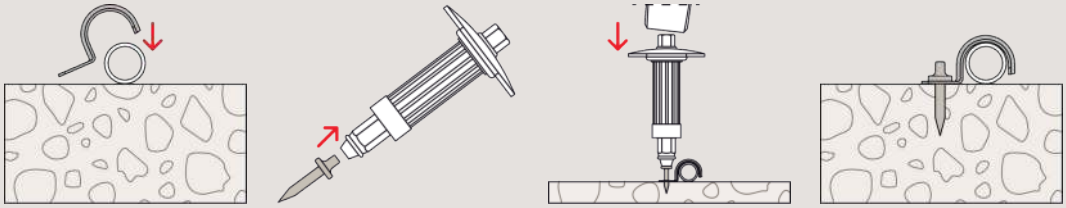
Applications

For fixing of:
- Conduit clips such as BSM, BSMD, BSMZ
- Perforated band such as LBK, LBV

Advantages

- The stable impact nail ED can be set in concrete with the impact nail setting tool SZE without pre-drilling. This allows for a fast installation.
- The setting tool SZE impact protection provides the best protection for your hand, thus ensuring a safe installation.

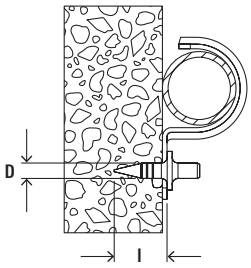
Installation ED



Technical data



ED



Item	Item No.	Length L [mm]	Diameter d [mm]	Sales unit [pcs]
ED 15	**048212**	15	4.0	200
ED 18	**079815**	18	4.0	200
ED 22	**014570**	22	4.0	200

4d

Technical data



SZE



Toolset for SZE

Item	Item No.	Sales unit [pcs]	
SZE	**552149**	1	
Toolset for SZE	**552150**	3	

Beam clamp FHBC

FHBC Beam clamp - Beam clamp for the installation of FUS channels on steel girders





Pipe installation on steel girders

Applications

- For installing FUS profile channels between the flanges on steel girders and U-profiles
- Suitable for FUS channels FUS 41
- For indoor and outdoor applications and in environments with high stress to components due to corrosion

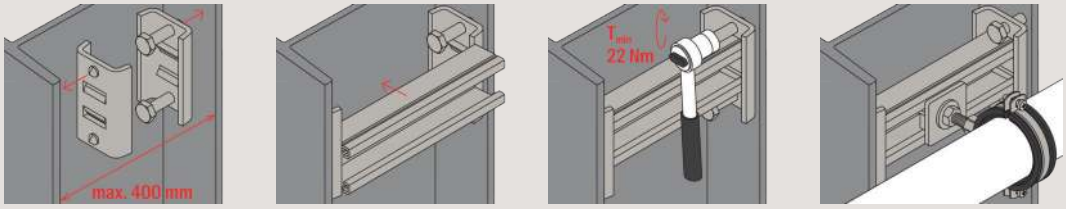
Advantages/benefits

- Easy installation of FUS profile to the flanges of steel girders.
- The FHBC allows for the installation of FUS channels on steel girders without drilling.
- The surface coating creates a high corrosion protection against environmental influences like humidity, water, saltwater or other corrosive substances

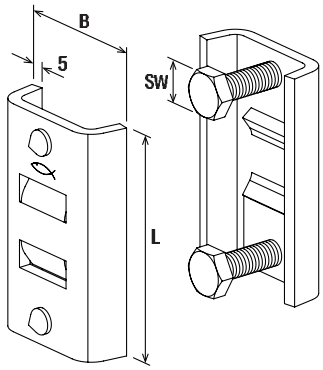
Properties

- Material: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025 (74074882)
- Zinc plating: hot-dip galvanised, min. 45 µm, acc. to DIN EN ISO 1461 (74083471)

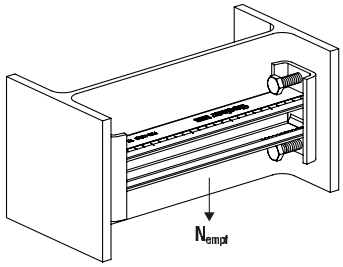
Installation FHBC



Technical data / Loads



FHBC



Load FHBC

Item	Item No.	Width B [mm]	Length L [mm]	Drive	Max. recom. static load (centr. tension) $N_{recom.}$ [kN]	Tightening torque T_{inst} [Nm]	Sales unit [pcs]
FHBC	**557375**	55	90	SW 17	3.6	22	10

Wire System FWI



4d

Applications

- Pipe supports
- Ventilation ducts
- Cable trays and containments
- Acoustic ceilings
- Lighting strips
- Bus bars
- Signage

Advantages

- The simple system comprising wire and wireclip guarantees ease of use.
- The wireclip's simple locking mechanism means that no tools are needed. This allows for a cost-effective installation.
- The adjustable wireclips makes it possible to adjust the length at any time. This guarantees the greatest flexibility.

Properties

- Lock Housing : Zamak-5
- Wire Rope : MS Galvanized IS 228, (ASTM-D117)-2016, IS 6745-2011.

Note

- Do not apply paint or other coating
- Do not apply lubricant
- Do not use for lifting loads
- Remove damaged wire ends using the wire cutter WIZ before assembly

Functioning

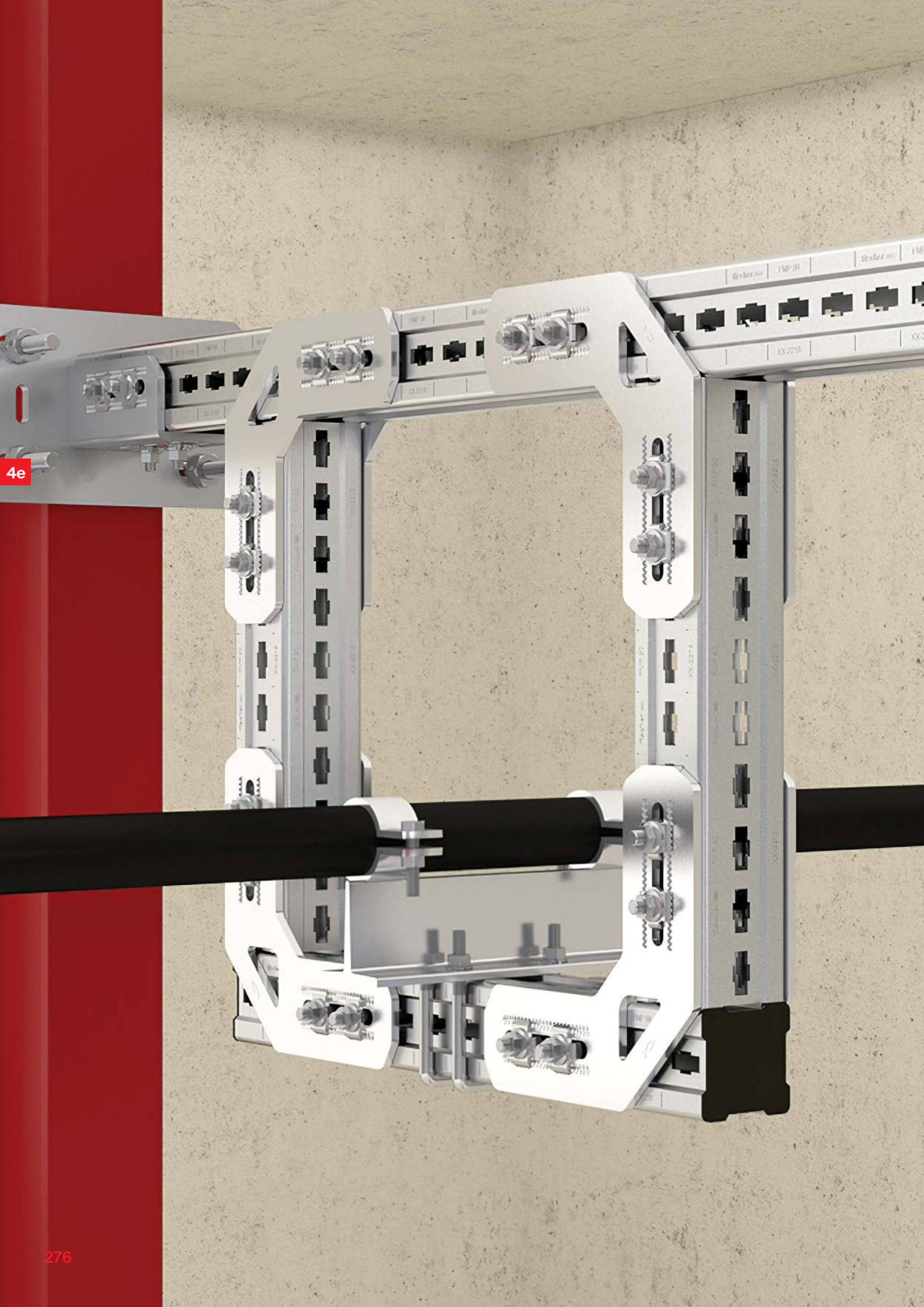
- Loops are formed from the wire which can be gripped through the wire clips. This allows objects to be hung. The wireclip can be adjusted at any time.
- The FNAII6 x 25 or acombination of drop- in anchor and eyebolt is suitable for fixing the wire.

Loads

Highest recommended loads for wire system		
Type	**Diameter of wire cable (mm)**	**Recommended tensile load (kN)**
2mm Wire System	2	0.7
3mm Wire System	3	1.2

Note:
- Factor of safety: 5
- Only in combination with fischer wire cable

Sr. No.	Art. No.	Item Description	Product Details	Scale Unit(Pcs.)
1	**566235**	FWI-GL 2.0	Lock 2.0mm	50
2	**566236**	FWI-GL 3.0	Lock 3.0mm	25
3	**566237**	FWI-CP	Corner Protector	50
4	**566238**	FWI-EB M8	Eyebolt M8	50
5	**566239**	FWI-EB M10	Eyebolt M10	50
6	**568149**	FWI-L2.01.5m	Wire 2.0 crimped loop 1.5m	20
7	**566240**	FWI-L2.0 3m	Wire 2.0 crimped loop 3m	20
8	**566241**	FWI-L2.0 4m	Wire 2.0 crimped loop 4m	20
9	**566242**	FWI-L2.0 6m	Wire 2.0 crimped loop 6m	5
10	**566243**	FWI-L 2.0 8m	Wire 2.0 crimped loop 8m	5
11	**566244**	FWI-L2.010m	Wire 2.0 crimped loop 10m	5
12	**566245**	FWI-L2.012m	Wire 2.0 crimped loop 12m	5
13	**566246**	FWI-L2.0 14m	Wire 2.0 crimped loop 14m.	5
14	**568150**	FWI-L3.01.5m	Wire 3.0 crimped loop 1.6m	20
15	**566247**	FWI-L3.03m	Wire 3.0 crimped loop 3m	20
16	**566248**	FWI-L3.04m	Wire 3.0 crimped loop 4m	20
17	**566249**	FWI-L 3.0 6m	Wire 3.0 crimped loop 6m	5
18	**566250**	FWI-L3.0 8m	Wire 3.0 crimped loop 8m	5
19	**566251**	FWI-L3.010m	Wire 3.0 crimped loop 10m	5
20	**566252**	FWI-L3.012m	Wire 3.0 crimped loop 12m	5
21	**566253**	FWI-L3.014m	Wire 3.0 crimped loop 14m	5
22	**568151**	FWI-LS 2.0 M8 1.5m	Wire 2.0 crimped M8 Stud 1.5m.	20
23	**566254**	FWI-LS 2.0 M8 3m	Wire 2.0 crimped M8 Stud 3m	20
24	**566255**	FWI-LS 2.0 M8 4m	Wire 2.0 crimped M8 Stud 4m	20
25	**566256**	FWI-LS 2.0 M8 6m	Wire 2.0 crimped M8 Stud 6m	5
26	**566257**	FWI-LS 2.0 M8 8m	Wire 2.0 crimped M8 Stud 8m	5
27	**566258**	FWI-LS 2.0 M8 10m	Wire 2.0 crimped M8 Stud 10m	5
28	**566259**	FWI-LS 2.0 M8 12m	Wire 2.0 crimped M8 Stud 12m	5
29	**566260**	FWI-LS 2.0 M8 14m.	Wire 2.0 crimped M8 Stud 14m	5
30	**568152**	FWI-LS 3.0 M8 1.5m	Wire 3.0 crimped M8 Stud 1.5m	20
31	**566261**	FWI-LS 3.0 M8 3m	Wire 3.0 crimped M8 Stud 3m	20
32	**566262**	FWI-LS 3.0 M8 4m	Wire 3.0 crimped M8 Stud 4m	20
33	**566263**	FWI-LS 3.0 M8 6m	Wire 3.0 crimped M8 Stud 6m	5
34	**566264**	FWI-LS 3.0 M8 8m	Wire 3.0 crimped M8 Stud 8m	5
35	**566265**	FWI-LS 3.0 M8 10m.	Wire 3.0 crimped M8 Stud 10m	5
36	**566266**	FWI-LS 3.0 M8 12m	Wire 3.0 crimped M8 Stud 12m	5
37	**566267**	FWI-LS 3.0 M8 14m.	Wire 3.0 crimped M8 Stud 14m	5
38	**566268**	FWI-YLH 2.0	Y Fit Wire 2.0 Snap Hook Ends	5
39	**566269**	FWI-YLS 2.0	Y Fit Wire 2.0 Stud Ends	5
40	**566270**	FWI-YLT 2.	Y Fit Wire 2.0 Toggle Ends	5
41	**566271**	FWI-YLH 3.0	Y Fit Wire 3.0 Snap Hook Ends	5
42	**566272**	FWI-YLS 3.0	Y Fit Wire 3.0 Stud Ends	5
43	**566273**	FWI-YLT 3.0	Y Fit Wire 3.0 Toggle Ends	5
44	**566274**	FWI-C 2.0100m	2mm wire budie-100 m	1
45	**566275**	FWI-C3.0100m	3mm wire budie-100 m	1
46	**566276**	FWI-WPS 3.0 50m	Sleeve 3.0mm 50m	1


4e

4e

Massive channel system FMS

Massive profile FMP	278	
Channel connector FMPC	282	
Cantilever FMC	284	
End cap FMEC	287	
Hammer-head push connector FMHB	288	
Connecting element FMCE-L short	290	
Connecting element FMCE	292	
Base plate FMSF BP	293	
Saddle flange FMSF	294	
Variable bracket FMVB	296	
Beam clamp FMBC	298	
Beam clamp FMBC M12 and M16	300	
Flat fitting FMFF 90°	302	
Mounting angle FMA 3 and FMA 4	304	
Mounting angle FMA	306	
Connecting element FMUF	308	
Fix point U-bolt FMFS UB	310	
Pipe shoe sliding element FMFS	312	
Fix-point U-bolt FMFS S and M	314	
Pipe shoe FMPS	316	
Massive pipe clamp FMFSC	320	
Massive U-bolt FMPSU	322	

Massive profile FMP

The efficient fixing solution for heavy-duty installations





Frame construction

Applications

- Secure fastening of heavy duty pipelines
- Safe construction of solid supporting structures

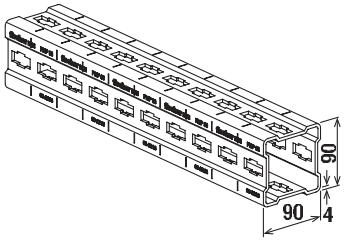
Advantages

- The clearly arranged product range of profiles and construction elements enables on-site assembly without prefabrication and thus considerably reduces costs and time.
- The fischer solid rail profiles can be square cut, thus reducing waste and material costs.
- The construction with the fischer solid rail system FMS also generates a fixing basis for dynamic loads and makes the system universally applicable.
- The hot-dip galvanised product range guarantees on-site processing without subsequent coating speeding the assembly process sustainably.
- The thick coating of the hot-dip galvanised version is suitable for outdoor installations and in corrosive environments.

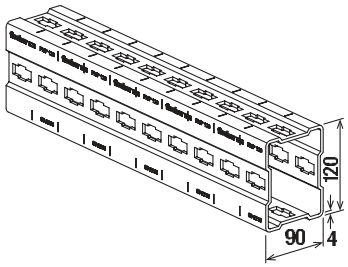
Properties

- Material FMP: Steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Galvanisation: Hot-dip galvanised, min. 75 µm, acc. to DIN EN ISO 1461

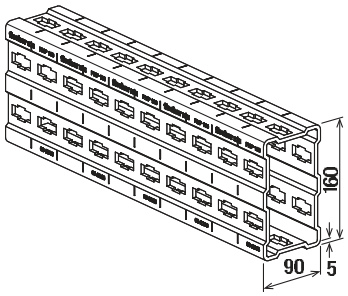
Technical data



FMP 90



FMP 120

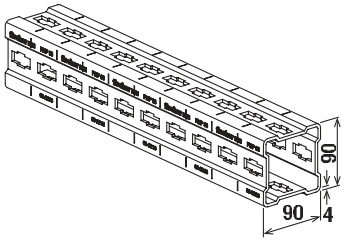


FMP 160

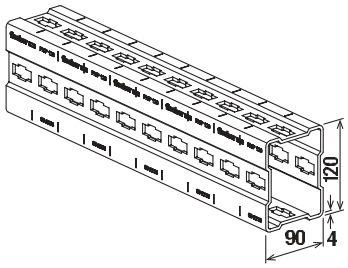
Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Profil weight [kg/m]	Profile cross section [cm²]	Thickness S [mm]	Sales unit [pcs]
FMP 90 3m	547795	3000	90	90	9.68	10.97	4	1
FMP 90/2,5 - 3 m	560562	3000	90	90	6.33	7.18	2.5	1
FMP 90 6m	547796	6000	90	90	9.68	10.97	4	1
FMP 120 3m	547797	3000	90	120	11.85	13.37	4	1
FMP 120 6m	547798	6000	90	120	11.85	13.37	4	1
FMP 160 6m	547799	6000	90	160	16.86	18.91	5	1
FMP 160 8m	547800 [1]	8000	90	160	16.86	18.91	5	1
FMP 90/2,5 - 6 m	560563	6000	90	90	6.33	7.18	2.5	1

1) Delivery time on request.

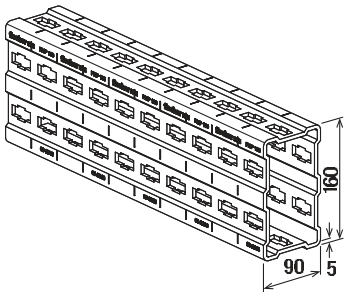
Loads



FMP 90



FMP 120



FMP 160

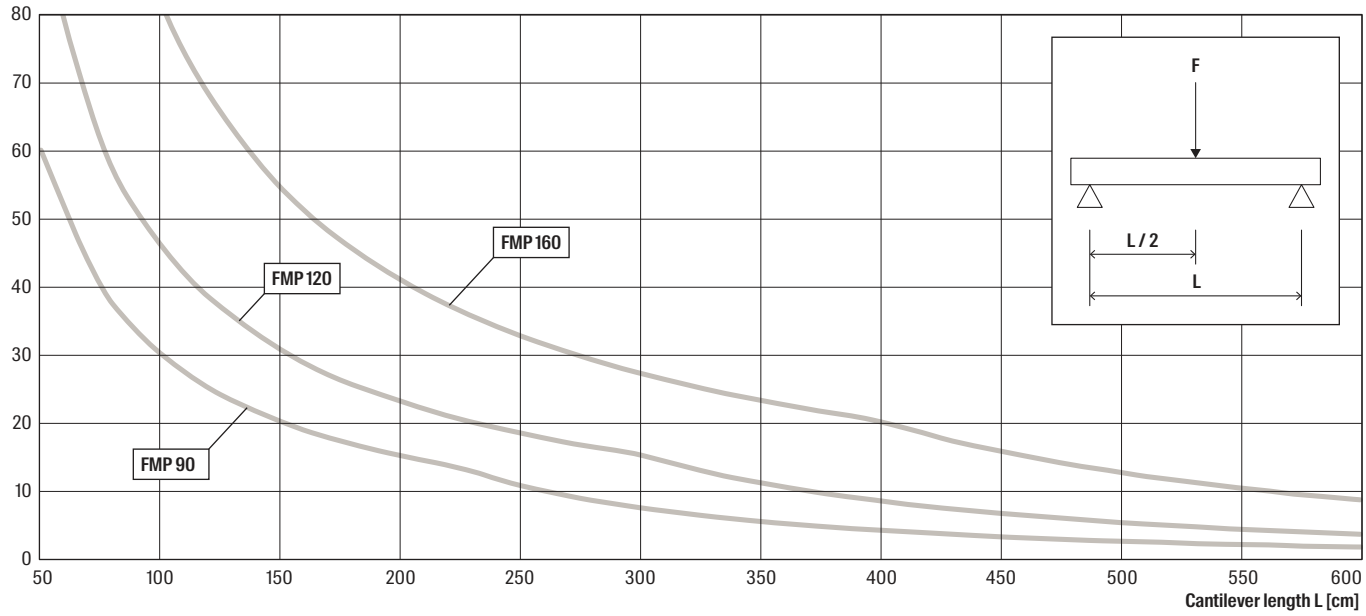
Item	Item No.	Yield strength f_{yk} [kN/cm²]	Rec. tensile stress σ_{zul}* [kN/cm²]	Rec. shear stress τ_{zul}* [kN/cm²]	Moment of inertia I_y [cm⁴]	Moment of inertia I_z [cm⁴]	Section modulus W_y [cm³]	Section modulus W_z [cm³]	Radius of gyration i_y [cm]	Radius of gyration i_z [cm]	Torsional moment of inertia I_t [cm⁴]	Torsional section modulus W_t [cm³]
FMP 90 3m	547795	35.5	25.36	14.64	133.08	133.08	29.57	29.57	3.48	3.48	198.86	52.55
FMP 90 6m	547796	35.5	25.36	14.64	133.08	133.08	29.57	29.57	3.48	3.48	198.86	52.55
FMP 120 3m	547797	35.5	25.36	14.64	272.09	177.48	45.35	39.44	4.51	3.64	328.80	73.19
FMP 120 6m	547798	35.5	25.36	14.64	272.09	177.48	45.35	39.44	4.51	3.64	328.80	73.19
FMP 160 6m	547799	35.5	25.36	14.64	645.39	247.29	80.67	54.95	5.84	3.62	583.59	119.31
FMP 160 8m	547800 [1]	35.5	25.36	14.64	645.39	247.29	80.67	54.95	5.84	3.62	583.59	119.31

1) Delivery time on request.

* The recommended stress is calculated acc. EN 1993;$\sigma_{rec}=f_{yk}/(\gamma_L^* \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$.

Simply supported beam with single load at L/2

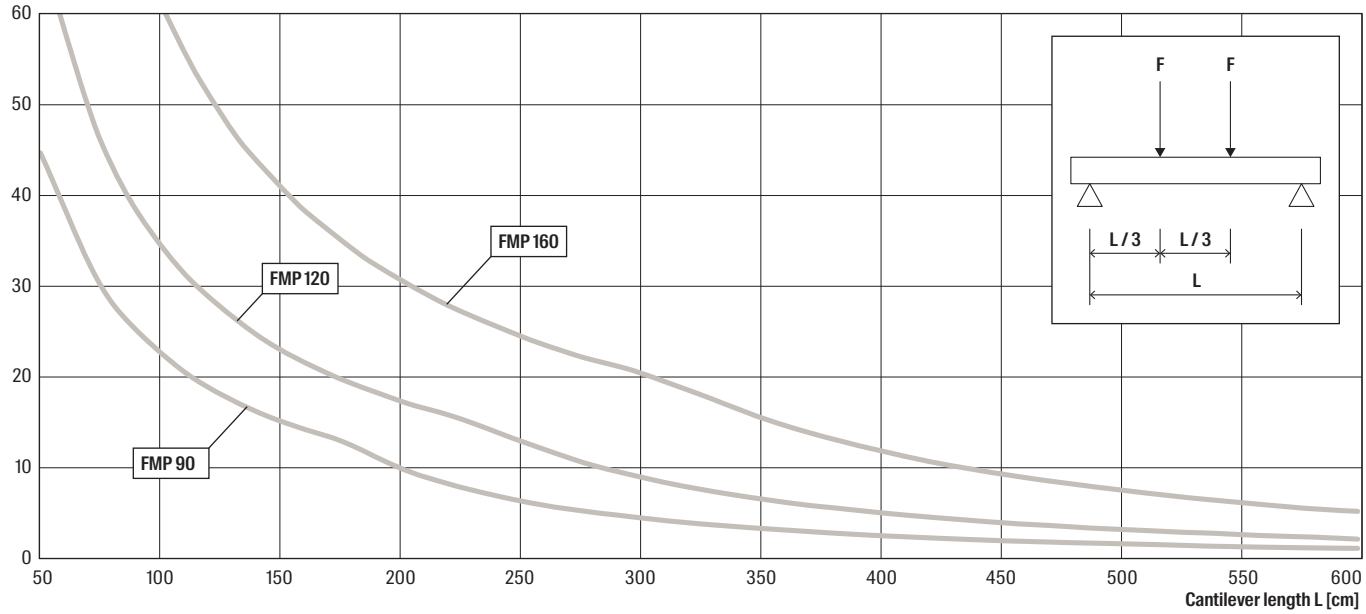
F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Simply supported beam with two single loads at L/3

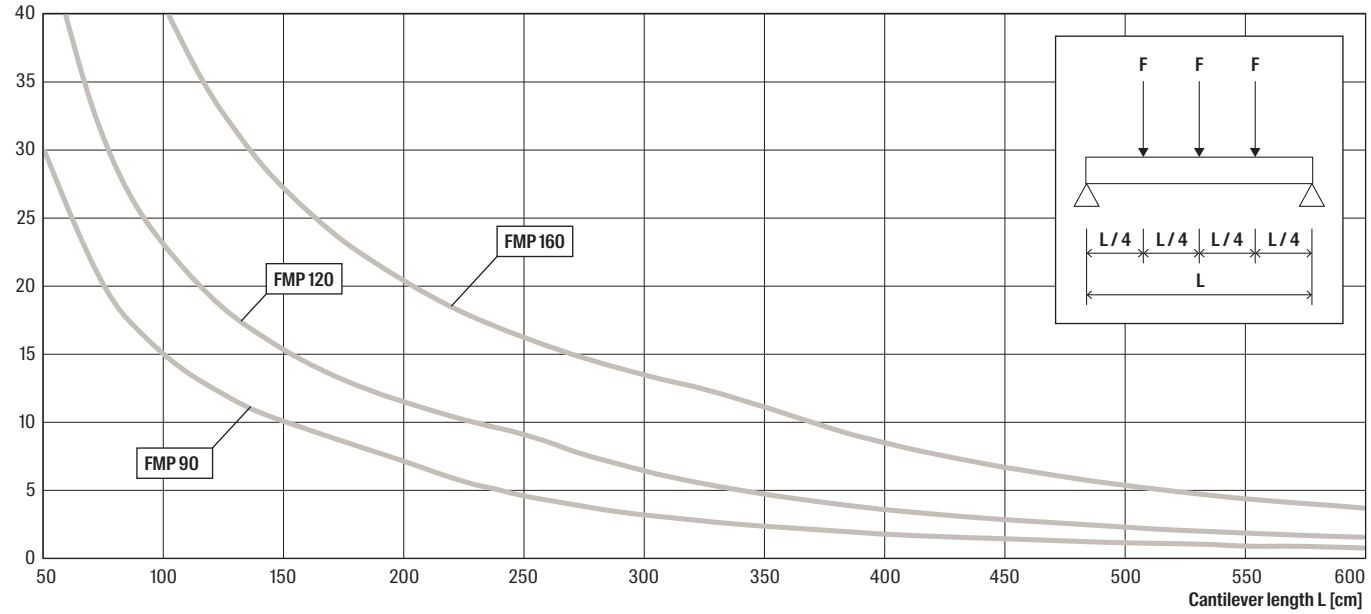
F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Simply supported beam with three single loads at L/4

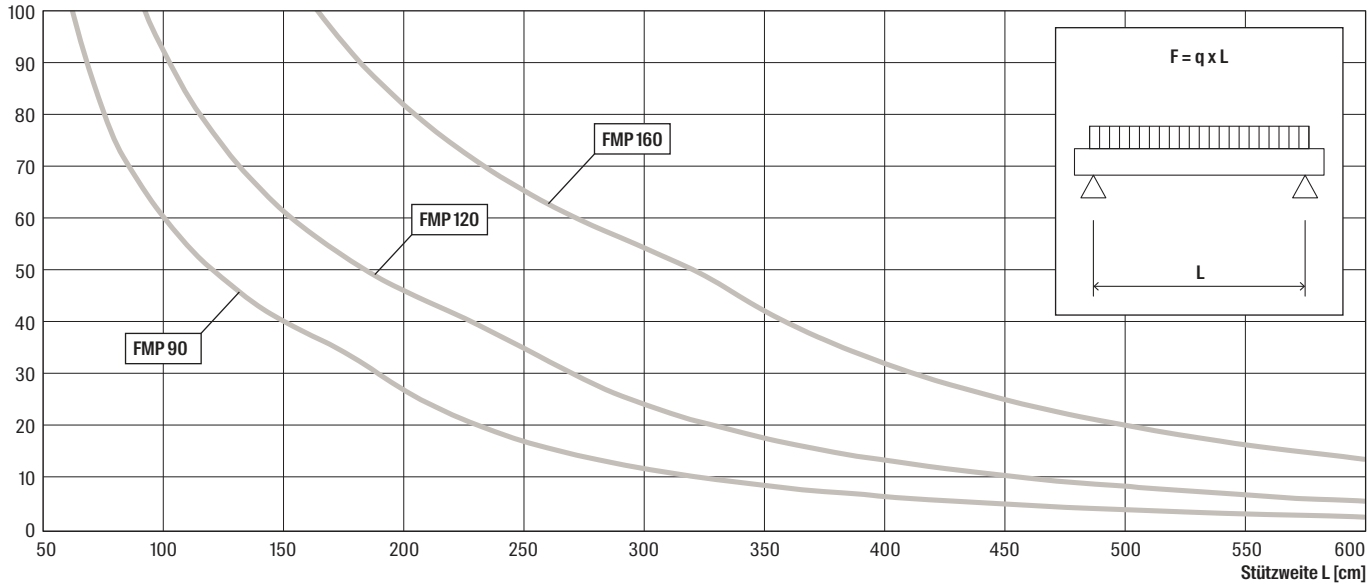
F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Uniformly distributed load $F_{rec} = q_{rec}$ x L

F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Channel connector FMPC

Optimum connection and fastening of FMP massive profiles





Profil connection to steel structure

Applications

- Connecting and aligning massive profiles
- FMPC usable for FMP 90 and FMP120

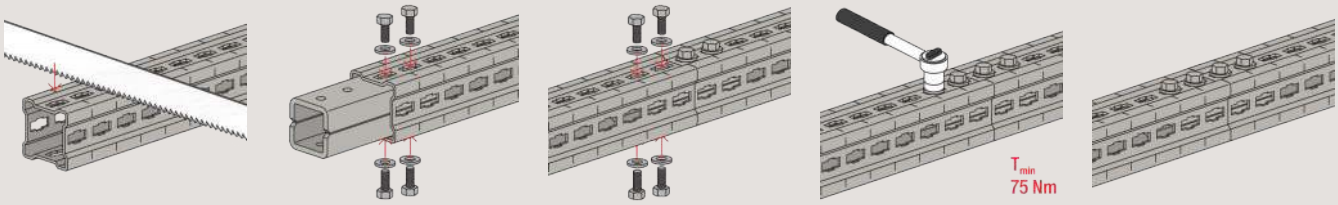
Advantages

- The FMPC channel connector enables the connection of the sizes 90 and 120 of the FMP massive profiles for the perfect alignment of profile.
- All FMPC profile connectors enable the conncetion by means of simple screwing through for a fast and clean mounting.
- FMPC 90, 120 and 160 profile connectors allow a stiff connection of profiles and high load possibilites.

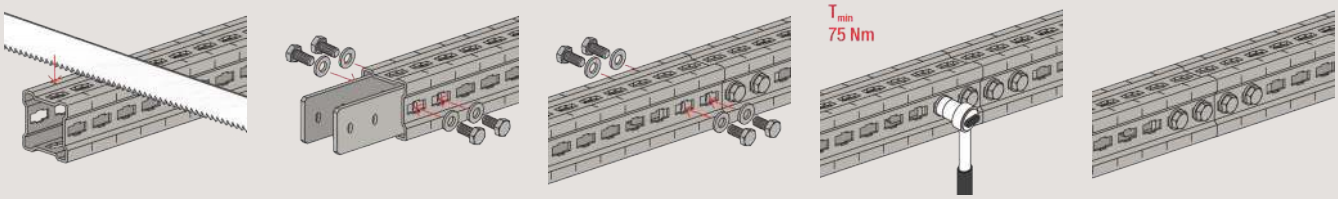
Properties

- Material FMPC: Steel S420MC (Material no. 1.0980) acc. to DIN EN 10149-2
- Material FMPC 90, 120, 160: steel S355 JR (material no. 1.0045) acc. to EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

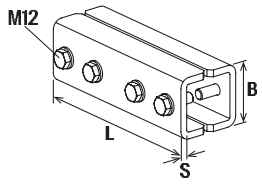
Installation FMPC



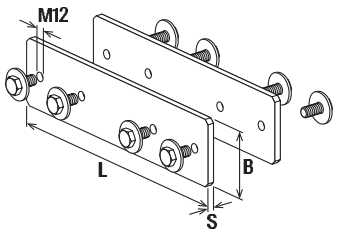
Installation FMPC 90/120/160



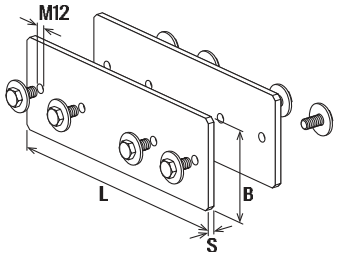
Technical data



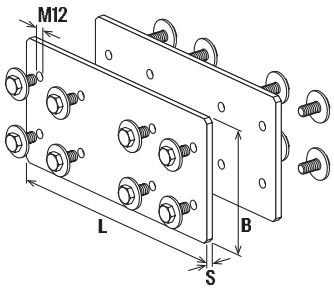
FMPC



FMPC 90



FMPC 120



FMPC 160

Item	Item No.	Length L [mm]	Width B [mm]	Thread Ø x length [mm]	Thickness S [mm]	Sales unit [pcs]
FMPC	**547801**	220	72	M 12	8	2
FMPC 90	**554236**	320	81	M 12	8	5
FMPC 120	**554237**	320	111	M 12	8	2
FMPC 160	**554238**	320	150	M 12	8	2

Cantilever FMC

Mounting profiles with welded base plate for fastening heavy duty pipelines





Profil traverse to steel structure



Supported cantilever

Applications

- Simple and safe fixing of heavy duty pipelines along the wall

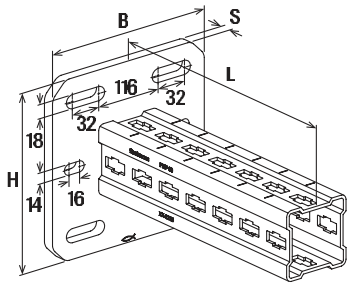
Advantages

- The graduated length assortment of the FMC cantilever arms allows an optimal adaptation to the respective application.
- The stable base plate of the cantilever provides a secure hold for a load-bearing construction.
- The completely hot-dip galvanised product range guarantees on-site processing without subsequent coating and simplifies and accelerates the assembly process sustainably.

Properties

- Material base plate: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Material profile: Steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Galvanisation: Hot-dip galvanised, min. 75 µm, acc. to DIN EN ISO 1461

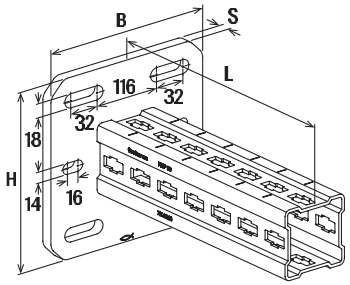
Technical data



FMC 90

Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMC 90-500	**547802**	500	230	230	15	1
FMC 90-750	**547803**	750	230	230	15	1
FMC 90-1000	**547804**	1000	230	230	15	1
FMC 90-1500	**547805**	1500	230	230	15	1

Loads

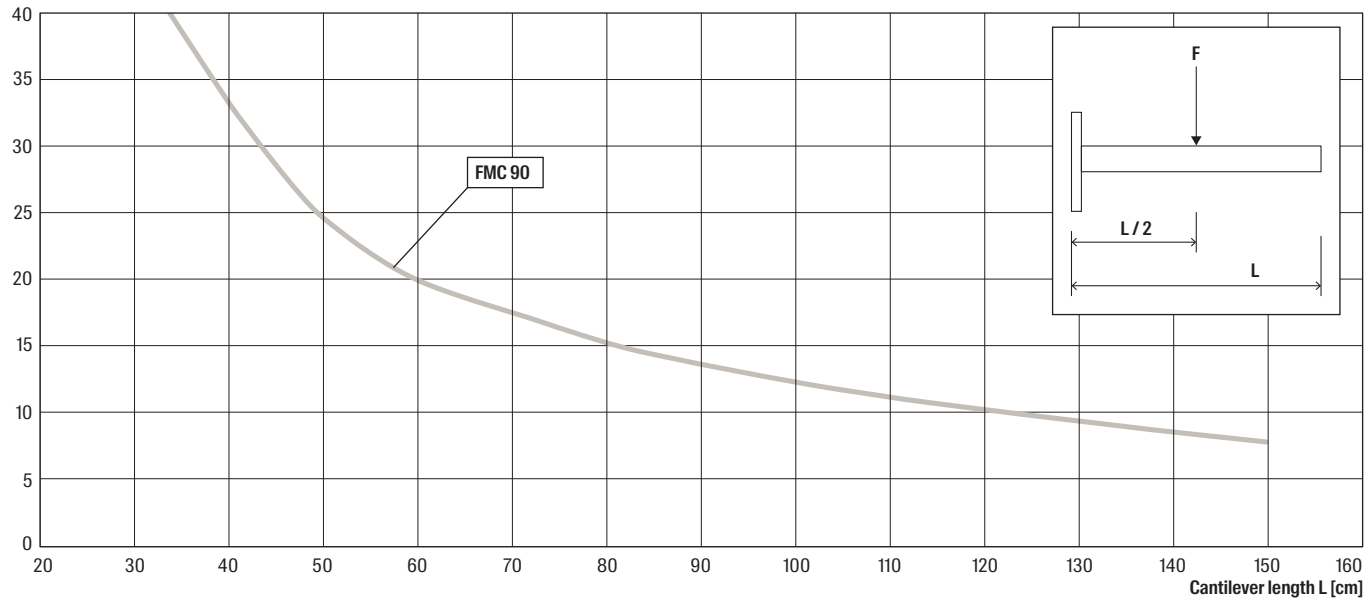


FMC 90

Item	Item No.	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Max. recommended static load load case 3 F_{rec} [kN]
FMC 90-500	**547802**	24.60	12.30	24.60
FMC 90-750	**547803**	16.40	8.20	16.40
FMC 90-1000	**547804**	12.30	5.60	12.30
FMC 90-1500	**547805**	7.80	2.40	7.80

Load case 1

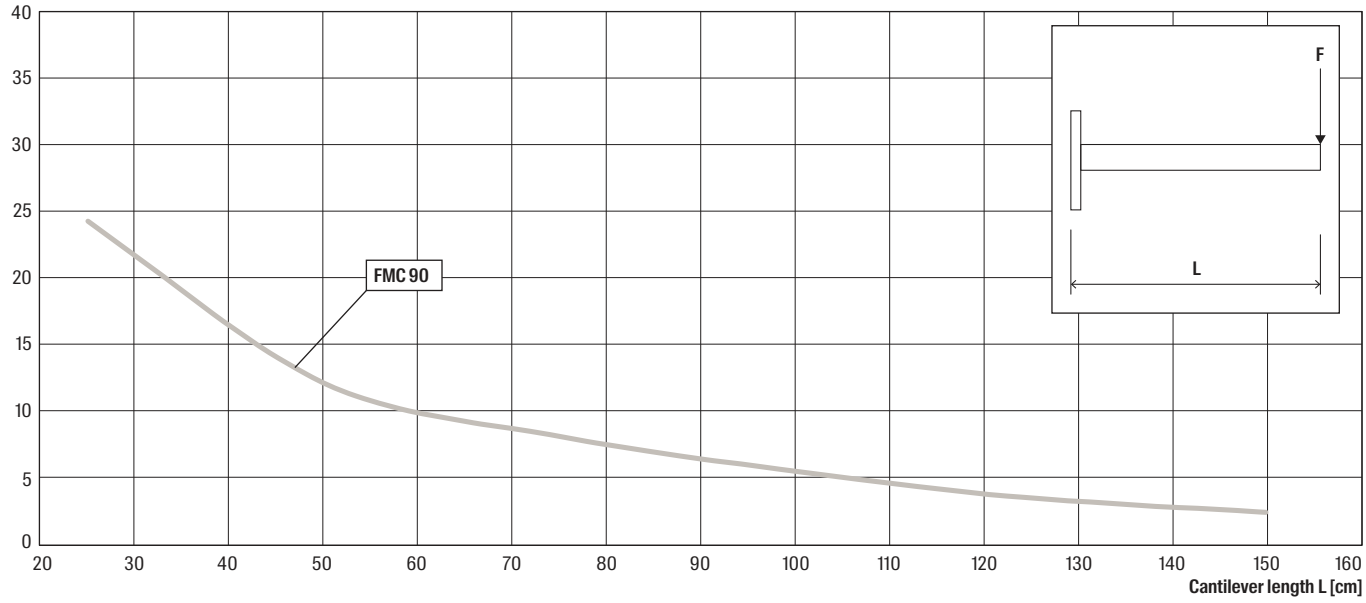
F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/150) is decisive

Load case 2

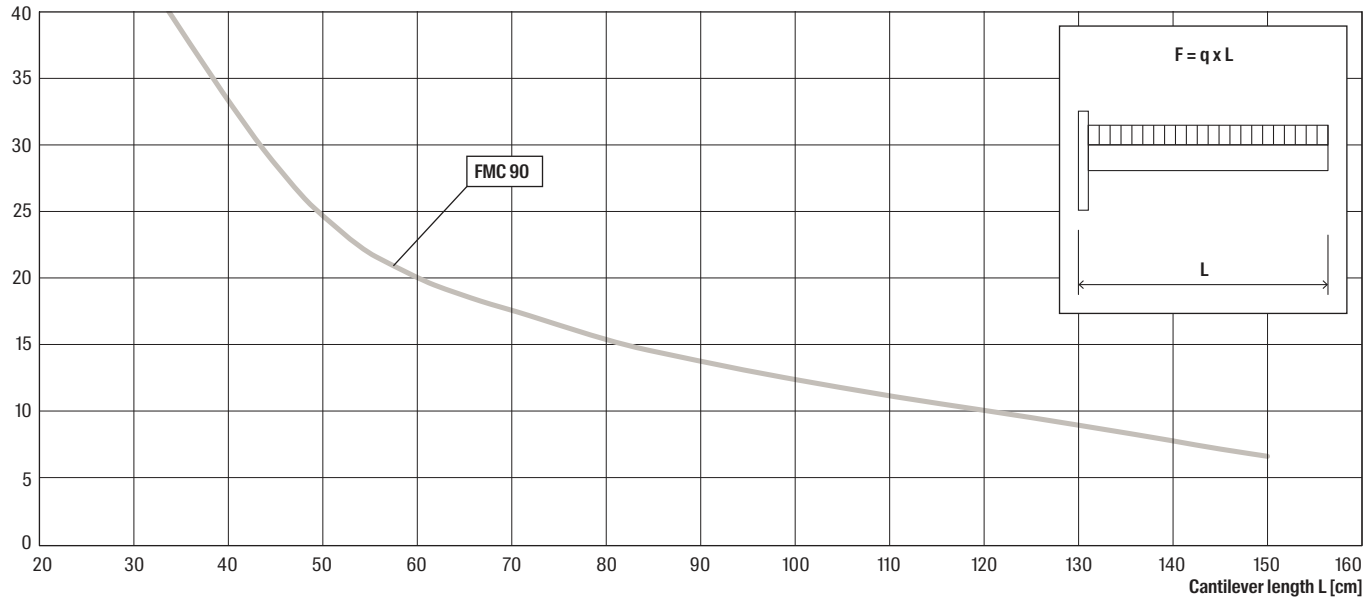
F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/150) is decisive

Load case 3

F [kN]**



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with $\gamma_L=1,4$ and $\gamma_{M0}=1,0$. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/150) is decisive

End cap FMEC

The clip-on and accurately shaped end for the FMP mounting profile





U-rack construction with flat fittings

Applications

- Closing of profile end

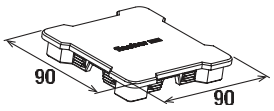
Advantages

- Suitable for FMP 90, 120 and 160 mounting profiles and cantilever arms FMC.

Properties

- Material: PP Polypropylen, colour black

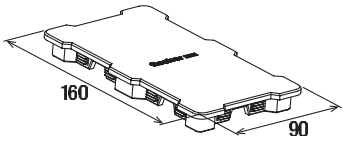
Technical data



FMEC 90



FMEC 120



FMEC 160

Item	Item No.	For profile	Sales unit [pcs]
FMEC 90	**547806**	FMP 90	100
FMEC 120	**547807**	FMP 120	60
FMEC 160	**547808**	FMP 160	40

Hammer-head push connector FMHB

Universal connector for FMP massive profile and construction elements





U-rack construction

Applications

- Connection of construction elements and assembly profiles by means of plug-in connectors
- Usable for dynamic loads with the security nut FMSB MU M12
- Install the FMSB MU M12 hand-tight + 1/4 turn

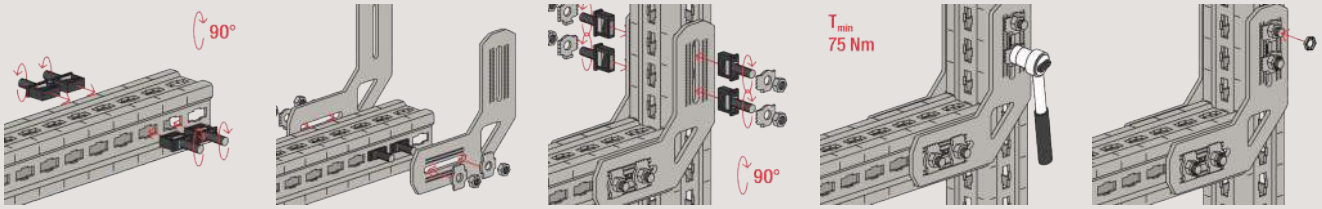
Advantages

- The unique hammer-head push connector allows easy modification of the construction and thus ensures fast design changes.
- The special design of the hammer-head push connector allows simple retrofitting to existing structures.
- The flexible hammer-head push connector in combination with the solid construction elements allows easy adjustment during installation and makes the alignment of a pipeline route simple and quick.
- The FMHB hammer-head push connector as a prefabricated connecting element enables safe and error-free assembly of the construction elements.

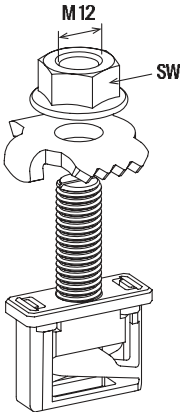
Properties

- Material: Steel S235JR (Material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material for hammer-head bolt: Steel 8.8, similar to 1.0503 C45
- Material plasic cage: polypropylene PP, item number 11400, Color black
- Material safety nut: GB/T 805-1988 according DIN 7967

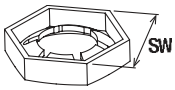
Installation FMHB



Technical data



FMHB



FMSB MU M12

Item	Item No.	Thread Ø x length [mm]	Width across nut SW [mm]	Sales unit [pcs]
FMHB	**547809**	M 12	18	100
FMSB MU M12	**547810**	M 12	19	100

Connecting element FMCE-L

Tailor-made fixing to massive profiles FMP





Profil traverse to steel structure

Applications

- Fixing of pipes using threaded rods or set screws

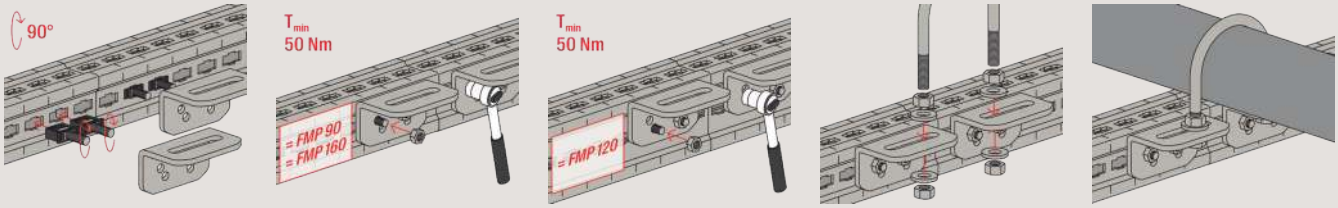
Advantages

- The L-shaped connecting elements allow pipe clamps, U-bolts and elements with base plates to be easily connected.
- The L-connector FMCE-L can easily be attached to all 3 sizes of the FMP mounting profile after the FMHB hammer-head connector has been pre-positioned.

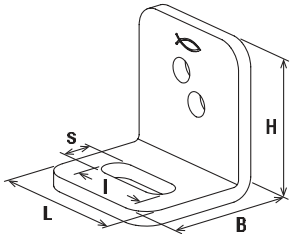
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

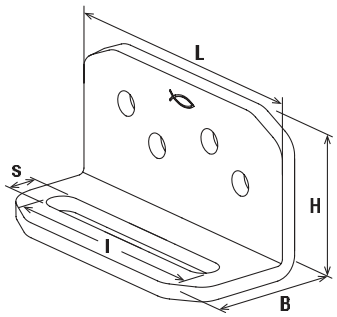
Installation FMCE-L short



Technical data



FMCE-L short



FMCE-L

Item	Item No.	Slot l x s [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Sales unit [pcs]
FMCE-L short M12	**554239**	50 x 13,5	80	71	84	20
FMCE-L short M16	**554240**	50 x 17,5	80	71	84	20
FMCE-L short M20	**554241**	50 x 22	80	71	84	20
FMCE-L M12	**547818**	100 x 13,5	130	71	84	10
FMCE-L M16	**547819**	100 x 17,5	130	71	84	10
FMCE-L M20	**547820**	100 x 22	130	71	84	10

Connecting element FMCE

Tailor-made fixing to massive profiles FMP





Pipe clamp connection to profile

Applications

- Fixing of pipes using threaded rods

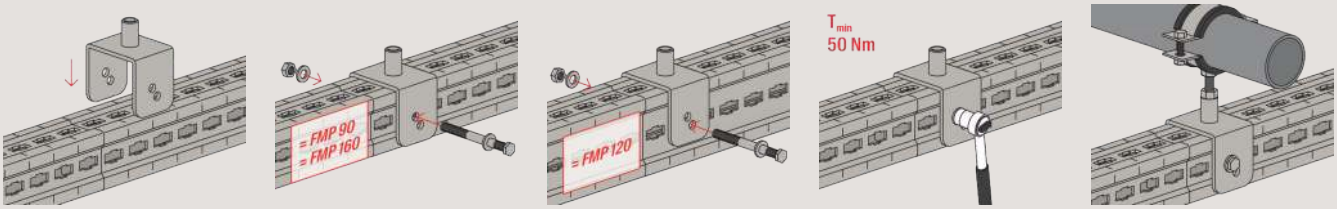
Advantages

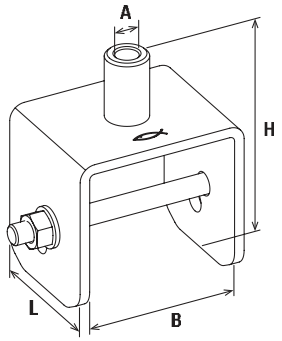
- The U- shaped connecting elements allow an easy connection of pipe clamps.
- Supplying the connecting element as a set with the necessary screw, hexagonal nut and washer ensures error-free installation.

Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMCE





FMCE

Item	Item No.	Thread M	Length L [mm]	Width B [mm]	Height H [mm]	Sales unit [pcs]
FMCE M12/M16	**547815**	M12 / M16	80	91	134	10
FMCE 1/2"	**547816**	1/2"	80	91	134	10
FMCE 3/4"	**547817**	3/4"	80	91	134	10

Base plate FMSF BP

Optimum connection and fastening saddle flange and cantilever to steel- and concrete beams





Connection to steel support

Applications

- For solid connections between the massive profile and building structures

Advantages

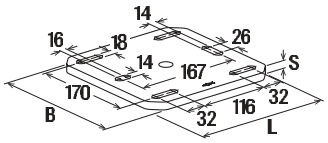
- The clever design, and size graduations of the FMSF BP base plates, offer optimum fixing ensuring and secure hold.
- The FMSF BP base plate is identical in construction to the base plates of the FMSF saddle flanges and enables simple connection by means of threaded rods for secure mounting on steel beams.

Properties

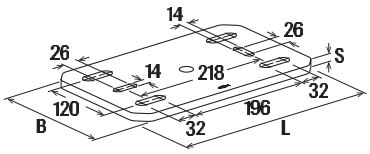
- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

4e

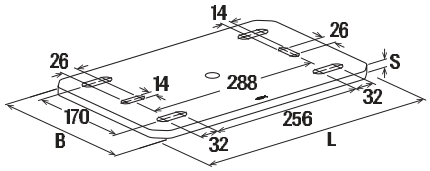
Technical data



FMSF BP S



FMSF BP M



FMSF BP L

Item	Item No.	For steel beam width [mm]	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FMSF BP S	**547829**	100 - 160	230	230	12	1
FMSF BP M	**547830**	180 - 240	330	200	12	1
FMSF BP L	**547831**	240 - 300	400	250	12	1

Saddle flange FMSF

Optimum connection and fastening of FMP massive profiles





U-rack at profile traverse

Applications

- For solid connections between the channel and building structures

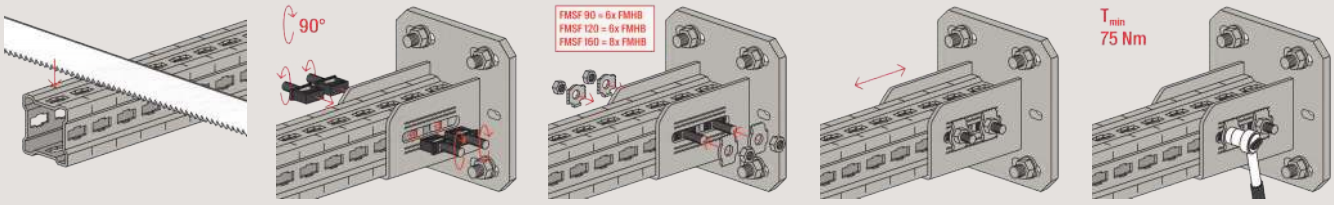
Advantages

- The design of the FMSF saddle flange enables fast and secure mounting by fitting inside the profile.
- The clever design and dimensions of the base plate of the FMSF saddle flange offers the optimum load level depending on the construction and ensures a secure hold.

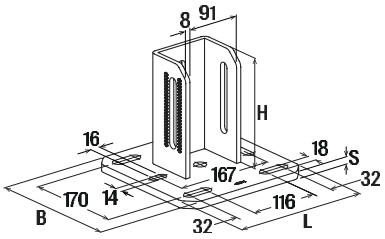
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

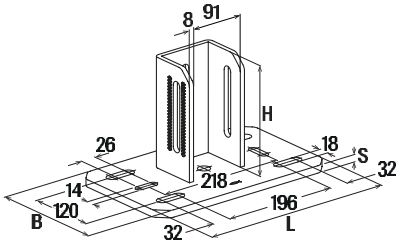
Installation FMSF



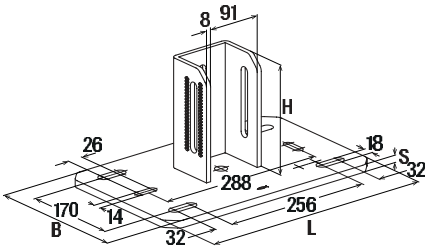
Technical data



FMSF 90S



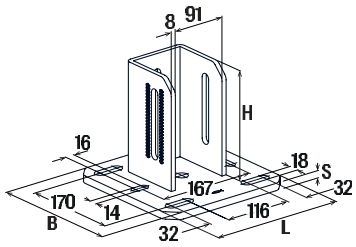
FMSF 90M



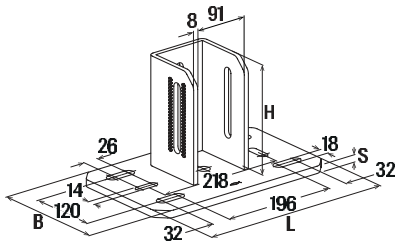
FMSF 90L

Item	Item No.	For profile	For steel beam width [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMSF 90S	**547821**	FMP 90	100 - 160	230	230	180	12	1
FMSF 90M	**547822**	FMP 90	180 - 240	330	200	180	12	1
FMSF 90L	**547823**	FMP 90	240 - 300	400	250	180	12	1

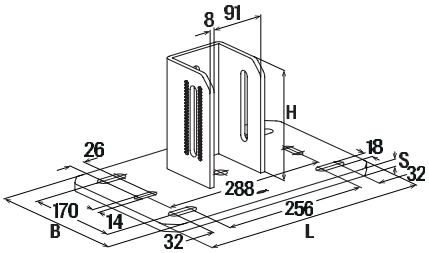
Technical data



FMSF 120S



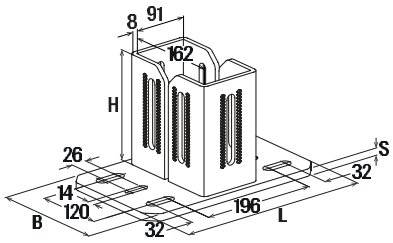
FMSF 120M



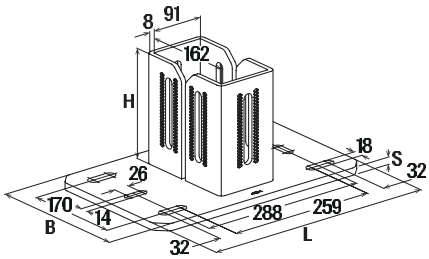
FMSF 120L

Item	Item No.	For profile	For steel beam width [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMSF 120S	**547824**	FMP 120	100 - 160	230	230	180	12	1
FMSF 120M	**547825**	FMP 120	180 - 240	330	200	180	12	1
FMSF 120L	**547826**	FMP 120	240 - 300	400	250	180	12	1

Technical data



FMSF 160M



FMSF 160L

Item	Item No.	For profile	For steel beam width [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMSF 160M	**547827**	FMP 160	180 - 240	330	200	180	12	1
FMSF 160L	**547828**	FMP 160	240 - 300	400	250	180	12	1

Variable bracket FMVB

Variable connection of FMP massive profiles to each other and to the substrate





Supported cantilever

4e

Applications

- Constructions of FMP massive profiles at an angle of 0° to 180°
- Mounting elements for the design of supporting structures with the FMP massive profiles
- Element for the stable construction of connections between channels and building structures

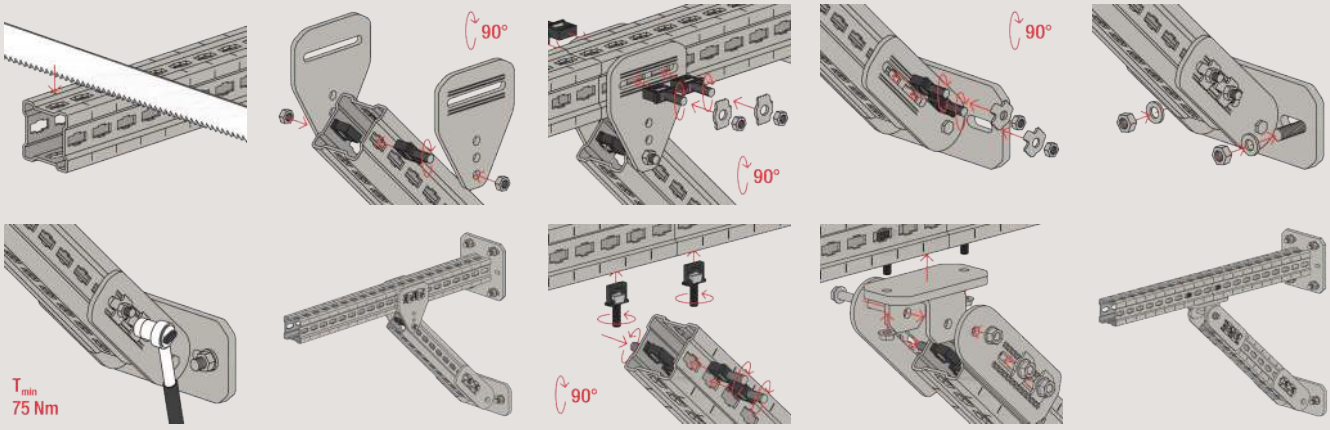
Advantages

- The variable construction elements allow stiffening or support of the profile construction at any angle and are therefore suited for versatile use.
- The stable design and the size graduation of the FMVB base plates offer the optimum fixing option depending on the construction and ensure a secure hold.
- The FMVB variable bracket with slot and grating to accommodate the toothed plate of the FMHB hammer-head push connector allows optimum adjustment of the supported profile for simple and safe installation.
- Supplying the FMVB articles as a set with the necessary screw, hexagonal nut and washer ensures error-free installation.

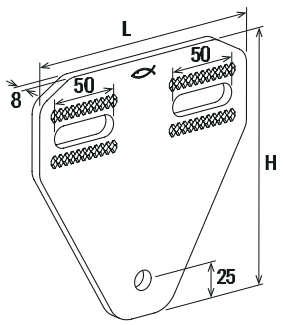
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

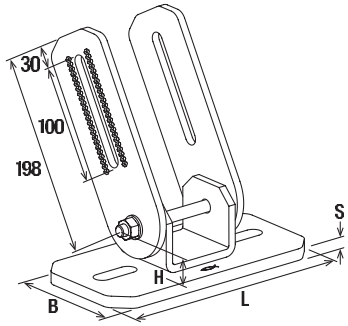
Installation FMVB



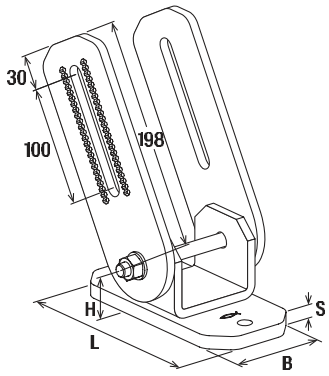
Technical data



FMVB-P



FMVB BP



FMVB-P II

Item	Item No.	Length L [mm]	For steel beam width [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMVB-P	**547832**	175	–	–	180	8	4
FMVB BP S	**547833**	250	100 - 160	125	40.5	12	2
FMVB BP M	**547834**	330	180 - 240	125	40.5	15	2
FMVB BP L	**547835**	400	240 - 300	125	40.5	15	2
FMVB-PII	**554242**	190	–	90	67	12	2

Beam clamp FMBC

Clamping bracket for fastening FMP massive profiles to steel beams





Profile fixing with beam clamp

Applications

- Attachment to the steel beam with two beam clamps on each side

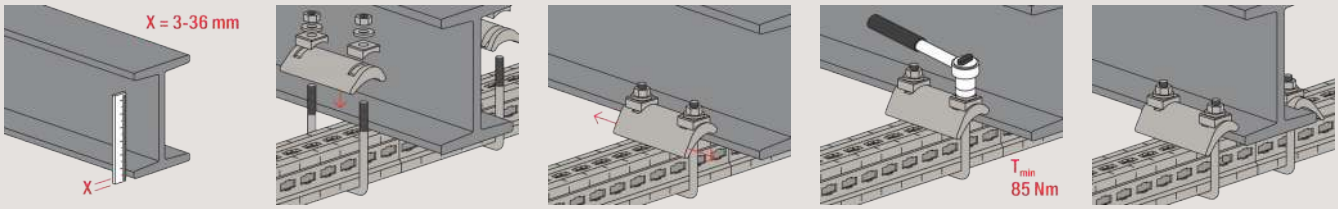
Advantages

- The design of the FMBC beam clamp makes it possible to fasten to steel beams without drilling or welding.
- The large clamping range of the FMBC beam clamp allows it to be attached to all common beam flanges.
- The design of the FMBC beam clamp in the 3 matching bracket heights for the FMP massive profiles ensures fast mounting and easy moving of the profiles for adjustment.

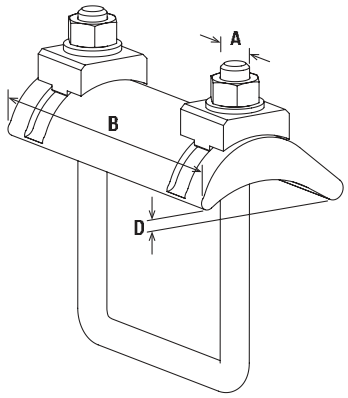
Properties

- Material: Cast iron with ductile iron (QT450-10 (material no. 5.3107) acc. to EN 1563
- Material U-bolt: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material hexagon nut: Steel resistance class 8

Installation FMBC



Technical data



FMBC

Item	Item No.	For profile	Thread A	Width B [mm]	Clamping range D [mm]	Sales unit [pcs]
FMBC 90	**547836**	FMP 90	M 12	140	3 - 36	4
FMBC 120	**547837**	FMP 120	M 12	140	3 - 36	4
FMBC 160	**547838**	FMP 160	M 12	140	3 - 36	4

Beam clamp FMBC M12 and M16

Efficient connection of base plates to steel beams without welding and drilling





Fixing with beam clamp

Applications

- Simple fixing by clamping the base plate to the steel beams
- For fixing FMSF S and FMSF BP S use FMBC M12. For FMS and FMSF BP M and L use FMBC M16.

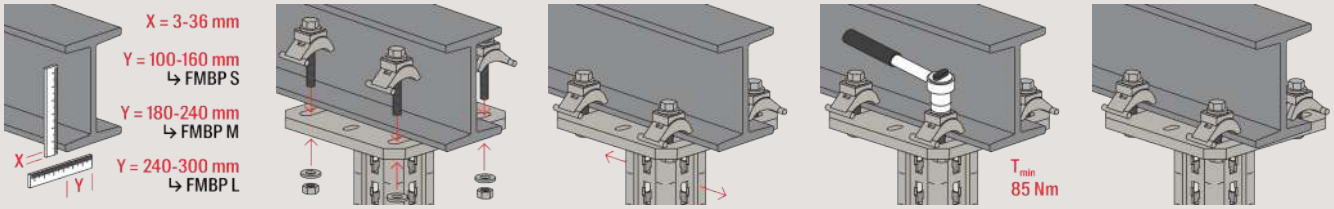
Advantages

- The design of the FMBC beam clamp M12 and M16 makes it possible to fasten to steel beams without drilling or welding.
- The large clamping range of the FMBC beam clamp M12 and M16 allows it to be attached to all common beam flanges.
- The design of the FMBC beam clamp M12 and M16 in the 3 matching bracket heights for the FMP massive profiles ensures fast mounting and easy moving of the profiles for adjustment.

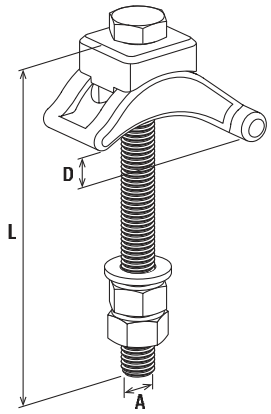
Properties

- Material: cast iron with ductile iron (QT450-10 (material no. 5.3107) acc. to EN 1563
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMBC M



Technical data



FMBC-M

Item	Item No.	Thread A	Length L [mm]	Clamping range D [mm]	Sales unit [pcs]
FMBC M12	**547839**	M 12	130	3 - 36	16
FMBC M16	**547840**	M 16	150	3 - 36	12

Flat fitting FMFF 90°

Stable right-angled connection of FMP massive profiles to each other





U-rack construction with flat fittings

Applications

- Element for stable right-angled connection of massive profiles with 2 flat connectors on each

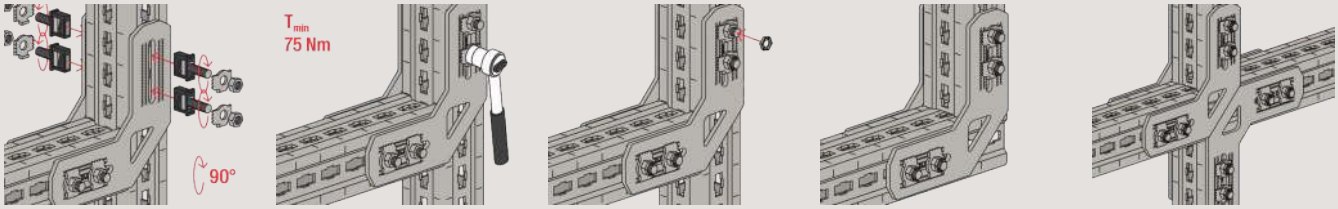
Vorteile

- The flat angle FMFF 90° is used in pairs and offers a high load capacity when connecting the FMP mounting profiles for the construction of massive applications.
- The design of the 90° flat angle FMFF with slotted holes and grating to accommodate the toothed plate of the FMHB hammer head connector allows optimum adjustment of the construction and simplifies the assembly process.

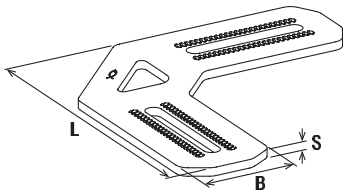
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

Installation FMFF



Technical data



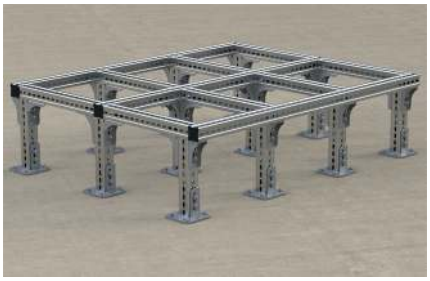
FMFF

Item	Item No.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FMFF 90°	**547841**	282	90	8	1

Mounting angle FMA 3 and FMA 4

The application-oriented connection of FMP massive profiles with each other





3D frame construction

Applications

- Connecting elements for multi-dimensional channel constructions

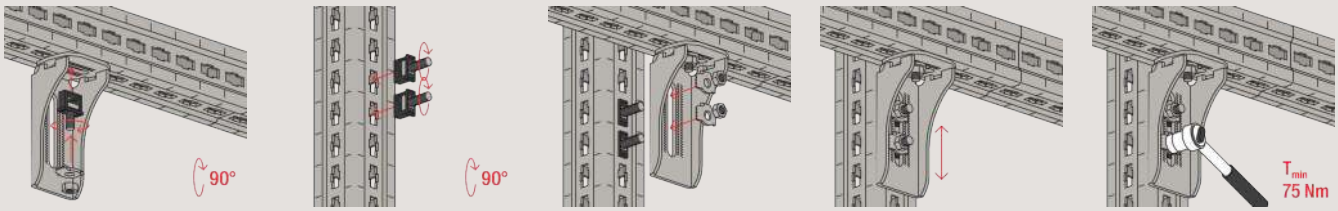
Advantages

- The different construction types of the mounting angle FMA 3 and FMA 4 enable an application oriented connection of the massive profiles FMP and make the construction possibilities even more flexible.
- The version of the mounting angle FMA with slotted holes and grating to accommodate the toothed plate of the hammer bolt connector FMHB enables the optimised adaption of the costruction and simplifies the mounting process.

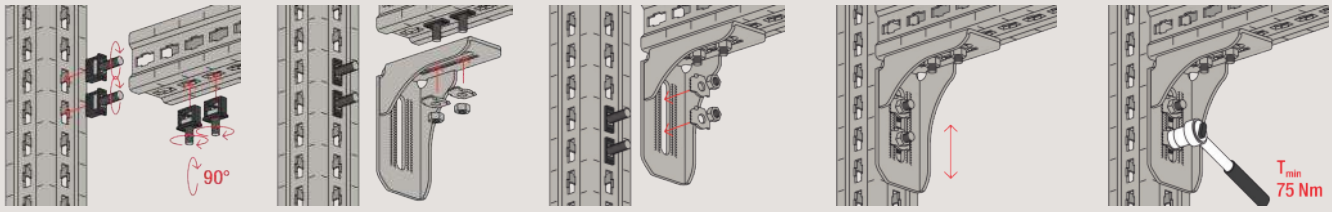
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

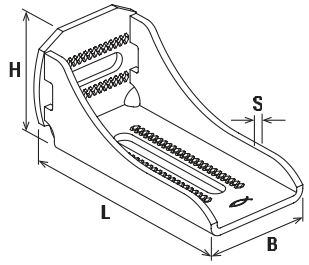
Installation FMA 3



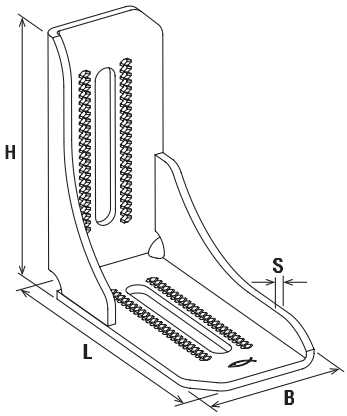
Installation FMA 4



Technical data



FMA 3



FMA 4

Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMA 3	**547842**	190	90	90	6	10
FMA 4	**547843**	190	90	190	6	8

Mounting angle FMA

The application-oriented connection of FMP massive profiles to built up racks





Frame constructions

Applications

- Mounting elements for the design of supporting structures with the FMP massive profiles

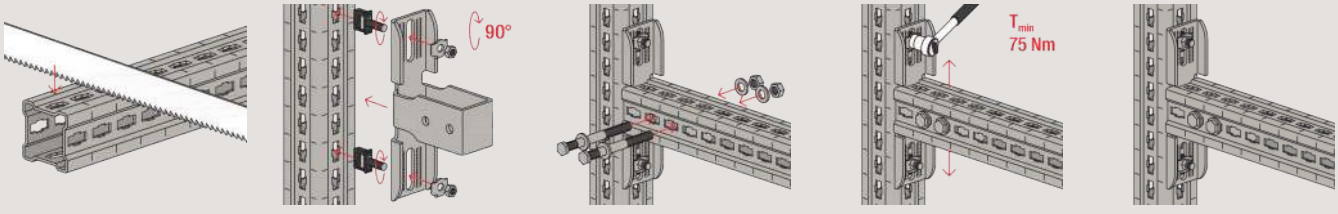
Advantages

- The different construction heights of the mounting angle FMA enable the application-oriented connection according to the 3 different construction heights of the massive profiles FMP.
- The version of the mounting angle FMA with slotted holes and grating to accommodate the toothed plate of the hammer bolt connector FMHB enables the optimized adaption of the costruction and simplifies the mounting process.
- Supplying the FMA articles as a set with the necessary screws, hexagonal nuts and washers ensures error-free installation.

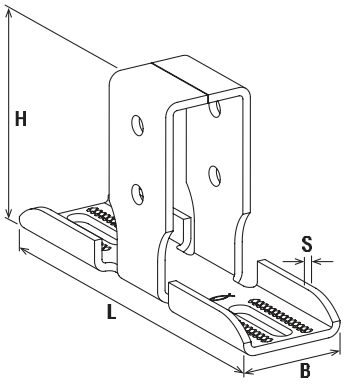
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMA



Technical data



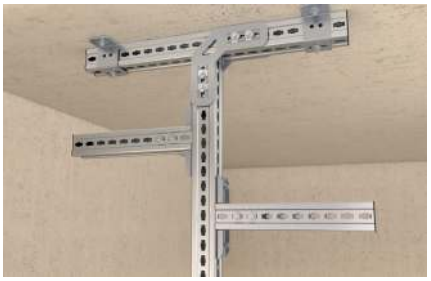
FMA 90

Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMA 90	**547844**	277.5	77.5	148	6	4
FMA 120	**547845**	277.5	77.5	148	6	4
FMA 160	**547846**	350	77.5	148	6	4

Connecting element FMUF

Simple bracket connection of FMP massive profiles to each other and to the substrate





Pendant cantilever fixed to travere profil

Applications

- Stable construction of connections between channels and building structures for the push-through system
- Connecting elements for multi-dimensional channel constructions
- For a secure transverse force connection, 2 M12*130 bolts with M12 nuts can be used alternative, which are pushed through the round openings, whereby each bolt is guided through the adjacent openings.

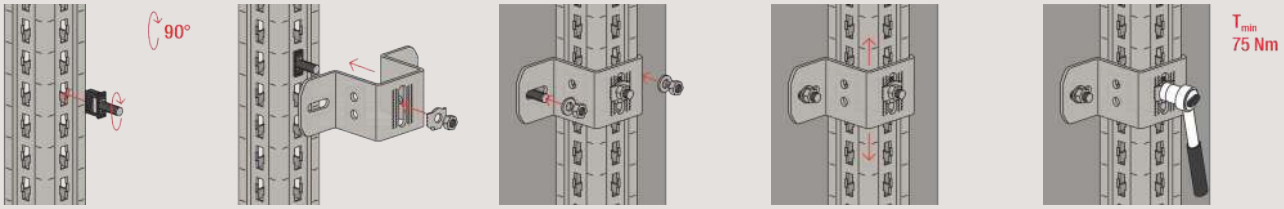
Advantages

- The design of the FMUF connecting element ensures that the FMP massive profiles can be fastened to each other and to the substrate and makes it easy to fasten.
- The version of the FMUF connecting element with slot and grating to accommodate the toothed plate of the FMHB hammer-head push connector allows optimum adjustment of the supported profile for simple and safe installation.

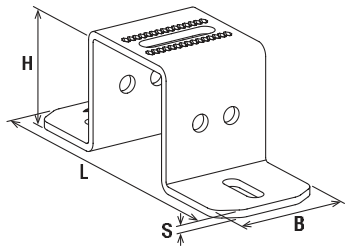
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material hexagon nut: Steel resistance class 8

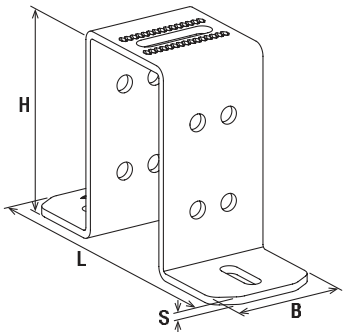
Installation FMUF



Technical data



FMUF 90/120



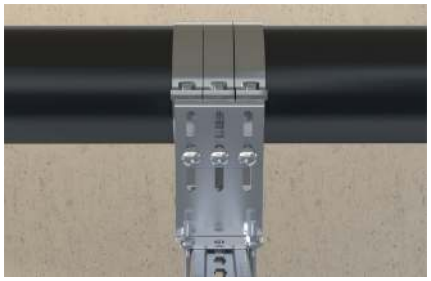
FMUF 160

Item	Item No.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMUF 90	**547847**	250	90	91	6	8
FMUF 120	**547848**	250	90	121	6	8
FMUF 160	**547849**	250	90	161	6	8

Fix point U-bolt FMFS UB

Element for fixing FMPS pipe shoes and FMFS fix point saddles





Fix-point construction with saddle

Applications

- Fastening the fix point and sliding elements onto the massive profile FMP

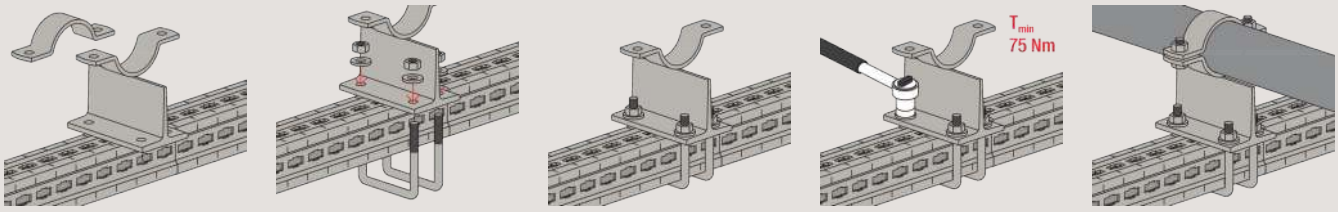
Advantages

- The FMFS UB fix point U-bolt is the precisely fitting element for quick and easy fastening of fix points or sliding elements to the massive profile FMP.
- The FMFS UB fix point U-bolt is available in 3 sizes and is the perfect fit for fastening for the 3 sizes of massive profiles FMP.

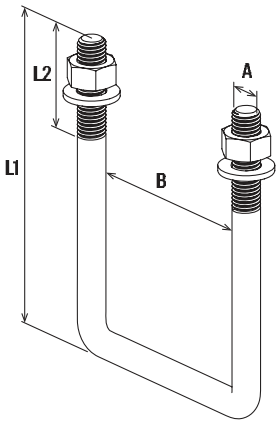
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material nut: steel grade 8.8

Installation FMFS UB



Technical data



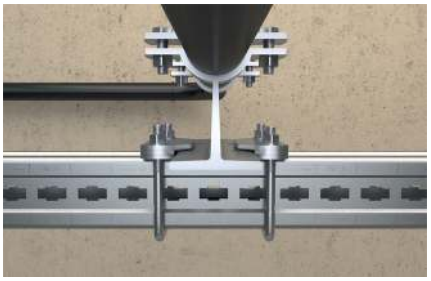
FMFS UB

Item	Item No.	Thread A	Length L_1 [mm]	Length L_2 [mm]	Width B [mm]	Sales unit [pcs]
FMFS UB 90	**547850**	M 12	130	45	91	50
FMFS UB 120	**547851**	M 12	160	45	91	40
FMFS UB 160	**547852**	M 12	200	45	91	30

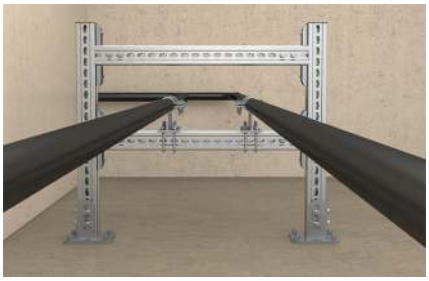
Pipe shoe sliding element FMFS

Element for fixing FMPS pipe shoes in case of thermal expansion





Slide bearing with pipe shoe



Frame construction

4e

Applications

- Fixation of pipelines for thermal expansions

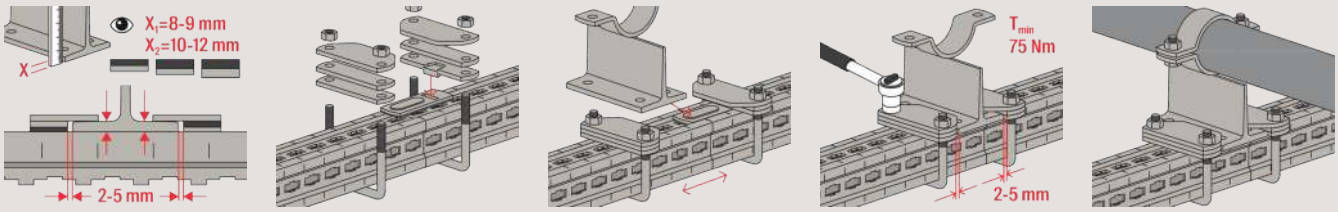
Advantages

- The sliding element FMFS can be attached to the pipe shoes FMPS to provide axial guidance and lifting for safe guidance in the moment of pipe expansion.
- The sliding element FMFS fits to all base plates of the pipe shoes FMPS due to the variably applicable distance plates and is easy to install.

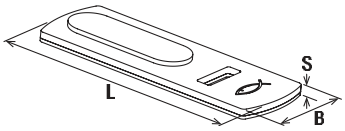
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461

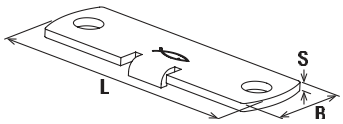
Installation FMFS



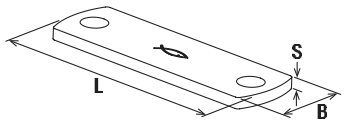
Technical data



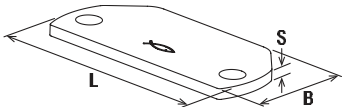
FMFS-SP



FMFS-SH



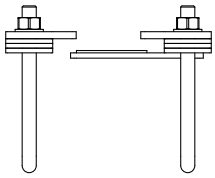
FMFS-DP



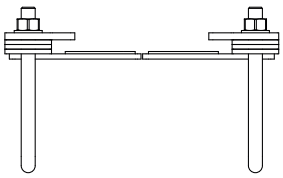
FMFS-LL

Item	Item No.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FMFS SP	**547853**	113	40	4.5	10
FMFS SH	**547854**	130	35	4	10
FMFS DP4	**547855**	130	35	4	20
FMFS DP6	**547856**	130	35	6	20
FMFS LL	**547857**	130	60	6	20

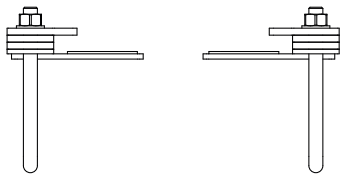
Technical information



BG 1



BG 2



BG 3

Item	Item No.	Thickness S [mm]	Required number of sliding elements - item per pipe shoe FMPS BG 1 X 1 = 8 - 9 mm [pcs]	BG 2 X 1 = 8 - 9 mm [pcs]	BG 3 X 2 = 10 - 12 mm [pcs]
FMFS SP	**547853**	4,5	1	2	2
FMFS SH	**547854**	4	1	2	2
FMFS DP4	**547855**	4	5	4	-
FMFS DP6	**547856**	6	-	-	4
FMFS LL	**547857**	6	2	2	2

In addition, 2 FMFS UB fixed point brackets are required in each case - size matching the FMP profile.
The kind of assembly group is listed in the tables for the pipe shoes FMPS, see pages FMPS.

Fix-point-saddle FMFS S and M

Supporting element for fixing in case of thermal expansion





Fix-point construction to profile

Applications

- Fixation of pipelines for thermal expansions
- To use with the pipe clamp FMFSC as fix point. Up to 3 pipe clamps in row possible.

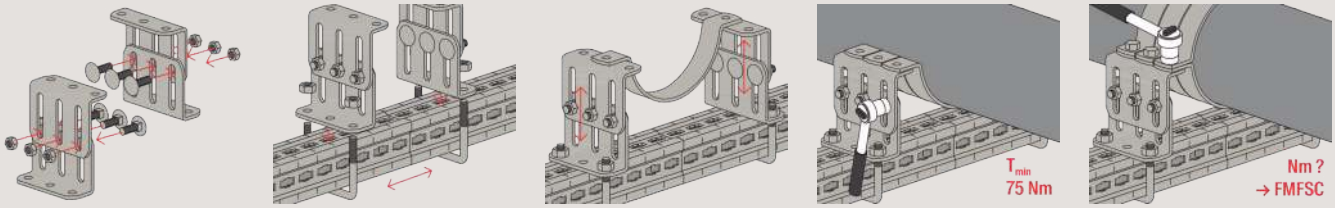
Advantages

- The modular design of the fixpoint saddle in 2 heights allows for optimum adaptation to the load level and pipe dimensions.
- The fixpoint saddle allows for good and simple height and inclination adjustment due to the slotted hole connections.

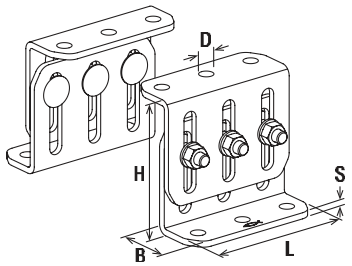
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Material hexagon nut: steel resistance class 8
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMFS



Technical data



FMFS

Item	Item No.	Use with FMFSC pipe clamps	Length L [mm]	Width B [mm]	Total height H [mm]	Hole-Ø D [mm]	Thickness S [mm]	Sales unit [pcs]
FMFS S	**547860**	≤ DN 80	140	54	115 - 175	14	6	2
FMFS M	**547861**	≥ DN100	140	54	175 - 240	17	6	2

Pipe shoe FMPS

Prefabricated elements for fixing of pipes and massive profiles FMP





Frame construction

Applications

- Fixing of heavy duty pipelines up to DN600
- Can be used as sliding point
- Can be used as fix point

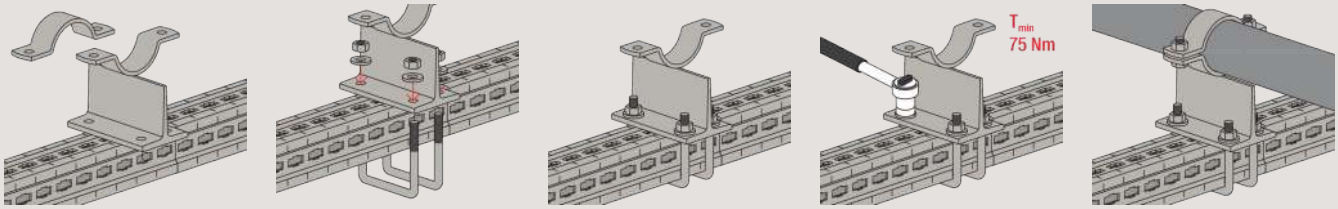
Advantages

- The designs of the pipe shoes with one or two pipe clamps in standard and solid version allows for fastening of heavy duty pipes.
- Due to the additional perforation, the pipe shoes FMPS can be used as fix points to attach with the FMFS UB fix point U-bolt to the FMP massive profile.
- The pipe shoes FMPS can be used as sliding elements by attaching the pipe shoes-sliding bearing to the FMP massive profile.

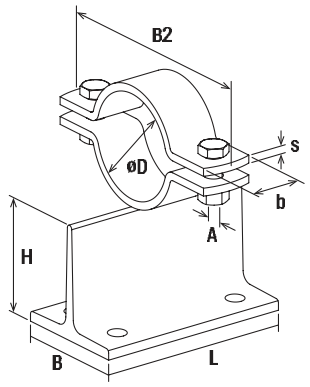
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMPS



Technical data

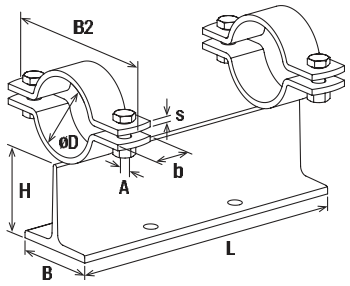


FMPS 1/1

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Assembly group BG	Sales unit [pcs]
FMPS 25 1/1-80	**547862** 1)	1"	34	150	90	87.5	102	30 x 5	M 10	1	1
FMPS 40 1/1-80	**547863** 1)	1 1/2"	49	150	90	87.5	118	30 x 5	M 10	1	1
FMPS 50 1/1-80	**547864** 1)	2"	61	150	90	87.5	144	40 x 6	M 12	1	1
FMPS 65 1/1-80	**547865** 1)	2 1/2"	77	150	90	87.5	158	40 x 6	M 12	1	1
FMPS 80 1/1-80	**547866** 1)	3"	89	150	90	87.5	172	40 x 6	M 12	1	1
FMPS 25 1/1-150	**548410** 1)	1"	34	150	150	150	102	30 x 5	M 10	2	1
FMPS 40 1/1-150	**547867** 1)	1 1/2"	49	150	150	150	118	30 x 5	M 10	2	1
FMPS 50 1/1-150	**547868** 1)	2"	61	150	150	150	144	40 x 6	M 12	2	1
FMPS 65 1/1-150	**547869** 1)	2 1/2"	77	150	150	150	158	40 x 6	M 12	2	1
FMPS 80 1/1-150	**547870** 1)	3"	89	150	150	150	172	40 x 6	M 12	2	1
FMPS 100 1/1-150	**547871** 1)	4"	115	150	150	150	220	50 x 8	M 16	2	1
FMPS 125 1/1-150	**547872** 1)	5"	140	150	150	150	252	50 x 8	M 16	2	1
FMPS 150 1/1-150	**547873** 1)	6"	169	150	150	150	280	50 x 8	M 16	2	1
FMPS 200 1/1-150	**547874** 1)	8"	220	150	150	150	332	50 x 8	M 16	2	1

1) Delivery on request.

Technical data

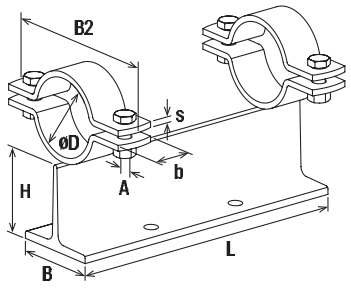


FMPS 1/2

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Assembly group BG	Sales unit [pcs]
FMPS 25 1/2-80	**547875** 1)	1"	34	300	90	87.5	102	30 x 5	M 10	1	1
FMPS 40 1/2-80	**547877** 1)	1 1/2"	49	300	90	87.5	118	30 x 5	M 10	1	1
FMPS 50 1/2-80	**547879** 1)	2"	61	300	90	87.5	144	40 x 6	M 12	1	1
FMPS 65 1/2-80	**547881** 1)	2 1/2"	77	300	90	87.5	158	40 x 6	M 12	1	1
FMPS 80 1/2-80	**547883** 1)	3"	89	300	90	87.5	172	40 x 6	M 12	1	1

1) Delivery on request.

Technical data

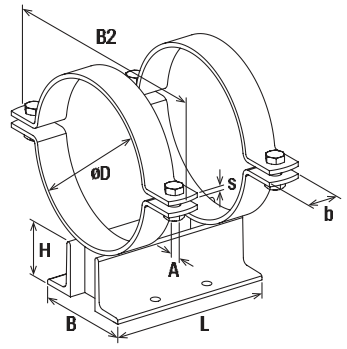


FMPS 1/2

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Assembly group BG	Sales unit [pcs]
FMPS 100 1/2-110	547885	4"	115	300	125	125	220	50 x 8	M 16	1	1
FMPS 125 1/2-110	547887	5"	140	300	125	125	252	50 x 8	M 16	1	1
FMPS 150 1/2-110	547889	6"	169	300	125	125	280	50 x 8	M 16	1	1
FMPS 200 1/2-110	547891	8"	220	300	125	125	332	50 x 8	M 16	1	1
FMPS 25 1/2-150	547876 [1]	1"	34	300	150	150	102	30 x 5	M 10	2	1
FMPS 40 1/2-150	547878 [1]	1 1/2"	49	300	150	150	118	30 x 5	M 10	2	1
FMPS 50 1/2-150	547880 [1]	2"	61	300	150	150	144	40 x 6	M 12	2	1
FMPS 65 1/2-150	547882 [1]	2 1/2"	77	300	150	150	158	40 x 6	M 12	2	1
FMPS 80 1/2-150	547884 [1]	3"	89	300	150	150	172	40 x 6	M 12	2	1
FMPS 100 1/2-150	547886 [1]	4"	115	300	150	150	220	50 x 8	M 16	2	1
FMPS 125 1/2-150	547888 [1]	5"	140	300	150	150	252	50 x 8	M 16	2	1
FMPS 150 1/2-150	547890 [1]	6"	169	300	150	150	280	50 x 8	M 16	2	1
FMPS 200 1/2-150	547892	8"	220	300	150	150	332	50 x 8	M 16	2	1

1) Delivery on request.

Technical data

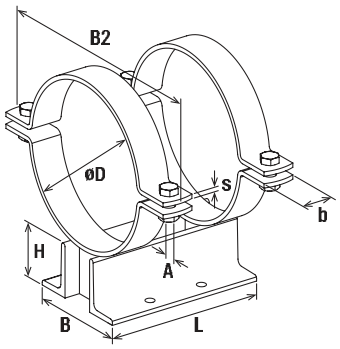


FMPS 2/2

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Assembly group BG	Sales unit [pcs]
FMPS 250 2/2-110	547893	10"	273	300	200	100	396	50 x 8	M 16	3	1
FMPS 300 2/2-110	547894	12"	324	300	200	100	458	60 x 8	M 20	3	1
FMPS 350 2/2-110	547895	14"	356	300	200	100	504	60 x 8	M 20	3	1
FMPS 400 2/2-110	547896	16"	407	300	200	100	582	70 x 10	M 24	3	1
FMPS 500 2/2-110	547897	20"	508	300	250	100	672	70 x 10	M 24	3	1
FMPS 600 2/2-110	547898	24"	610	300	250	100	814	90 x 15	M 30	3	1
FMPS 250 2/2-150	547899 [1]	10"	273	300	200	140	396	50 x 8	M 16	3	1

1) Delivery on request.

Technical data



FMPS 2/2

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Assembly group BG	Sales unit [pcs]
FMPS 300 2/2-150	**547900** 1)	12"	324	300	200	140	458	60 x 8	M 20	3	1
FMPS 350 2/2-150	**547901** 1)	14"	356	300	200	140	504	60 x 8	M 20	3	1
FMPS 400 2/2-150	**547902** 1)	16"	407	300	200	140	582	70 x 10	M 24	3	1
FMPS 500 2/2-150	**547903** 1)	20"	508	300	250	140	672	70 x 10	M 24	3	1
FMPS 600 2/2-150	**547904** 1)	24"	610	300	250	140	814	90 x 15	M 30	3	1

1) Delivery on request.

Massive pipe clamp FMFSC

Element for stable fixing of pipes and massive profiles FMP





Fix-point clamp construction

Applications

- Fixing of heavy duty pipelines up to DN250
- Can be used as a fixed point in combination with the FMFS saddle

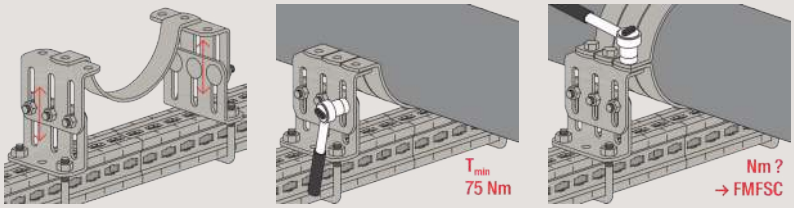
Advantages

- The fischer solid pipe clamps FMFSC without rubber insert for fastening pipelines up to DN 250 can reliably fix heavy duty pipelines and can be used in many applications.

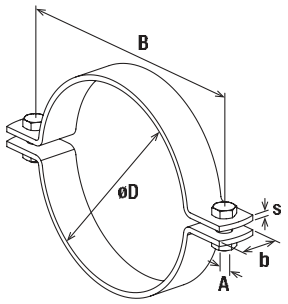
Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMFSC



Technical data



FMFSC

Item	Item No.	Size [inch]	Clamping range D [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Thread A	Tightening torque T_{inst} [Nm]	Sales unit [pcs]
FMFSC 25	**547905**	1"	34	72	30 x 5	M 10	30	1
FMFSC 32	**547906**	1 1/4"	43	82	30 x 5	M 10	30	1
FMFSC 40	**547907**	1 1/2"	49	88	30 x 5	M 10	30	1
FMFSC 50	**547909**	2"	61	108	40 x 6	M 12	50	1
FMFSC 65	**547910**	2 1/2"	77	122	40 x 6	M 12	50	1
FMFSC 80	**547911**	3"	89	136	40 x 6	M 12	50	1
FMFSC 100	**547913**	4"	115	172	50 x 8	M 16	100	1
FMFSC 125	**547915**	5"	140	204	50 x 8	M 16	100	1
FMFSC 150	**547918**	6"	169	232	50 x 8	M 16	100	1
FMFSC 200	**547919**	8"	220	284	50 x 8	M 16	100	1
FMFSC 250/50	**547921**	10"	273	348	50 x 8	M 16	100	1

Massive U-bolt FMPSU

Simple element for fixing of pipes and massive profile FMP





Profil traverse to steel structure

Applications

- Fixing of heavy duty pipelines up to DN250

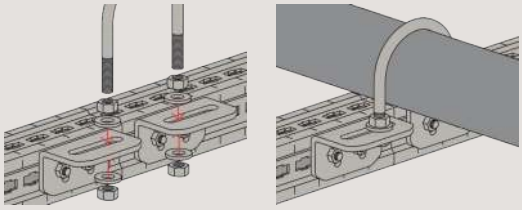
Advantages

- The FMPSU massive U-bolt for fixing heavy duty pipelines directly onto the FMP massive profile is the simplest type of connection for heavy duty pipelines.

Properties

- Material: Steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Galvanisation: Hot-dip galvanised, min. 55 µm, acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMPSU

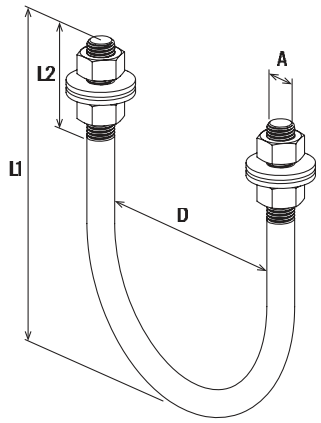


See also

Connecting element FMCE-L



Technical data



FMPSU

Item	Item No.	Size [inch]	Clamping range D [mm]	Length L_1 [mm]	Length L_2 [mm]	Thread A	Sales unit [pcs]
FMPSU 25	**547929**	1"	38	70	40	M 10	50
FMPSU 32	**547930**	1 1/4"	46	76	50	M 10	50
FMPSU 40	**547931**	1 1/2"	52	86	50	M 10	50
FMPSU 50	**547933**	2"	64	109	50	M 12	50
FMPSU 65	**547934**	2 1/2"	82	125	50	M 12	50
FMPSU 80	**547935**	3"	94	138	50	M 12	50
FMPSU 100	**547937**	4"	120	171	60	M 16	25
FMPSU 125	**547939**	5"	148	191	60	M 16	20
FMPSU 150	**547941**	6"	176	217	60	M 16	15
FMPSU 200	**547942**	8"	228	283	70	M 20	8
FMPSU 250	**547943**	10"	282	334	70	M 20	8



4f

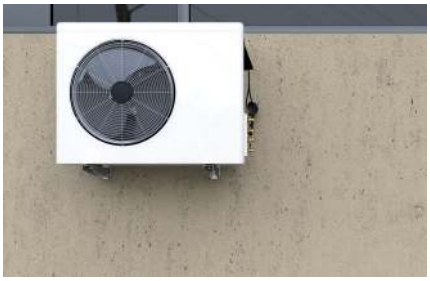
4f
Air conditioner fixings

Air conditioner fixing MCE	326	
Air conditioner fixing KSU	328	

Air conditioner fixing MCE

The complete kit for air conditioner fixing on walls





Airconditioner on the outer wall

Applications

- Universal fixing for air conditioners
- MCE Klima Klik - air conditioner fixing onto walls with max. fixing distance of 760 mm on the horizontal channel
- Please consider: load bearing capacity of the wall and the quality of the substrate

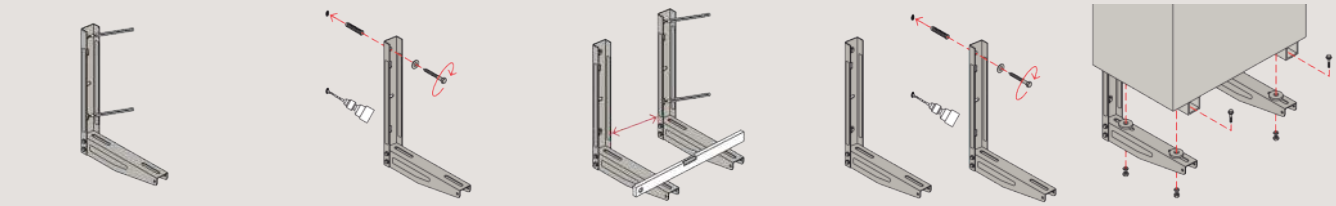
Advantages/benefits

- The complete kit including anti vibration dumper, SX plug and screws offers an optimised installation security.
- The brackets with quick snap (Klik) simplify and shorten the installation.
- The horizontal channel of the MCE Klima Klik allows a flexible adjustment of the brackets and simplifies the installation additionally.
- The MCE Klima Klik horizontal channel with snap-on bubble level enables the adjustment without additional tools.

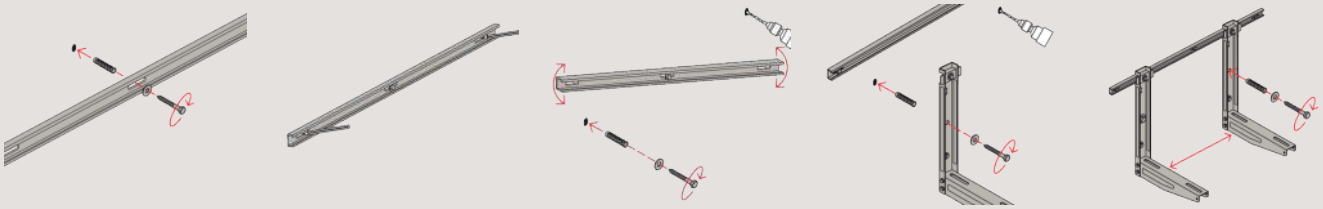
Properties

- Material: steel
- Coating: powder coating
- Colour: RAL 9002

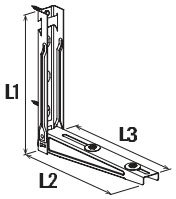
Installation MCE LP



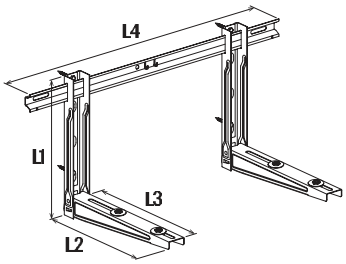
Installation MCE PT



Technical data



KLIMA EASY KLIK

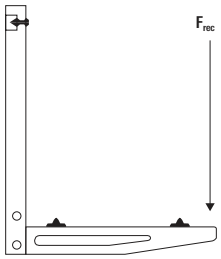


KLIMA KLIK

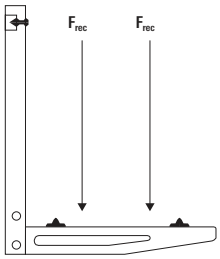
Item	Item No.	Length L_1 [mm]	Length L_2 [mm]	Length L_3 [mm]	Length L_4 [mm]	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Sales unit [pcs]
KLIMA EASY KLIK	**521760** 1)	400	420	380	–	1.0	1.0	1
KLIMA KLIK 420	**521761** 1)	400	420	380	780	1.0	1.0	1

1) The loads are valid for the use in pairs (two consoles).

Load case 1

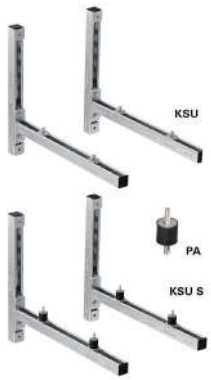


Load case 2



Air conditioner fixing KSU

The complete kit for fixing of Air conditioners, pumps or ventilators on walls





Air conditioning units

Applications

- Secure attachment of air conditioners, pumps and fans to walls with or without sound insulation element.

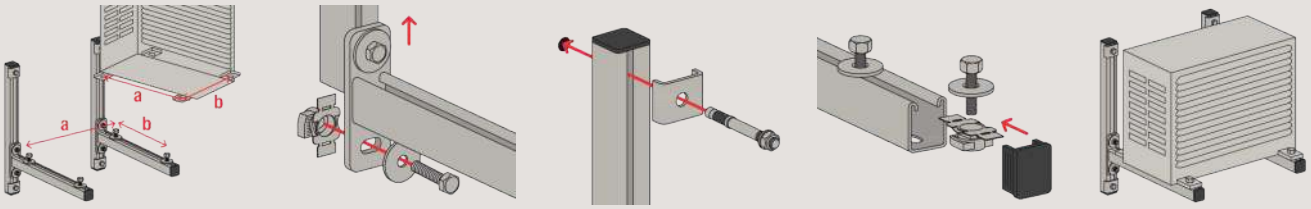
Advantages/benefits

- The KSU Sets are available in two different versions: KSU without noise reduction pieces and the KSU S with noise reduction pieces.
- The horizontal cantilevers with different lengths and the FCN Clix P8 sliding nut allow a flexible adjustment of the noise protection pieces to simplify the installation.
- The included FCN Clix P10 sliding nut with screws for the fixing of the cantilevers offers the possibility of an easy adjustment and a time saving installation.
- The KSU set consists of finished cut channels for instant use and avoids the accumulation of single pieces.

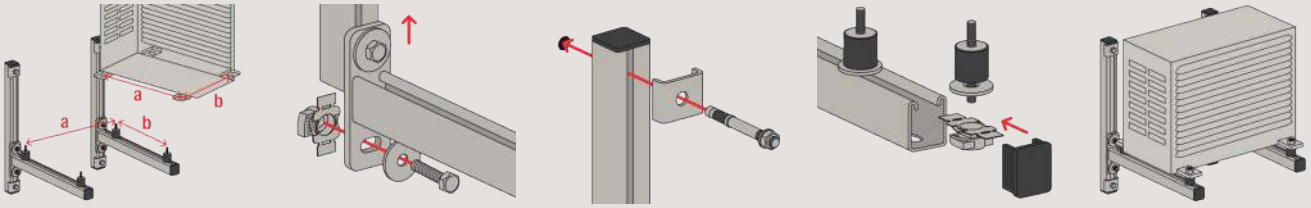
Properties

- Material channels: steel S250 GD+Z275 (material no. 1.0242) acc. to DIN EN 10346
- Material cantilever arms: steel S235 JR (material no.: 1.0037) acc. to DIN EN 10025
- Zinc plating channels: sendzimir-galvanised
- Zinc plating cantilever arms: electro zinc-plated

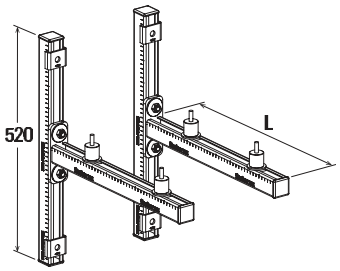
Installation KSU



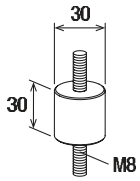
Installation KSU S



Technical data



KSU

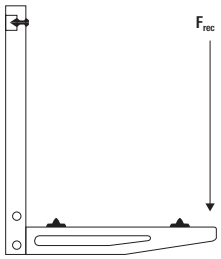


PA 30 x 30

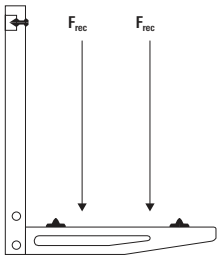
Item	Item No.	Length L [mm]	Construction with noise protection	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Sales unit [pcs]
KSU 450	**553733** 1)	450	–	1.5	1.5	1
KSU 500	**553734** 1)	500	–	1.5	1.5	1
KSU 600	**553735** 1)	600	–	1.5	1.5	1
KSU S 450	**553736** 1)	450	yes	1.5	1.5	1
KSU S 500	**553737** 1)	500	yes	1.5	1.5	1
KSU S 600	**553738** 1)	600	yes	1.5	1.5	1
PA 30 x 30	**512715**	–	–	–	–	4

1) The loads are valid for the use in pairs (two consoles).

Load case 1



Load case 2




FES-H-50/30-35

5
Cast-in Channel System

Content

Cast-in Channel FES-C	335	
Cast-in Channel FES-H	338	
Cast-in Channel FES-H-S	342	
Channel bolt FBC	344	
Channel bolt FBC-N	348	
Channel bolt FBC-S	350	

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

Basic Introduction



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.



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



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 paralleled two grooves
- Steel grade: 8.8



Serrated channel bolt

Cast-in Channel with serrated channel lips in combination with locking channel bolts with 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 staggered two grooves
- Steel grade: 8.8

Loads

Profile							
		Non-serrated channels					
		FES-H-I-52/34	FES-H-52/34	FES-C-54/33	FES-H-I-50/30	FES-H-50/30	FES-C-49/30
							
Type		Hot-rolled	Hot-rolled	Cold-formed	Hot-rolled	Hot-rolled	Cold-formed
Channel bolts		FBC-50/30 FBC-N-50/30	FBC-50/30 FBC-N-50/30	FBC-50/30	FBC-50/30 FBC-N-50/30	FBC-50/30 FBC-N-50/30	FBC-50/30
Thread		M10 - M20	M10 - M20	M10 - M20	M10 - M20	M10 - M20	M10 - M20
Design resistance for connection between anchor and channel	$N_{Rd,s,c}$ [kN]	39.1	30.6	30.6	22.2	17.2	17.2
Design resistance for connection between anchor and channel	$N_{Rd,s,c,y}$ [kN]	55.6	55.6	30.6	33.3	33.3	17.2
Design resistance for connection between anchor and channel	$N_{Rd,s,c,x}$ [kN]	23.4	18.3	–	13.3	10.3	–
Design resistance for lip failure of channel	$N_{Rd,s,l}$ [kN]	40.0	40.0	30.6	23.9	23.9	17.2
Design resistance for lip failure of channel	$N_{Rd,s,l,y}$ [kN]	55.6	55.6	30.6	33.3	33.3	17.2
Design resistance for lip failure of channel	$N_{Rd,s,l,x}$ [kN] (γ_{inst} included)	7.4	7.4	–	7.4	7.4	–
Dimension of anchor channel	b_{ch} [mm]	52.5	52.5	53.5	50	50	50
Dimension of anchor channel	h_{ch} [mm]	34	34	33	30	30	30
Dimension of anchor channel	d_{ch} [mm]	22.5	22.5	21.5	22.5	22.5	22
Dimension of anchor channel	f [mm]	11.5	11.5	7.5	8.1	8.1	7
Dimension of anchor channel	$h_{nom,min}$ [mm]	160	160	157.5	99	96.2	96.2
Dimension of anchor channel	$h_{ef,min}$ [mm]	155	155	155	94	94	94
Approvals/assessments		ETA	ETA	ETA	ETA	ETA	ETA

					Serrated channels	
FES-H-I-40/22	FES-H-40/22	FES-C-40/25	FES-C-38/17	FES-C-28/15	FES-H-S-38/23	FES-H-S-29/20
						
Hot-rolled	Hot-rolled	Cold-formed	Cold-formed	Cold-formed	Hot-rolled	Hot-rolled
FBC-40/22	FBC-40/22	FBC-40/22	FBC-38/17, FBC-S-38/23	FBC-28/15, FBC-S-29/20	FBC-S-38/23	FBC-S-29/20
M10 - M16	M10 - M16	M10 - M16	M10- M16	M8 - M12	M12 - M16	M12
19.4	11.1	11.1	10.0	5.0	16.8	11.2
22.2	22.2	11.1	10.0	5.0	16.8	11.2
–	–	–	–	–	10.1	6.7
21.1	21.1	11.1	10.0	5.0	16.8	11.2
22.2	22.2	11.1	10.0	5.0	16.8	11.2
–	–	–	–	–	12.9	10.4
40	40	40	38	28	38	30
23.5	23.5	25	17.3	15.5	23	20
18	18	18	18	12	18	14
6.2	6.2	6	3	2.3	6	5.2
84	92	81	78	46.5	99.2	79.2
79	90	79	76	45	97	77
ETA	ETA	ETA	ETA	ETA	ETA	ETA

Cast-in Channel FES-C

Cold-formed anchor channel. Strong and safe.





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.

5

Approval

ETA-18/0862, FES with special screw FBC

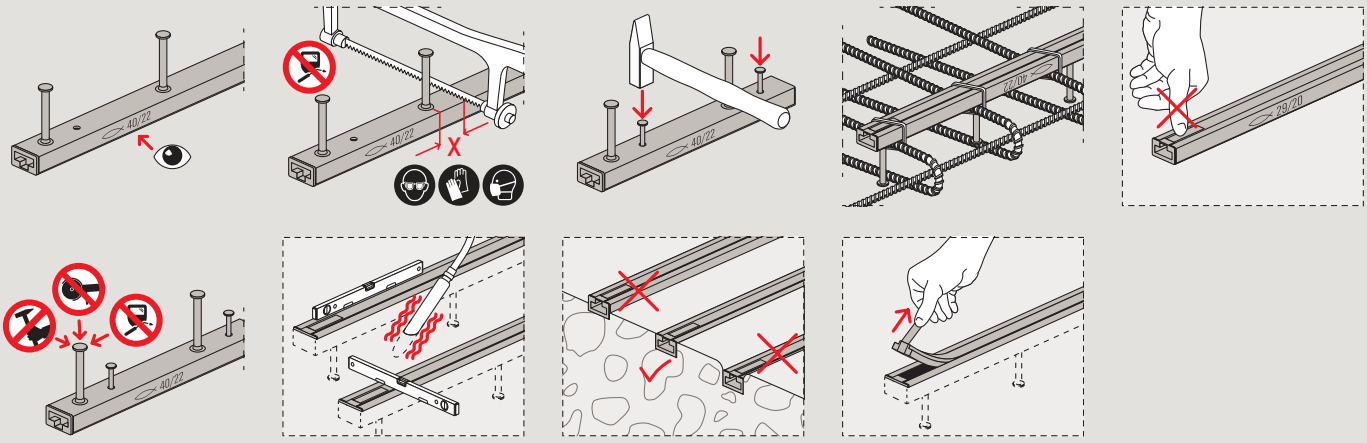
Building materials

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

Functioning

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

Installation FES



Technical data

Profile FES-C-28/15	Profile FES-C-38/17	Profile FES-C-40/25	Profile FES-C-49/30
			
FES-C	FES-C	FES-C	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	1
FES-C-28/15-150-HDG	552544	●	150	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-200-HDG	552545	●	200	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-250-HDG	552546	●	250	2	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-300-HDG	552547	●	300	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-350-HDG	552548	●	350	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-450-HDG	552549	●	450	3	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-500-HDG	552550	●	500	4	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
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	●	1,050	6	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-3050-HDG	552553	●	3,050	16	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-28/15-6070-HDG	552554	●	6,070	31	No	Round anchor	hot-dip galvanised	FBC-28/15	M8 - M12	1
FES-C-38/17-100-HDG	552555	●	100	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-150-HDG	552556	●	150	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-200-HDG	552557	●	200	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-250-HDG	552558	●	250	2	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-300-HDG	552559	●	300	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-350-HDG	552560	●	350	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-450-HDG	552561	●	450	3	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-500-HDG	552562	●	500	4	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
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	●	1,050	6	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-3050-HDG	552565	●	3,050	16	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-38/17-6070-HDG	552566	●	6,070	31	No	Round anchor	hot-dip galvanised	FBC-38/17	M10 - M12	1
FES-C-40/25-150-HDG	552567	●	150	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-200-HDG	552568	●	200	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-250-HDG	552569	●	250	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-300-HDG	552570	●	300	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-350-HDG	552571	●	350	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-400-HDG	552572	●	400	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-550-HDG	552573	●	550	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-800-HDG	552574	●	800	4	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-1050-HDG	552575	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-3050-HDG	552576	●	3,050	13	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-40/25-6070-HDG	552577	●	6,070	25	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-C-49/30-150-HDG	552578	●	150	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-200-HDG	552579	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-250-HDG	552580	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-300-HDG	552581	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-350-HDG	552582	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-400-HDG	552583	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-550-HDG	552584	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-800-HDG	552585	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-1050-HDG	552586	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-3050-HDG	552587	●	3,050	13	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-49/30-6070-HDG	552588	●	6,070	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	1
FES-C-54/33-200-HDG	**552590**	●	200	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-250-HDG	**552591**	●	250	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-300-HDG	**552592**	●	300	2	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-350-HDG	**552593**	●	350	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-400-HDG	**552594**	●	400	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-550-HDG	**552595**	●	550	3	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-800-HDG	**552596**	●	800	4	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-1050-HDG	**552597**	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-3050-HDG	**552598**	●	3,050	16	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1
FES-C-54/33-6070-HDG	**552599**	●	6,070	25	No	Round anchor	hot-dip galvanised	FBC-50/30	M10 - M20	1

Cast-in Channel FES-H

Hot rolled for excellent strength and safety.





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.

Approval

ETA-18/0862, FES with special screw FBC

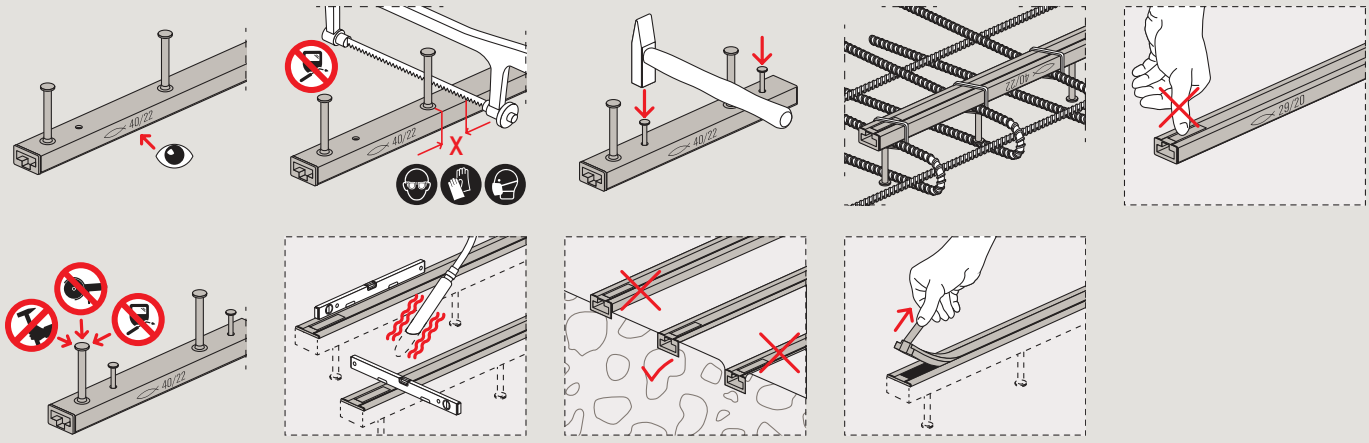
Building materials

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

Functioning

Suitable for use in combination with plain T-Bolts FBC or notching T-Bolts FBC-N.

Installation FES



Technical data

Profile FES-H-40/22



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	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	M10 - M16	1
FES-H-40/22-200-HDG	552469	●	200	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-250-HDG	552470	●	250	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-300-HDG	552421	●	300	2	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-350-HDG	552472	●	350	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-400-HDG	552473	●	400	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-550-HDG	552474	●	550	3	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-800-HDG	552475	●	800	4	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-1050-HDG	552476	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-1300-HDG	552477	●	1,300	6	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-1550-HDG	552478	●	1,550	7	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-1800-HDG	552479	●	1,800	8	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-2050-HDG	552480	●	2,050	9	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-2300-HDG	552481	●	2,300	10	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-3050-HDG	552482	●	3,050	13	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-40/22-6070-HDG	552483	●	6,070	25	No	Round anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-150-HDG	552507	●	150	2	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-200-HDG	552508	●	200	2	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-250-HDG	552509	●	250	2	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-300-HDG	552510	●	300	2	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-350-HDG	552511	●	350	3	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-400-HDG	552512	●	400	3	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-550-HDG	552513	●	550	3	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-1050-HDG	552514	●	1,050	5	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1
FES-H-I-40/22-6070-HDG	552515	●	6,070	25	No	I Anchor	hot-dip galvanised	FBC-40/22	M10 - M16	1

Technical data

Profile FES-H-50/30



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors 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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1

Technical data

Profile FES-H-50/30



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors l	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-50/30-1050-HDG	552493	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-50/30-3050-HDG	552494	●	3,050	13	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-50/30-6070-HDG	552495	●	6,070	25	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or 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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
FES-H-I-50/30-1050-HDG	552523	●	1,050	5	No	I-Anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-I-50/30-6070-HDG	552524	●	6,070	25	No	I-Anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1

Technical data

Profile FES-H-52/34



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-52/34-150-HDG	552496	●	150	2	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1

Technical data

Profile FES-H-52/34



FES-H

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-52/34-1050-HDG	**552504**	●	1,050	5	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-52/34-3050-HDG	**552505**	●	3,050	13	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-52/34-6070-HDG	**552506**	●	6,070	25	No	Round anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or 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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
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 or M20 for FBC-N-50/30	1
FES-H-I-52/34-1050-HDG	**552532**	●	1,050	5	No	I-Anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or M20 for FBC-N-50/30	1
FES-H-I-52/34-6070-HDG	**552533**	●	6,070	25	No	I-Anchor	hot-dip galvanised	FBC-50/30, FBC-N-50/30	M10 - M20 for FBC-50/30 or 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

5

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.

Approval

ETA-18/0862, FES with special screw FBC

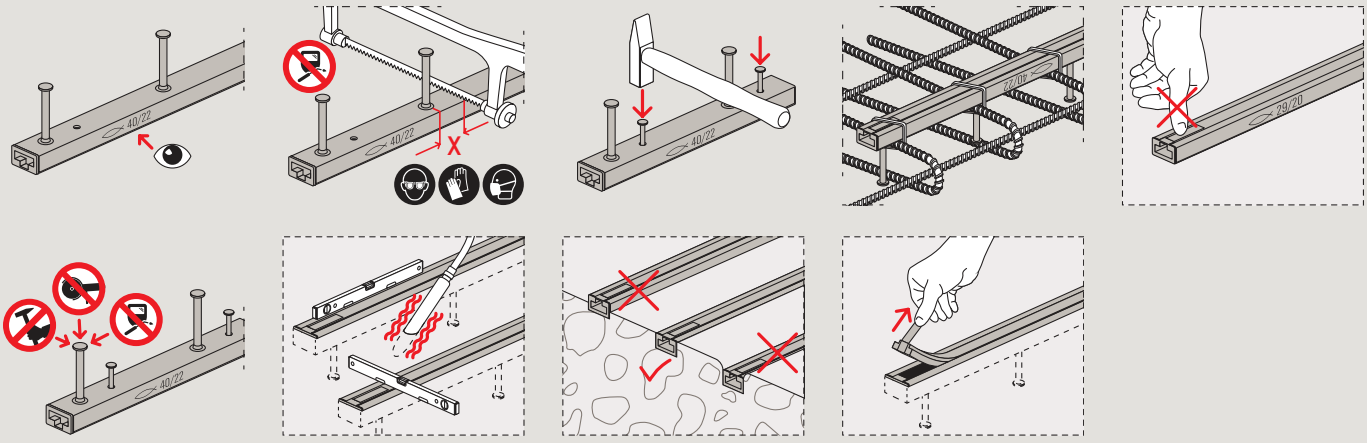
Building materials

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

Functioning

Suitable for use in combination with serrated T-Bolts FBC-S.

Installation FES



Technical data

Profile FES-H-S-29/20



FES-H-S

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-S-29/20-150-HDG	552446	●	150	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-200-HDG	552447	●	200	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-250-HDG	552448	●	250	2	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-300-HDG	552449	●	300	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-350-HDG	552450	●	350	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-400-HDG	552451	●	400	3	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-500-HDG	552452	●	500	4	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-850-HDG	552453	●	850	5	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-1050-HDG	552454	●	1,050	6	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-3050-HDG	552455	●	3,050	16	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1
FES-H-S-29/20-6070-HDG	552456	●	6,070	31	Yes	Round anchor	hot-dip galvanised	FBC-S-29/20	M12	1

Technical data

Profile FES-H-S-38/23



FES-H-S

Item	Item no.	Approval ETA	Length l [mm]	Number of anchors	Serrated	Type	Coating	Match	Thread M	Sales unit [pcs]
FES-H-S-38/23-150-HDG	552457	●	150	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-200-HDG	552458	●	200	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-250-HDG	552459	●	250	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-300-HDG	552460	●	300	2	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-350-HDG	552461	●	350	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-400-HDG	552462	●	400	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-550-HDG	552463	●	550	3	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
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	●	1,050	5	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-3050-HDG	552466	●	3,050	13	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1
FES-H-S-38/23-6070-HDG	552467	●	6,070	25	Yes	Round anchor	hot-dip galvanised	FBC-S-38/23	M12 - M16	1

Channel bolt FBC

Standard channel bolt strong, safe and flexible.





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.

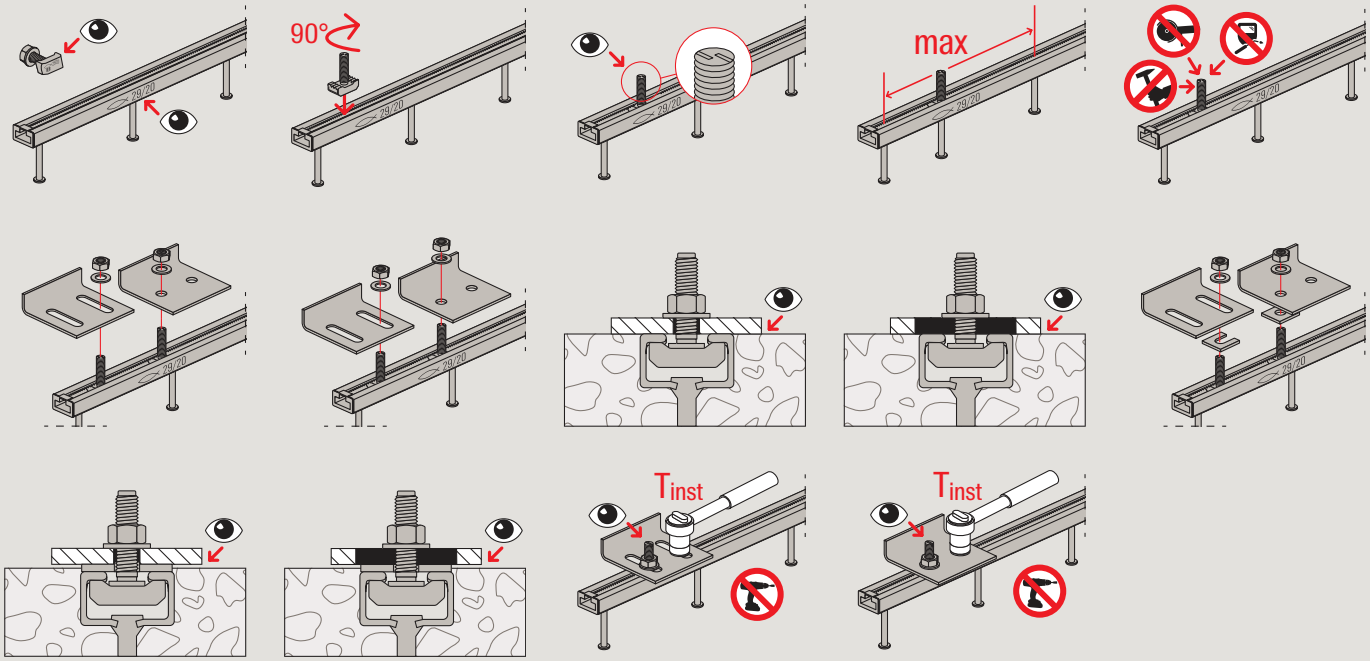
Building materials

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

Functioning

- FBC channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them 90° clockwise and then applying the specified torque moment.
- Suitable for use in combination with hot-rolled and cold-rolled 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	Length l [mm]	Material	Coating	Match	Sales unit [pcs]
FBC-28/15-M8x40-8.8-HDG	**552600**	M8	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	270
FBC-28/15-M10x40-8.8-HDG	**552604**	M10	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	240
FBC-28/15-M12x30-8.8-HDG	**552605**	M12	30	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	210
FBC-28/15-M12x40-8.8-HDG	**552606**	M12	40	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	180
FBC-28/15-M12x60-8.8-HDG	**552607**	M12	60	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	180
FBC-28/15-M12x80-8.8-HDG	**552609**	M12	80	Steel grade 8.8	hot-dip galvanised	FES-C-28/15	150

Technical data

Channel olt FBC-38/17	Channel bolt FBC-40/22	Channel bolt FBC-50/30
		
Bolt FBC	Bolt FBC	

Item	Item no.	Thread M	Length l [mm]	Material	Coating	Match	Sales unit [pcs]
FBC-38/17-M10x30-8.8-HDG	552610	M10	30	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	240
FBC-38/17-M10x40-8.8-HDG	552613	M10	40	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	240
FBC-38/17-M10x60-8.8-HDG	552616	M10	60	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	210
FBC-38/17-M10x80-8.8-HDG	552619	M10	80	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	210
FBC-38/17-M12x40-8.8-HDG	552622	M12	40	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	180
FBC-38/17-M12x60-8.8-HDG	552623	M12	60	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	180
FBC-38/17-M12x80-8.8-HDG	552624	M12	80	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	150
FBC-38/17-M16x50-8.8-HDG	552625	M16	50	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	90
FBC-38/17-M16x80-8.8-HDG	552626	M16	80	Steel grade 8.8	hot-dip galvanised	FES-C-38/17	60
FBC-40/22-M12x40-8.8-HDG	552627	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	180
FBC-40/22-M12x50-8.8-HDG	552628	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	180
FBC-40/22-M12x60-8.8-HDG	552629	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	150
FBC-40/22-M12x80-8.8-HDG	552630	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	120
FBC-40/22-M12x40-8.8-HDG	552637	M12	100	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	120
FBC-40/22-M16x50-8.8-HDG	552650	M16	50	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	60
FBC-40/22-M16x60-8.8-HDG	552655	M16	60	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	60
FBC-40/22-M16x80-8.8-HDG	552656	M16	80	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	60
FBC-40/22-M16x100-8.8-HDG	552657	M16	100	Steel grade 8.8	hot-dip galvanised	FES-H-40/22, FES-C-40/25	60
FBC-50/30-M12x40-8.8-HDG	552658	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	180
FBC-50/30-M12x50-8.8-HDG	552659	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	150
FBC-50/30-M12x60-8.8-HDG	552661	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	150
FBC-50/30-M12x80-8.8-HDG	552663	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	150
FBC-50/30-M12x100-8.8-HDG	552667	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	120
FBC-50/30-M16x50-8.8-HDG	552669	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	60
FBC-50/30-M16x60-8.8-HDG	552671	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	60
FBC-50/30-M16x80-8.8-HDG	552673	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	60
FBC-50/30-M16x100-8.8-HDG	552675	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	60
FBC-50/30-M16x125-8.8-HDG	552676	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	60
FBC-50/30-M20x60-8.8-HDG	552677	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	30
FBC-50/30-M20x80-8.8-HDG	552678	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	30
FBC-50/30-M20x100-8.8-HDG	552679	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	30
FBC-50/30-M20x125-8.8-HDG	552684	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	30
FBC-50/30-M20x200-8.8-HDG	552686	M20	200	Steel grade 8.8	hot-dip galvanised	FES-C-49/30, FES-H-50/30, FES-H-52/34, FES-C-54/33	30

Channel bolt design resistance

Standard channel bold FBC													
	Strength class	Load capacity M10			Load capacity M12			Load capacity M16			Load capacity M20		
	Steel grade	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$
Profile		**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**	**[kN]**
FBC-40/22	8.8	30.9	18.6	47.8	36.7	27.0	83.8	54.8	50.2	213.1	–	–	–
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

Required installation torque T_{inst}

Standard channel bold FBC			
	Thread	**Gerneral (A)**	**Steel – steel contact (B)**
	M	$T_{inst,g}$	$T_{inst,s}$
Profile		**[Nm]**	**[Nm]**
FBC-40/22	M10	15	30
	M12	25	45
	M16	50	100
FBC-50/30	M10	15	30
	M12	25	45
	M16	60	100
	M20	75	230

Channel bolt FBC-N

Notched channel bolt for excellent strength and safety.





Railway tunnels



Unitised curtain wall

Applications

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

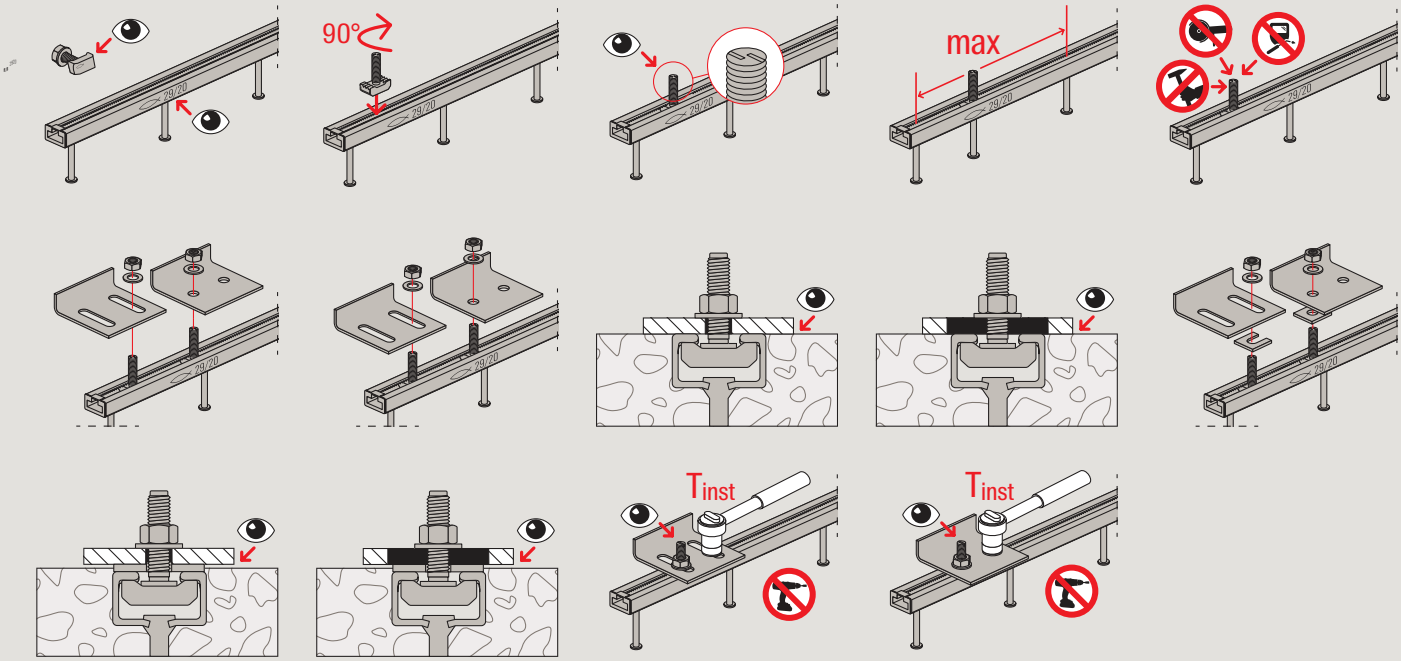
Advantages

- 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.

Functioning

- FBC-N channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them 90° clockwise and then applying the specified torque moment.
- Suitable for use in combination with hot rolled Cast-in Channels fischer FES-H.

Installation FBC



Technical data

Channel bolt FBC-N



Bolt FBC N

Item	Item no.	Thread M	Length l [mm]	Material	Coating	Match	Sales unit [pcs]
FBC-N-50/30-M20x60-8.8-HDG	552689	M20	60	Steel grade 8.8	hot-dip galvanised	FES-H-50/30, FES-H-52/34	30
FBC-N-50/30-M20x80-8.8-HDG	552690	M20	80	Steel grade 8.8	hot-dip galvanised	FES-H-50/30, FES-H-52/34	30
FBC-N-50/30-M20x100-8.8-HDG	552691	M20	100	Steel grade 8.8	hot-dip galvanised	FES-H-50/30, FES-H-52/34	30
FBC-N-50/30-M20x125-8.8-HDG	552693	M20	125	Steel grade 8.8	hot-dip galvanised	FES-H-50/30, FES-H-52/34	30
FBC-N-50/30-M20x200-8.8-HDG	552699	M20	200	Steel grade 8.8	hot-dip galvanised	FES-H-50/30, FES-H-52/34	30

Channel bolt design resistance

Standard channel bold 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]	$M_{Rd,s}$ [Nm]	$N_{Rd,s}$ [kN]	$V_{Rd,s}$ [kN]	$M^0_{Rd,s}$ [Nm]
FBC-N-50/30	8.8	–	–	–	–	–	–	–	–	–	95.0	78.4	415.4

Required installation torque T_{inst}

Channel bold FBC-N

Profile	Thread M	Gerneral (A) $T_{inst,g}$ [Nm]	Steel – steel contact (B) $T_{inst,s}$ [Nm]
FBC-N-50/30	M20	–	400

Channel bolt FBC-S

Serrated channel bolt for optimum strength and safety.





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.

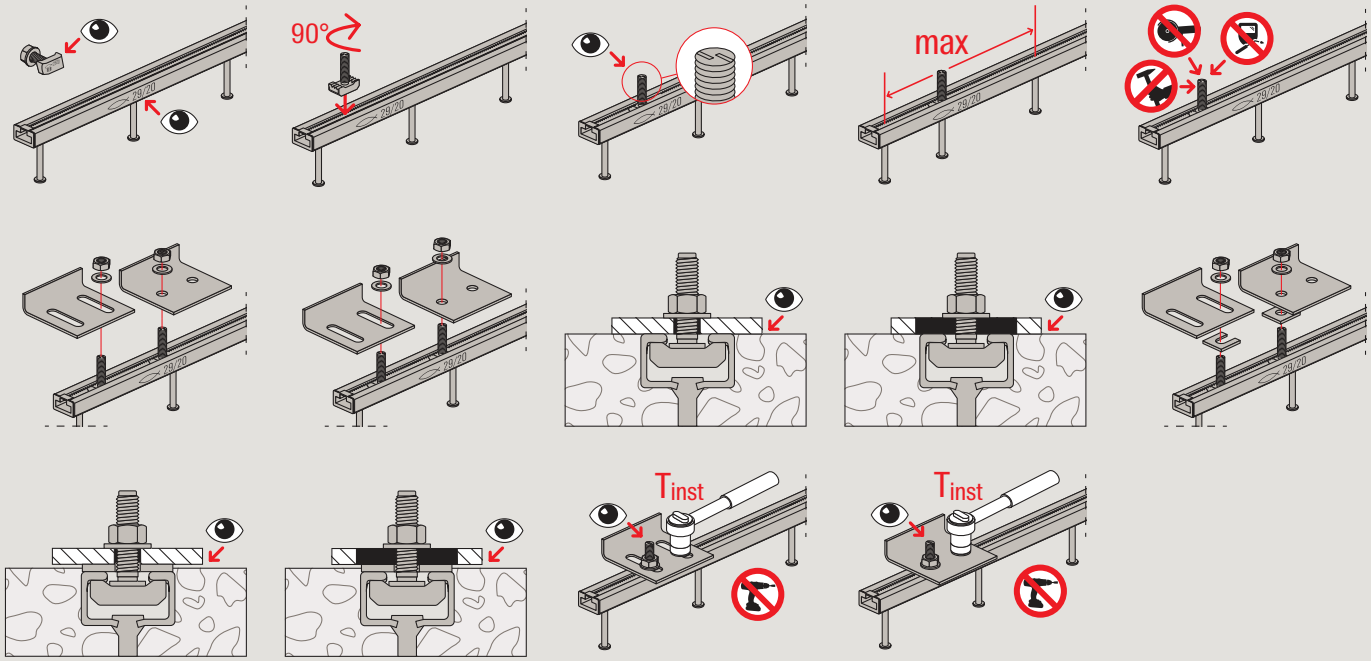
Building materials

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

Functioning

- FBC-S channel bolts can be variably set in the planned position of Cast-in Channels.
- They are easily fixed by turning them 90° 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



Technical data

Channel bolt FBC-S-29/20	Channel bolt FBC-S-38/23	Channel bolt FBC-S-38/23
		
Bolt FBC S	Bolt FBC S	Bolt FBC S

Item	Item no.	Thread M	Length l [mm]	Material	Coating	Match	Sales unit [pcs]
FBC-S-29/20-M12x40-8.8-HDG	**552700**	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	180
FBC-S-29/20-M12x50-8.8-HDG	**552704**	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	150
FBC-S-29/20-M12x60-8.8-HDG	**552705**	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	150
FBC-S-29/20-M12x80-8.8-HDG	**552711**	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-S-29/20	150
FBC-S-38/23-M12x40-8.8-HDG	**552712**	M12	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	150
FBC-S-38/23-M12x50-8.8-HDG	**552713**	M12	50	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	150
FBC-S-38/23-M12x60-8.8-HDG	**552714**	M12	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	120
FBC-S-38/23-M12x80-8.8-HDG	**552718**	M12	80	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	120
FBC-S-38/23-M16x40-8.8-HDG	**552719**	M16	40	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	60
FBC-S-38/23-M16x60-8.8-HDG	**552720**	M16	60	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	60
FBC-S-38/23-M16x100-8.8-HDG	**552721**	M16	100	Steel grade 8.8	hot-dip galvanised	FES-H-S-38/23	60

Channel bolt design resistance

Standard channel bold FBC-S													
	Strength class	Load capacity M10			Load capacity M12			Load capacity M16			Load capacity M20		
	Steel grade	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$	$N_{Rd,s}$	$V_{Rd,s}$	$M^0_{Rd,s}$
Profile		[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
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}

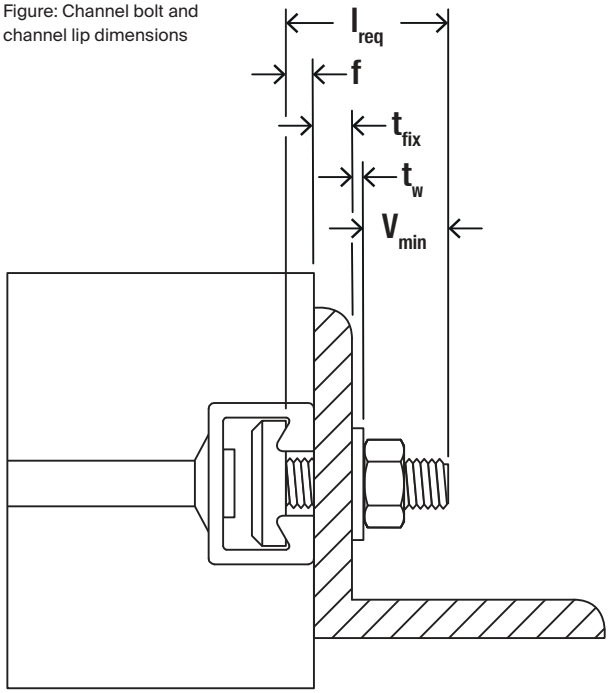
Channel bold FBC-S			
	Thread	Gerneral (A)	Steel – steel contact (B)
	M	$T_{inst,g}$	$T_{inst,s}$
Profile		[Nm]	[Nm]
FBC-S-29/30	M12	80	80
FBC-S-38/23	M12	80	80
	M16	100	100

Channel bolt installation parameter

V_{min}/size	
	V_{min}
Channel bolt thread	[mm]
M10	14.5
M12	117
M16	20.5
M20	26

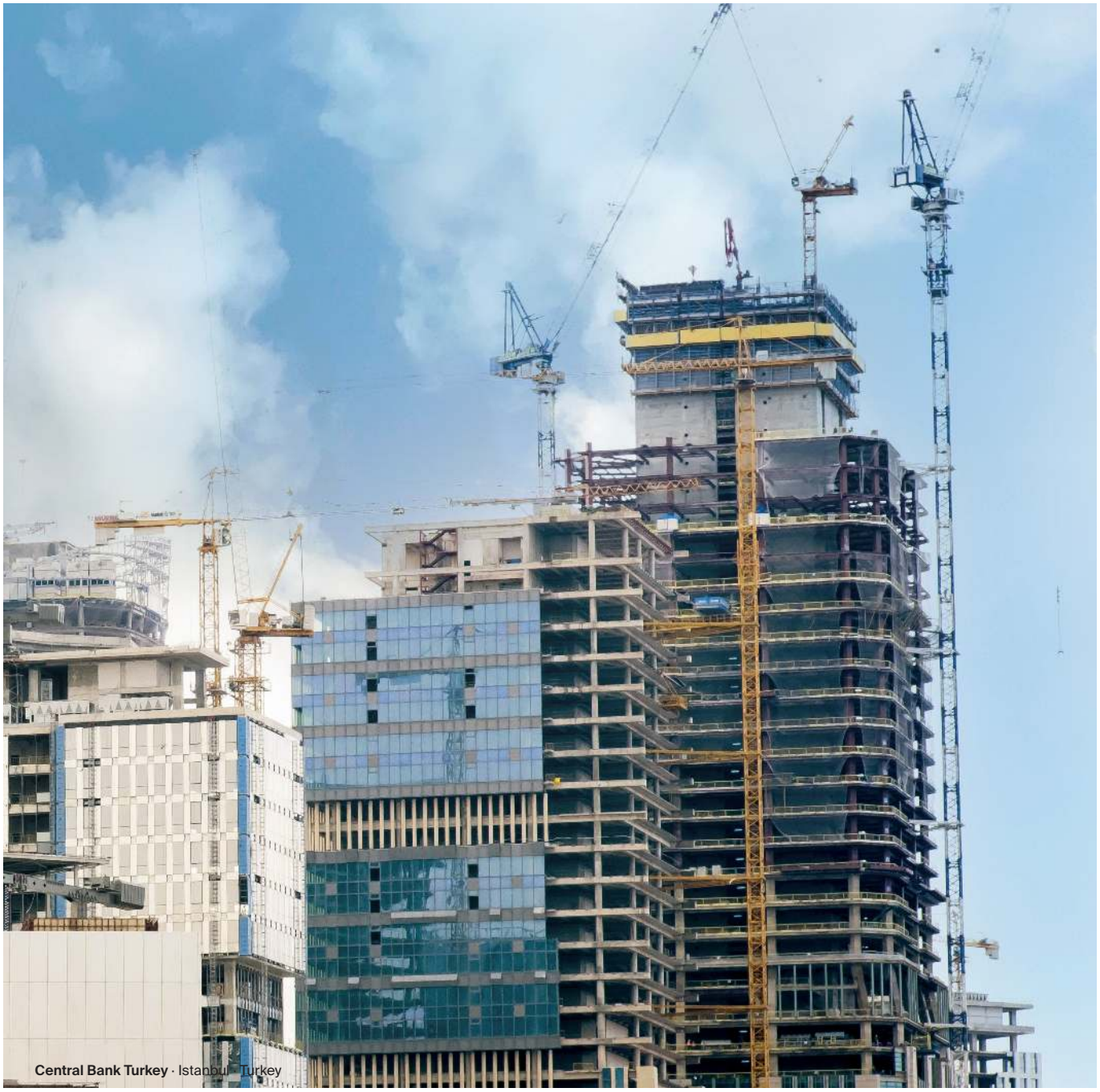
Cast-in Channel system lip thickness f	
	Thickness
Profile	[mm]
H-S-29/20	5.2
H-S-38/23	6
H-40/22	6.2
H-50/30	8.1
H-52/34	11.5
C-28/15	2.3
C-38/17	3.0
C-40/25	6.0
C-49/30	7.0
C-54/33	8.5

Figure: Channel bolt and channel lip dimensions



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

References



Central Bank Turkey · Istanbul · Turkey

1. **Changchun Longxiang- business center** · Changchun · China
2. **Guiyang Financial Center building** · Guiyang · China
3. **Baoding Healthy city** · Baoding · China
4. **Hangzhou Xiasha Marriott hotel** · Hangzhou · China
5. **Wuxi Hanglung Plaza** Wuxi · China
6. **Dali East sea developing zone Utility tunnel** · Dali · China
7. **Chengdu Global Foundrie** · Chengdu · China
8. **Shanghai Yoozoo Plaza** · Shanghai · China
9. **Zhengzhou Media Group Mansion** · Zhengzhou · China
10. **Tianjing Utility Tunnel** · Tianjing · China
11. **Zhengzhou Zhengshang International Building** · Zhengzhou · China
12. **Chengdu Tianfu Airport City Pipeline Terminal** · Chengdu · China
13. **Shenzhen Fuji Land Building 1# Building** · Shenzhen · China
14. **Hangzhou Joy City** · Hangzhou · China
15. **Guizhou Anshun Urban Construction Building** · Guizhou · China
16. **Central Bank Turkey** · Istanbul · Turkey
17. **Dubai Hills Mall Roller Coaster** · Dubai · U.A.E.
18. **Nest One** · Tashkent · Uzbekistan
19. **Quartier Puerto Retiro** · Buenos Aires · Argentina



6

6 Basic knowledge of fastening technology

Basic knowledge	355
Building material – concrete	356
Building material – masonry	358
Building material – drywall panels	359
Drilling	360
Installation	361
Installation types	362
Loads	363
Working principles	364
Failure modes	365
Cracks in concrete components	366
Fire protection – fundamentals	367
Fire protection in fastening technology	368
Corrosion dynamics	370
Legal basis	371
Assessment procedure	372
Design of fastenings	373
Approvals	374
Approvals, markings and their importance	378
Advanced product selection guide	379
Engineering judgement request form	382
Calculation of Consumption Guide	383
Calculation of Consumption Guide	384
Elongation	385
Soundproofing	386
Corrosion protection	387
Fire protection	388
Mounting sprinkler systems	392
Floor Mounted Supports	395
Wall Mounted / Cantilever Supports	396
Suspended Supports (Ceiling)	397
Suspended Supports (Structure)	398
Combined Support for MEP Systems	399
Details	400

Building Material – Concrete

The substrate's quality is crucial when selecting the correct fixing: A differentiation is made between concrete, masonry and panel building materials. Concrete is made from a mixture of cement, aggregates and water.

Concrete's main properties are:

- High level of compressive strength,but only low tensile strength(≈ 10 % of the compressive strength).
- Inserting individual rebars andor mats will increase tensile strength(steel + concrete = reinforced concrete).
- Structure easily reproducible as it isregulated by standards, therefore it isan ideal anchor base.



Concrete is mainly split into two categories:

Standard concrete and lightweight concrete. While standard concrete contains gravel; lightweight concrete contains additives such as pumice, expanded clay or polystyrene® usually with a lower compressive strength or bulk density. This leads to unfavourable conditions for anchor fixings.

The load bearing capacity of heavy duty fi xings depends on the concrete's compressive and tensile strength. This is indicated by the numbers in the abbreviations: e. g. the most commonly used concrete compressive strength is C20/25 with a cube compressive strength of 25 N/mm².

EXPERT TIP

- **Standard concrete qualities:**
  C12/15 to C50/60, even higher grades are also available for special applications. The majority of anchors approved for concrete may only be used from concrete quality from C20/25 up to a max. of C50/60. In the past, designations from DIN 1045 were used in Germany: B25 (≃ C20/25) to B55 (≃ C45/55).
- **C20/25 means:**
  C = concrete
  20 = compressive strength f_{ck} or $f_{ck, cyl}$ of a concrete test cylinder (Ø 150 mm, height 300 mm) in N/mm²
  25 = compressive strength f_{ck}, cube of a concrete test cube (edge length 150 mm) in N/mm²
- **Normal concrete** without accelerating additives reaches its nominal strength after 28 days. Only then can the fixing be installed in compliance with the approval /assessment.
- **Fresh concrete:** still workable up to approx. one hour after pouring.
- **Green concrete:**.elbakrow regnol on ,sruoh ruof retfa nedrah ot strats
- **New concrete:** is hardened after 28 days, however minimum compressive strength not yet reached.
- **Hard concrete:** more than 28 days old, nominal strength reached.

Compressive strength classes in different countries

Country	Specimen	Dimensions [1] [cm]	Concrete strength class	Unit	Standard
China	Cube	15x15x15	C15,C20, C25, C30, C35, C40, C45 C50, C55,C60	N/mm²	GB50010-2010
Denmark	Cube	15x15x15	C12/15, C16/20, C20/25, C25/30, C30/37, C40/50, C45/55, C50/60	N/mm²	DS/EN 206
Germany	Cube	15x15x15	C12/15, C16/20, C20/25, C25/30, C30/37, C40/50, C45/55, C50/60	N/mm²	EN 206
France	Cylinder	16x32	B20,B25,B30, B35, B40, B45, B50	N/mm²	BAEL 91
Great Britain	Cube	15x15x15	C20, C25, C30, C37, C40, C45, C55, C60	N/mm²	BS EN 12390-3:2009
Italy	Cube	15x15c15	C 8/10, C12/15, C16/20, C20/25, C25/30, C28/35, C30/37, C32/40, C35/45, C40/50, C45/55, C50/60	N/mm²	UNI EN 206
Japan	Cylinder	10x20	≥ 15	N/mm²	JIS A 1108
Korea	Cylinder	10x20, 15x30	18, 21, 24, 27, 30	N/mm²	KS F 2405
The Netherlands	Cylinder	15x30	C 8/10, C12/15, C16/20, C20/25, C25/30, C30/37, C35/45, C40/50, C45/55, C50/60	N/mm²	NEN-EN 206-1
Austria	Cube	15x15x15	C 8/10, C12/15, C16/20, C20/25, C25/30, C30/37, C35/45, C40/50, C45/55, C50/60	N/mm²	ÖNORM B 4710-1
Sweden	Cube	15x15x15	C12/15, C16/20, C20/25, C25/30, C30/37, C40/50, C45/55, C50/60	N/mm²	SS-EN206
Switzerland	Cube	15x15x15	C12/15, C16/20, C20/25, C25/30, C30/37, C40/50, C45/55, C50/60	N/mm²	SIA 262
Spain	Cylinder	15x30	Unreinforced concrete: HM-20, HM-25, HM-30, HM-35, HM-40, HM-45, HM-50 Reinforced concrete: HA-25, HA-30, HA-35, HA-40, HA-45, HA-50 Pre-stressed concrete: HP-25, HP-30, HP-35, HP-40, HP-45, HP-50	N/mm²	EHE-08
USA	Cylinder	15x30	2000, 2500, 3000, 3500, 4000, 5000, 6000, 7000, 8000	Psi	ACI 318

(1) Conversion: $f_{Cylinder} = 0.85 \times f_{Cube,\ 20x20x20}$; $f_{Cube,\ 15x15x15} = 1.05 \times f_{Cube,\ 20x20x20}$

EXPERT TIP

- **Anchors** used in **new concrete** must be **suitable** for this purpose, or may only bear loads after reaching the minimum compressive strength.
- **Concrete** always shows **cracks** (shrinkage during hardening, loading).
- **In cracked concrete,** anchors which are tested in cracked concrete must be used. These **anchors** must be able to **expand** when concrete starts to crack e. g, expansion anchors (e. g. FAZ II), form locking anchors or undercut anchors (e. g. FZA), or bonded anchors (e. g. FIS SB).
- **Cutting** through **reinforcement steel** while making **drill holes** is **not permitted.** In special cases, non load-bearing steels can be cut after consultation with the responsible engineer.
- The load bearing capacity of the concrete along the entire drill hole must be guaranteed (no honeycombing in the concrete, no voids and pockets).
- **Pre-stressed concrete:** A certain drilling distance must be maintained from the tensioning strands as stated in the approval/assessment (e. g. FHY, FBS II 6 or EA II).

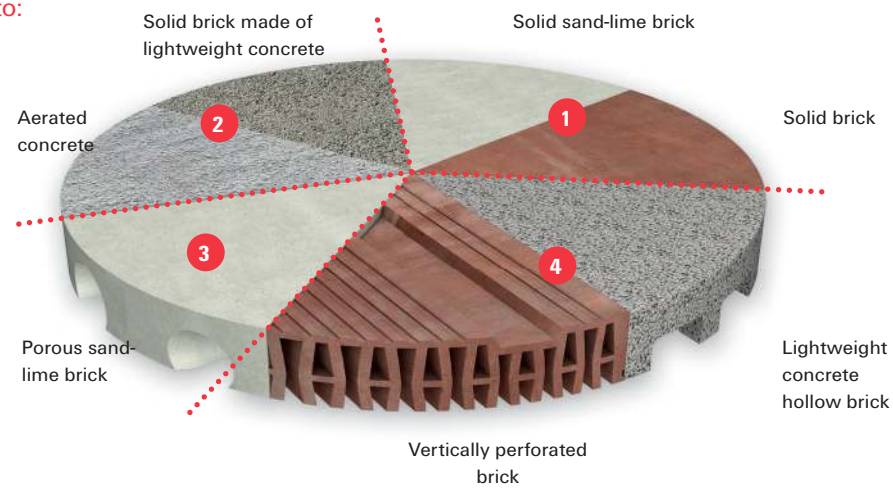
NOTE

Building Material – Masonry

Compared to concrete, there is a larger variety of masonry building materials.

Masonry can be classified according to:

- Brick type used (e. g. natural stone, lime stone or aerated concrete).
- Wall type (e. g. single or double layer).
- Brick strength class and gross density.



Generally, masonry is classifi ed into four groups:

1 **Solid bricks with a dense structure** are a highly compres-sion resistant building material, without cavities or low hole surface percentage (up to a max. 15 % e. g. as grip holes). This type is very well suited for anchor fi xings.

2 **Solid bricks with porous structure** usually have a very large number of pores and low compressive strength. Therefore, special fixings should be used, e. g. fixings with a longer expansion zone or bonded anchors.

3 **Perforated bricks with a compact structure** (perforated and hollow bricks) are mostly manufactured from the same compressive strength materials as solid blocks but with cavities. If higher loads are introduced into these building materials, special fi xings should be used (e. g. bonded anchors, FIS V), which bridge or fi ll the cavities.

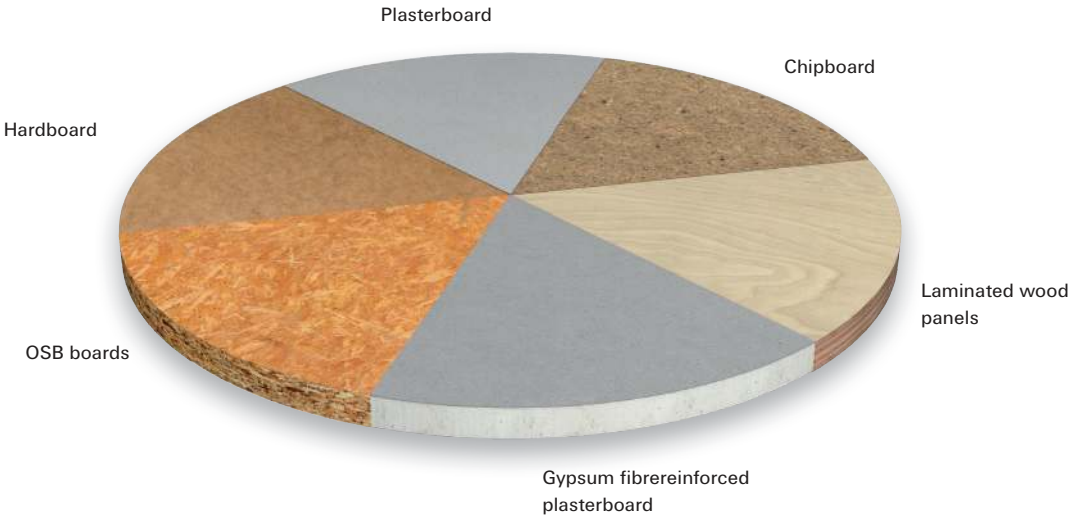
4 **Perforated bricks with porous structure** have many cavities and pores and thus generally a low compressive strength. In this case, special care is required when selecting the fi xing. Suitable fi xings include those with a long expansion zone or form locking injection anchors.

EXPERT TIP

- Before **fixing in masonry,** determine which brick type (designation, size, compressive strength) and mortar type (mortar category) has been used.
- For **safety anchoring** in unknown or old masonry, pull out tests must be carried out on-site to determine the anchor load bearing capacity.
- For **fixings close to the edge,** it is important to know if the wall is a load bearing wall as this prevents the risk of brick pull out.
- Even **solid brick** can have holes (e. g. MZ, KS). The holes are mostly larger grip-holes in the centre of the brick (up to max. 15 % cavity proportion per brick).
- Always drill without hammer function in **perforated and hollow bricks.** Here, special, sharply ground drills with hard metal tips are suitable.
- **Plaster or other non load-bearing layers** may not be added to the load-bearing base and are not to be used in calculating the anchorage depth.
- **Avoid anchoring into masonry joints** as much as possible due to joint inhomogeneity. If anchoring into a joint cannot be avoided (e. g. plaster on masonry) loads should be reduced.
- For **systems approved by building authorities, anchoring in joints** (vertical or horizontal joints) is regulated in the approval notices.
- For **anchoring high loads** in performated bricks, the anchorage depth should be increased.
- **Expansion fixings** (e. g. FAZ II or FBN II) are not suitable for use in masonry due to its high expansion forces which may lead to cracks in the brick. Frame fixings are suitable due to its longer expansion part.
- **Bonded anchors** achieve the highest possible loads in masonry.

Building Material – Drywall Panels

Panel building materials are thin-walled materials that often have limited strength – e. g. plasterboard like “Rigips”, “Knauf”, “LaGyp”, “Norgips”; Gypsum fi breboard like “Fermacell”, “Rigicell” or chip board, hard fi bre boards, plywood and others.



The main characteristics of panel building materials are:

- Often thin-walled materials, mainly with limited strength.
- Easy-to-process materials for non load-bearing walls and also used as cladding material (e. g. walls, roofs or ceilings).
- A wide range of different building materials.

Special fixing elements must be used:

Cavity fixings are fixings made of plastic or metal, whichanchor by form locking into the material, e. g. by knotting or a snap on mechanism (e. g. toggles).

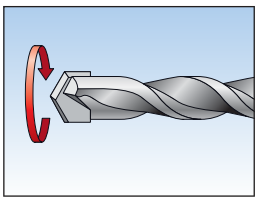
EXPERT TIP

- Only approved anchors should be used for **lightweight materials, prestressed hollow core slabs and panel materials.**
- Contact your **fischer consultant** on site before anchoring **heavy or safety-relevant loads** in the above-mentioned substrates.

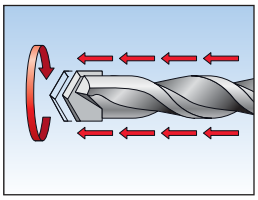
NOTE

Drilling

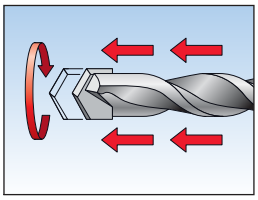
The building material determines the drilling method. Five methods are possible:

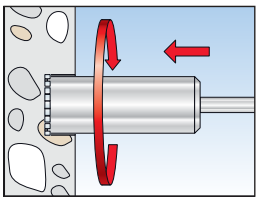
Rotary drilling
Rotary drilling without impact, uses a sharply ground carbide drill bit. When this method is used, the drill hole does not become too large and the perforated brick's webs do not break.

Impact drilling (mechanical)
Impact drill with rotation and a high number of light strokes, is suitable for dense structured building materials.

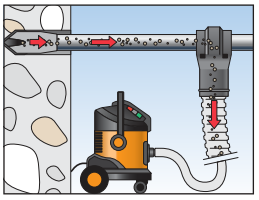



Hammer drilling (pneumatic)
Hammer drill uses rotation and a low number of light strokes with high impact energy, also suitable for dense structured solid building materials.

Diamond or core drilling process
Mainly used for larger drill hole diameters or for heavily reinforced components and/or if noise or vibration must be reduced.





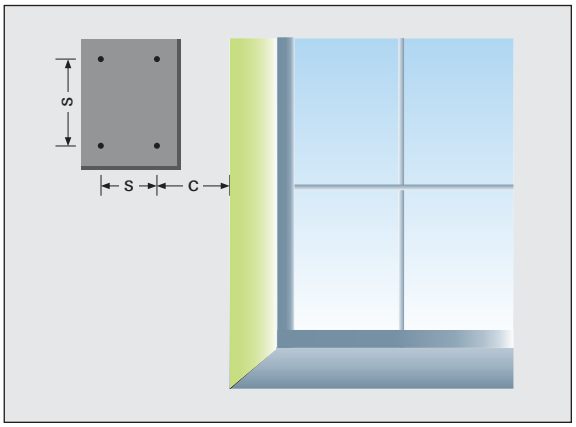
Hollow drilling
Special drill with a hollow core, which is connected to a vacuum cleaner. Cleans the drilled hole during the drilling operation. No further brushing or blowing is required. Can be used in concrete and masonry with dense structure.

EXPERT TIP

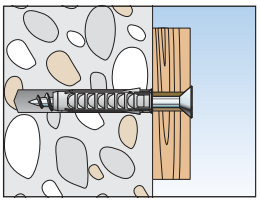
- The drilling method for approved anchors is specifi ed in the **approval / assessment.**
- Drill bits with **excessively worn cutting** edges should **not be used** (see approval /assessment).
- For certain fixings, **special drills** are required (e. g. a stop drill) as per approval /assessment.
- **Drill holes** must be **carefully cleaned** (blown out and brushed). See the respective approval /assessment or manufacturer's specifi cations.
- The **drill hole depth** is always exacly specified and relates to a given anchoring base thickness. For general applications without an approval /assessment the following applies: the drill hole depth + 30 mm should not exceed the anchoring base thickness.
- In case of **incorrect drilled** holes (hitting reinforcements or wrong location), the location for the new drill hole is regulated in the applicable fixing approval /assessment). Usually, the distance for the new drill hole must be twice the depth of the incorrect drill hole. The wrong drill hole must be fi lled with injection mortar (e. g. FIS V).
- **Diamond core drilling** is only permitted if stated in the approval/assessment or according to manufacturer's guidelines (e. g. RSB, FIS EM Plus, FAZ II, FBS II...).
- **The load bearing capacity is reduced** by water filled holes or wet substrates especially for chemical or plastic fixings.
- **Cutting** through a reinforcement is not permitted.
- **The drill hole** must be drilled perpendicular to the anchor base (an inclinement of up to 5° is permitted). Exceptional cases are regulated in the anchor approval /assessment and or according to manufacturer's guidelines.

Installation

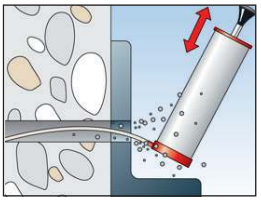
In general, the following aspects must be taken into consideration during installation:



The edge distance and centre distance, as well as the component thickness and width, must be carefully observed to ensure that the fixing can take the required load. Otherwise, it may lead to spalling of the construction material or cracks. For fixings without approval, e. g. nylon fixings, a minimum edge distance of c = 1 x h_{ef} (h_{ef} = anchorage depth) and a minimum spacing of s = 1 x h_{ef} must be adhered to for concrete. When using non approved metal anchors, a minimum edge distance of c = 1.5 x h_{ef} and a minimum spacing of s = 3 x h_{ef} must be adhered to. When using hammerset anchors, spacing and edge distance can increase due to higher expansion forces.



The drill hole depth must be larger than the anchorage depth (exception chemical anchor systems), to ensure that the screw has enough room at the end of the fixing element to penetrate at least one time the screw's diameter.



Drill hole cleaning after drilling, e. g. by blowing out, brushing or suction, is generally necessary. The load bearing capacity will be reduced, if the hole is not cleaned. (Exceptions: approved anchor systems where no hole cleaning is required, e. g. FHB II + PF - High speed capsule).

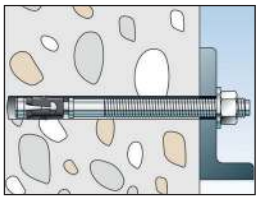
EXPERT TIP

- **Strictly adhere to specifications** for component geometry, edge and spacing distances. If this is not taken into account, the component will be damaged or the anchor capacity will be reduced.
- **Drill hole cleaning is essential.** The specifications in the approvals and the manufacturer's specifications must be observed.

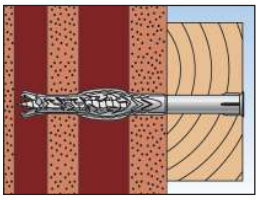
NOTE

Installation types

There are three diff erent types of installation.



Anchor bolt FAZ II

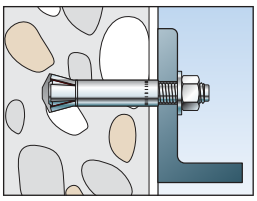


Frame fixing SXRL

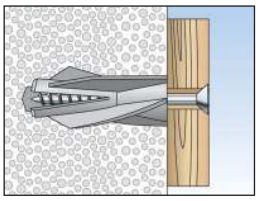
Push-through installation

In particular for simplifying installation for series installations or for attachments with two or more fixing points:

- If the attachment's hole diameter is larger than the drill bit diameter, then the attachment can be used as a template. Please note: The drill bit tip is generally larger than the nominal diameter of the drill.
- In addition to facilitating a simple installation, an exact fit is also achieved.
- The fixing is inserted into the drill hole through the attachment and then tightened (e. g. FAZ II, FBN II, FH II).



Zykon anchor FZA

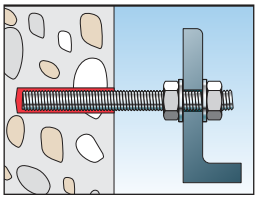


Aircrete anchor GB

Pre-positioned installation

The anchor is installed before fastening the attachment. If drilling is not done precisely, then the holes in the attachment will not match up. This could mean that the anchors cannot be installed or could cause damage to the anchors. The installation sequence:

- Transfer the hole pattern of the fixture to the anchor base.
- Drill and clean the holes, install the attachment and then fix the attachment (e. g plastic fixings: S, SX, UX; metal fixings: FZA, EA II).



Threaded rod FIS A

Stand-off installation

This allows attachments to be compression and tension resistant at a certain distance from the anchor base. For this purpose, external threaded metal anchors (e. g. FAZ II, FBN II) or internal threaded anchors (e. g. EA II) with screws or threaded rods are clamped against the anchor base surface while using a bearing washer and nut. When using chemical systems with threaded rods (e. g. FIS SB, FIS V, FIS EM Plus, and FIS A), the installation can be done without using a bearing washer and nut.

EXPERT TIP

- **Clearance holes in the attachment** are specified for the respective anchor size in the approvals/assessments and manufacturer's guidelines.
- **For stand -** off installations with shear loads on the anchor, additional bending moment occurs and this must be considered.
- **The attachment must lie** fully flush on the surface base or it must have either a compression resistant levelling layer of max. 3 mm or half the anchor's diameter, otherwise the anchor must be checked for bending.
- **The attachment shall be in contact with the anchor** over its entire thickness, otherwise the anchor must be checked for bending.
- **Usable length is the maximum fixing height** t_{fix} which takes into account the attachment's thickness plus additional non-bearing layers (e. g. plaster, air, insulation etc.).
- Post-installed anchors must be tightened with a specific torque. A calibrated torque wrench must be used to ensure the correct pre-stressing force and the correct installation of the anchor. For **chemical anchors, the prescribed hardening time must be adhered to** before tightening torque or service load can be applied.
- Anchors must be mounted as a standard unit as delivered. The exchange or removal of parts is not permitted.

Loads

When selecting an anchor, it is necessary to know the load on the total construction and the resulting action forces.

Action forces can differ based on:

Dimension ▪ Direction ▪ Type of load ▪ Point of application

There are various types of loads:

Approvals generally give characteristic resistance. In the manufacturer's guidelines, **"permissible loads"** are specified for products with approvals. For anchors without an approval, **"recommended loads"** are given by the manufacturer.

- **Determine the size,** direction and point of application of the load. These parameters determine which anchor should be used.
- **Characteristic resistance** (N_{RK} or V_{RK}) describes the 5 % fractile of resistance. (Value with a 95 % probability of being exceeded, with a confidence level of 90 %).
- **Permissible loads** are working loads that already include an appropriate safety factor. These only apply if the approval conditions are complied with (N_{zul} or V_{zul}).
- **Recommended loads or maximum working loads** include an adequate safety factor. These only apply if the manufacturer's specifications are complied with (F_{rec} – valid for all load directions, N_{rec} - for compressive or tensile load or V_{rec} for shear load).
- **The calculation** is carried out by dividing the respective failure load or characteristic loads by a safety factor.
  Recommended safety factors compared to the average failure load:

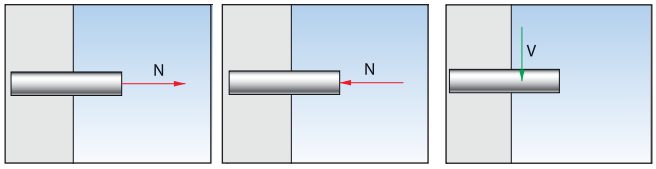
Steel and bonded anchors	$\gamma \geq 4$
Plastic anchors	$\gamma \geq 7$
Hammerfix anchors N	$\gamma \geq 4$

- **Recommended safety factors compared to the characteristic failure loads:**

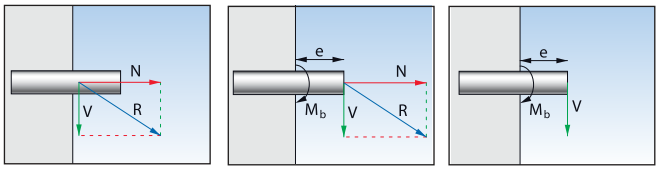
Steel and bonded anchors	$\gamma \geq 3$
Plastic anchors	$\gamma \geq 5$

  For deviations to the regulation, see load tables. For certain products, the safety factors may deviate. In general, the global safety factor is calculated using the scatter of the faillure load, the failure probability and the reliability index of a product.
- **The specified loads** apply to individual anchors that are installed away from the edge, i. e. there is no influence from edges or other anchors.
- **The characteristic spacing and edge distances,** marked with $c_{cr,N}$ and $c_{cr,V}$, give the distances at which an anchor achieves its max. characteristic load.

Load directions

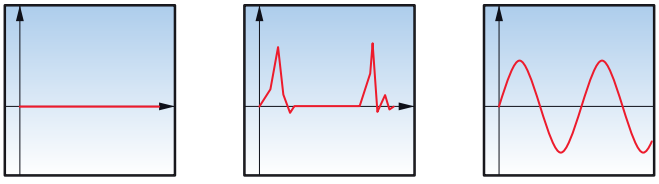


Tensile load | Compression load | Shear load

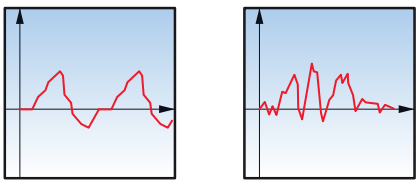


Oblique load (tension and shear load) | Oblique load at distance e (Bend + tension + shear load) | Shear load and bending moment

Types of loads



statically dormant | dynamically rising | dynamically changing

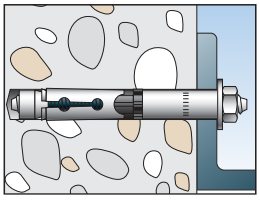


shock | seismic activity

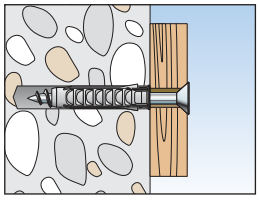
- **The specified minimum spacing and edge distance,** marked with s_{min} and c_{min}, indicates the distance at which no failure of the building material will occur when installing the anchor (cracks). These distances are mandatory and must be complied with. The characteristic spacing and edge distances may be shorter but not less than the minimum values but at the same time the load bearing capacity must be reduced. When combined loads occur, loads are determined separately for tensile and shear load and the overall utilization is determined by means of an interaction equation. As a rule, the sum of the ratio values from tensile and shear loads is less than 1.2.

Working Principles

There are different load transfer mechanisms which induce forces acting on the anchor in a building material.

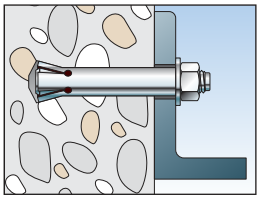


Sleeve anchor (e. g. FH II)

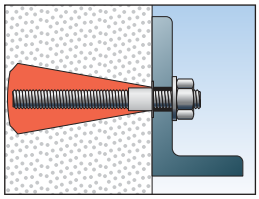


Plastic anchor (e. g. SX)

For frictional locking, the expanding part of the anchor is pressed against the drill hole wall.

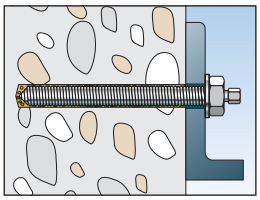


Undercut anchor (e. g. FZA)

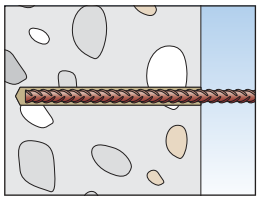


Injection anchor (e. g. FISV with cone drill PBB)

For form locking, the anchor geometry adapts to the subtrate's form or drill hole shape (e. g. conical drill hole).



Resin anchor
(e. g. Superbond RSB)



Subsequent reinforcement connector with concrete reinforcing bars

For adhesive bonding, the load will be transferred by a combination of adhesion and micro-keying (e. g. using resin / injection mortar).

6

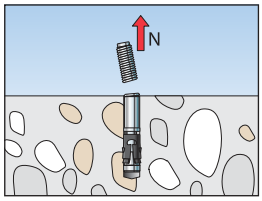
EXPERT TIP

For many fixings, a combination of working principles occurs (e. g. in soft base material a combination of friction and form locking takes place).

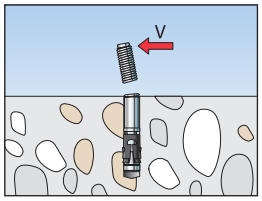
NOTE

Failure modes

If there is excessive stress, incorrect installation or a substrate with inadequate load bearing capacity, the following types of failure can occur.

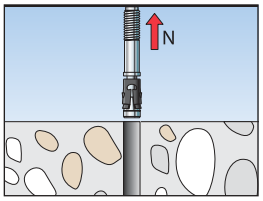


Steel failure tension



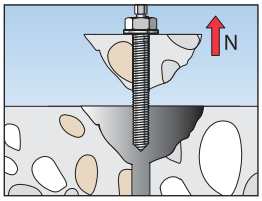
Steel failure shear

Steel failure:
- Insufficient steel stength for the applied load



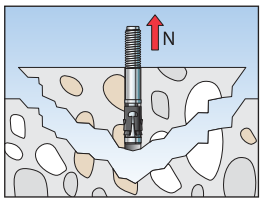
Pull out

Pull out failure:
- Friction failure and or adhesion failure due to high load or incorrect installation

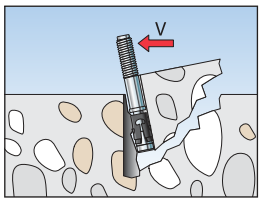


Combined failure

Combined failure:
- Pull out
- Concrete failure near the surface

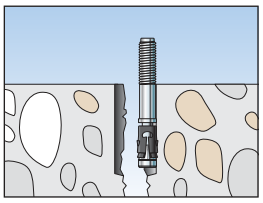


Concrete cone failure

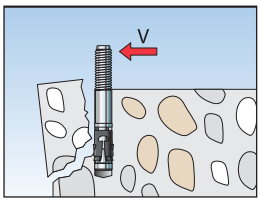


Pry-out failure

Anchor base failure:
- Tensile load “N” or shear load “V” too high
- Inadequate strength of anchor base
- Insufficient embedment depth



Concrete splitting failure



Concrete edge failure

Anchor base splitting:
- Insufficient component dimensions
- Deviation from the spacing and edge distances
- Excessive expansion pressure

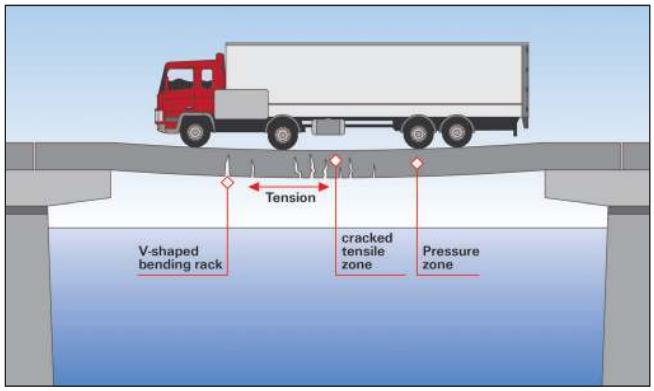
EXPERT TIP

- In most anchor approvals/assessments, the anchoring of **predominately static loads** is regulated. However, there are also approvals which regulate non-static loads (fatigue loads, e. g. FHB dyn).
- Seismic loads for post-installed anchors are regulated in Europe according to ETAG 001 Appendix E. The assessment is to be carried out in accordance with EOTA TR045 until the Eurocode 1992-4 is introduced. The seismic performance of an anchor system is categorised by performance categories C1 and C2. The classification of the seismic performance categories C1 and C2 for seismicity level and the evaluation category is the responsibility of the respective Member State (in Germany, an approval in accordance with ETAG 001 is sufficient. Classification in accordance with C1 and C2 is not necessary). The performance category and the characteristic values are found in the respective ETA (e. g. FAZ II, FH II, FIS SB, FIS EM Plus...).
- **The main causes for anchor failure are overloading, incorrect installation or an insufficient load bearing anchoring base.**

NOTE

Cracks in concrete components

Cracks can occur anywhere in concrete at any time: Factors involved in this are loads such as dead loads, traffi c or windloads, concrete shrinkage and creeping or external infl uences such as seismic activity or ground motion result in stresses and deformations thus leading to cracks.



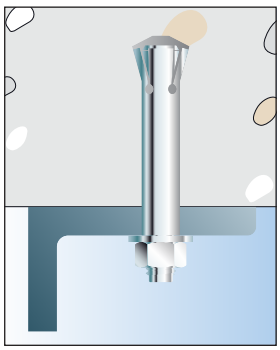
Example:
If a bridge designed as a single-span element is loaded, the bridge will buckle. Due to this buckling, cracks could occur in the element's tensile area.

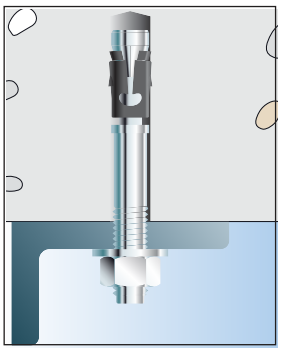
Concrete is not able to support tensile loads, therefore, reinforce-ments are placed in the element to take the tensile load area numerous cracks are formed that are barely visible to the naked eye. This is called the cracked tensile zone.

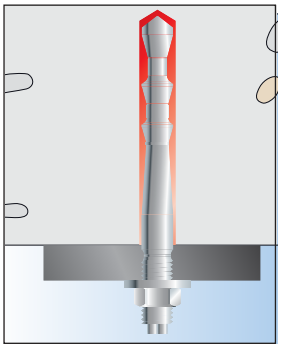
Suitable anchor systems for cracked concrete

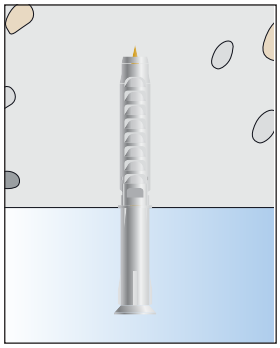
When fixing in concrete, **cracks** are always **expected in the anchoring area which will have an impact on the load bearing capacity** of the anchor system. However, it is very complicated, if not impossible, to prove whether the concrete is cracked or not cracked.

For safety reasons, designers and craftsmen should **always use anchor bolts which are suitable for cracked concrete.** Fixings with an approval/assessment according to ETAG 001 for cracked concrete have proven their suitability in cracks, therefore they can be used without any restrictions in tensile and compres-sion zones of a concrete member.


Undercut anchor FZA


Bolt anchor FAZ II


Threaded rod FHB II


Frame fixing SXS

Due to safety reasons, always use crack-suitable anchor systems such as FAZ II, FH II, FHB II, FIS SB, FIS EM plus or FIS V.

Fire protection – Fundamentals

General requirements of building structures for fire protection.

Structural installations

Structural installations are to be ordered, erected, changed and brought into commission in such a way that:

- the emergence of a fire is prevented from breaking out.
- the spread of fire and smoke (spread of fire) is prevented
- in the event of a fire, the rescue of people and animals is possible.
- eff ective fi re-fi ghting operations are possible.

German regulation

In Germany, the procedure for construction and operational fi re protection are specified by the fi re protection standard DIN 4102, the Model Building Ordinance (MBO), Regional Construction Ordinances (LBO) and various trade-specifi c regulations from professional associations.

The following applies as per Section 1 and 2 of DIN 4102:

Building materials such as **concrete, wood, stone, metal** etc., are classified according to their behaviour **into fl ammable or non-flammable building material classes.**

However, **components composed** of different **flammable and non- flammable materials** are not classified into fire classes in building construction but they are evaluated as a complete system according to their fi re resistance duration. The fire resistance duration R is indicated in minutes and classified according to two categories:

- **Components with a fire resistance duration** of R30 and R60 are fire inhibiting.
- **Fire-resistant,** are all components with a fire resistance duration of R90, R120 and R180.

Tested systems such as cable, ventilation or duct systems are not only tested for fire resistance, but also for functional capability in the event of fire (e.g. supply lines to sprinkler systems). The fire resistance duration of these systems is e.g. E30 to E120 for electrical cable systems or L30 to L120 for specifi ed ventilation ducts. The anchors that are used to fasten these systems must have at least the same fire resistance duration.

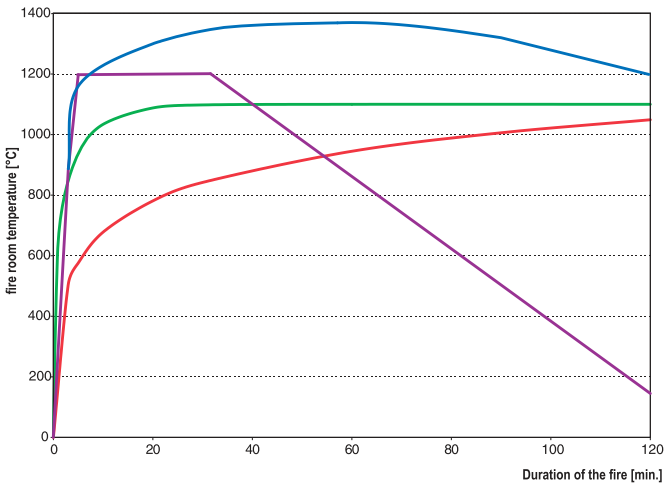
European standardisation

In accordance with the European Norm DIN EN 13501-1, the classifi cation of fi re behaviour of building materials / products is similar to that of DIN 4102. The classifications are, however, much more precise.

In addition to, the main classification criteria concerning flammability, flame spread and heat released, e.g. smoke development and dropping behaviour is tested.

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 resistance duration is then labelled with the letter R for “Resistance”.

The standard temperature-time curve (ETK) of DIN 4102 and ISO 834 is based on a simulation of real fire conditions and forms the evaluation basis that is used worldwide to determine the fire resistance duration. In addition, there are other temperature curves for special fire exposures, e.g. the hydrocarbon curve for destructive fi res caused by flammable liquids or the RAB/ZTV tunnel curve (Germany) or the Rijkswaterstaat tunnel curve (the Netherlands), which describe tunnel fires.



Temperature curves: — (ETC), — Hydrocarbon curve, — RABT/ZTV tunnel curve — Rijkswaterstaat tunnel curve

Fire protection in fastening technology

The fastening technology has a vital importance in fire protection. To ensure the functional capability and stability of railings, pipe systems, fire safety doors or ceiling elements.

Assessing fixings for fire is carried out in accordance with the technical regulation EOTA TR020 or in accordance with fire protection reports.

The labelling and classifi cation of anchors and fixings is classified in:

1 Fire behaviour (e. g. non-flammable)
2 Fire resistance duration (e. g. R90)

For this purpose, the legal regulations set down in the fi nal draft of the Delegated Act "Fire Behaviour" must be observed.

EOTA TR020 only states anchor performance ratings that have an **ETA for cracked concrete!** Meanwhile, a new evaluation document issued by the German Institute for Construction Engineering (DIBt) is used to determine the characteristic load values and the corresponding fi re resistance duration.

A partial safety factor of $\gamma_M = 1.0$ on the load side is used in the event of fire.

The fire values only refer to anchor bolts that are directly exposed to flames.

Alternatively, anchors can be protected from direct exposure to fire by using fire protection panels or fire protecting coatings.

For fixing cladding systems, it is assumed that the load bearing capacity of specified plastic screw anchors in concrete with an external diameter of 10 mm and a metal screw diameter of 7 mm and an anchoring depth of $h_{ef} = 50$ mm with a polyam-ide PA6 plastic sleeve has a suffi cient fi re resistance of at least 90 minutes (R90), if the permissible load (no permanent centric tensile load) is ≤ 0.8 kN.



Before the fire test



During the fire test



After the fire test

Corrosion – Fundamentals

Corrosion is a chemical reaction which degrades metal.

The less noble the metal ("electrochemical potential"), the more severe the material damage is, resulting in metal loss or corrosion flakes. For this reason, different appearance patterns have been determined. **The most common types of corrosion in fixings and anchors are:**

Surface corrosion: In this case, the metal corrodes relatively uniformly over the entire surface or over a part of the surface. An example of this is the invisible rusting of a screw in the transition area from anchor plate to hole due to condensation. The result: A connection that appears completely intact from the outside, but suddenly fails.

Contact corrosion: If metals with a different nobility are in contact with each other in a conductive medium, the less noble metal always corrodes (the anode). Whereas stainless is not aff ected. A decisive factor is the surface ratios of the two types of metal: The greater the surface area of the most noble metal in comparison with the less noble, the greater the corrosion. For example, if larger stainless steel sheets are screwed with galvanised screws, the screws will be agressively attacked within a very short time. Whereas using stainless screws in galvinised sheets poses no problems.

Stress corrosion cracking: Permanent internal or external tensile stresses lead to metal strain or corrosion. In this process, a crack develops due to mechanical stresses, which grows under increasing loads and thus creates a path for progressive corrosion. For example, this occurs with stainless steel of corrosion resistance Class III e.g. A4, in an atmosphere containing chlorine (swimming pools). Generally, stress corrosion cracking is not visible with fixings and usually leads to sudden failure of the anchoring.



In 1985, the suspended concrete ceiling of an indoor swimming pool collapsed in Uster, Switzerland. The stainless steel ceiling attachments exhibited no external defects, but were completely destroyed internally in some cases due to stress corrosion cracking.



Example of trans-crystalline stress corro-sion cracking on stainless steel 1.4401 with high chloride concentra-tion

Corrosion protection

There are different ways to protect fastenings from corrosion. The most important are:

Galvinised zinc coating (or also electrolytic zinc coating) followed by passivation is the most common corrosion protection used in metal finishing. A zinc coating thickness of 3 – 10 µm off ers excellent corrosion protection for damp rooms and outdoor use.

Hot-dip galvanising is the application of a metal zinc coating by dipping it in molten zinc (at approx. 450 °C). Zinc layer thickness's of 45 – 80 µm offer an excellent corrosion protec-tion for moist rooms and outdoor use.

Stainless steel fi xings of corrosion resistance class III e. g. A4, material no. 1.4401, 1.4404 and 1.4571 as well as two phased duplex steel (austenitic and ferritic structure / magnetic) are suitable for anchoring in damp rooms, in open air, in industrial atmospheres or near the sea (but not directly in sea water).

Stainless steel anchors made from high corrosion-re-sist-ant steel of the corrosion resistance class V e.g. material no. 1.4529 are used in especially aggressive environ-ments e.g. in atmospheres containing chlorine (swimming pools), in road tunnels or with direct sea water contact. Due to their high molybdenum content they are risistant is such aggressive enviroments. That means that steel type 1.4529 – containing chrome, molybdenum and nicklel – has an alloy content of 58 %. The rest consists of iron and carbon. Due to this very high alloy content, the production for this steel type is very expensive, but on the other hand the conection is safe and maintenance – free in terms of corrosion.

Dynamics

For predominantly non-static loads.

The general building approvals issued by the **German Institute of Construction Engineering (DiBt) and the European Technical Approvals / Assessments (ETA)** are mainly valid for predominately static loads. However, there are certain applications e. g. swinging cranes, crane rails, jib cranes, elevator guide rails, machines, industrial robots and blast fans in tunnels including antenna and masts which are subjeted to dynamic eff ects

In general, the anchoring of components with more than > 1000 load cycles must be carried out using fastening elements that have been checked and approved for this purpose. Until recently, the design for post-installed anchors for such dynamically loaded applications was nearly impossible. Time consuming and costly expert reports and or approvals for individual applications were required.

The bonded anchors: fi scher Highbond anchor FHB dyn and fi scher UMV multicone dyn and FDA **have a German DiBt approval for dynamic loads.** In the approval, only fatigue loads are considered as dynamic loads and not loads from shock or seismic activity.

The approvals apply to the anchoring of dynamic loads with unlimited numbers of load cycles, for tension and for shear loads.

In addition, the FHB dyn is manufactured in anchor size M12 and M16 from highly corrosion-resistant steel (e. g. corrosion resistant Class V - 1.4529).

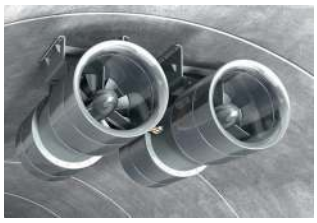
Dynamic load tests have shown - compared to normal stainless steel grades of corrosion resistant class III (e. g. 1.4401 also known as 316) – that this material is not only highly suitable for indoor and outdoor humid environments, as well as other agres-sive conditions, it is also highly suitable for dynamic loadings.



Elevator guide rails



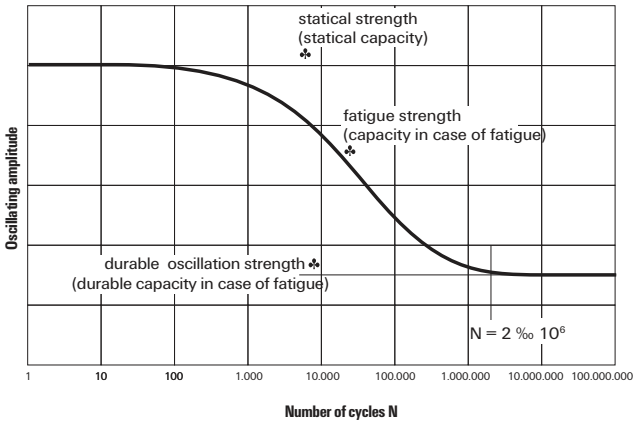
Industrial robots



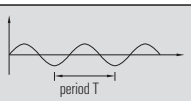
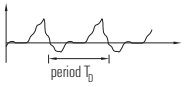
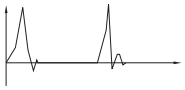
Blast fans



Antenna and masts



Wöhler curve

Action	Run of the oscillation	Possible cause
harmonic	 sinusoidal	Unbalances, tumbling machines
periodic	 optional, periodical	Regularly abutting parts (e.g. punching machines) , rail- and road traffic
transient	 optional, nonperiodical	Earthquakes
impulsive	 optional, with very short time of influence	Impact, explosion

Legal basis

The European Union (EU) determines the legal foundation for the assessment, CE labelling and bringing building products into the European Economic Area (EEA).

The aim is to reduce trade barriers by harmonising the requirements of building products.

REGULATION (EU) No 305/2011 (Construction Products Regulations) OF THE EUROPEAN PARLIAMENT AND COUNCIL fully came into force on 1st July 2013. The Construction Products Regulation is law in all EU countries. However, the Construction Product Directive 89/106 / EEC is not law in all EU countries.

Construction products are products, or parts which are permanently incorporated into buildings. Their performance infl uences the structure's basic requirements (e. g. mechanical strength). Therefore, construction products and materials for safetly relevant applications are affected.

Important building requirements include:

1 Mechanical strength and stability
2 Fire protection
3 Hygiene, health and environmental protection
4 Safety and accessibility during use
5 Sound protection
6 Energy saving and heat protection
7 Sustainable use of natural resources

When a construction product is covered by a harmonised standard (hEN), or a European Technical Assessment or Approval (ETA) has been issued for this product, the manufacturer is obligated to draw up a Declaration of Performance (DoP) for this product and affi x the CE marking on the product. The application for an ETA for a construction product by the manufacturer is voluntary. National approvals may only be issued if a construction product is not marked with a CE label.

Existing European Technical Approvals (ETA) are valid until the end of the validity date and will be amended with the Declaration of Performance (DoP) by the manufacturer from the due date. The reference number of the DoP is part of the CE marking and must be determined by the manufacturer. The Declarations of Performance (DoP) are available on the fi scher website under "Approvals/Assessments": http://www.fi scher.de/sdb.

The CE mark is the only means to certify whether the manufacturer has conformed to the applicable harmonised requirements of construction products. The CE label allows the construction product to be freely traded without trade barriers in the European Economic Area.

Each Member State determines the essential characteristics for use of the construction product and its performance in its territory. The unrestricted use of a construction product in a Member State depends on whether performance values exist in the DoP for the essential characteristics determined by the Member State. If one characteristic is declared with "NPD" (No Performance Determined), this can lead to a ban on use in a Member State. Therefore, each member State must establish Product Contact Points, which will provide information on these regulations. In Germany, this is the Federal Institute for Material Research and Testing (BAM: see www.pcp.bam.de).

Assessment procedure

Fasteners which are not covered by a harmonised standard (hEN) can apply for an ETA (European Technical Assessment) on the basis of a European Assessment Document (EAD).

Existing assessment documents, such as ETAGs (European Technical Approval Guidelines) for metal and plastic fixings are still valid and transferred into EADs in accordance with the EU Const-ruction Products Regulation (CRP). The ETAGs and the new EADs can be downloaded from the EOTA website: http://www.eota.eu

The assessment document for mechanical fasteners (ETAG 001- 1, -2, -3, -4 or in the future, EAD 33-0232) and the assessment document for bonded anchors (ETAG 001-5 or in the future, EAD 33-0499) divides possible approvals of metal fixings into 12 options.

Options 1-6 are for use in cracked and non-cracked concrete, options 7-12 are only for use in non-cracked concrete. Anchors of Option 1 off er the largest range of fl exibility for assessment, since performance values for concrete of the strength classes C20/25 to C50/60, as well as the minimum spacing and edge distances are available (see table below).

Section 6 of the ETAG 001 (in the future, EAD 33-0747) regula-tes the assessment of metal fixings in cracked and non-cracked concrete for multiple use for non-structural systems. Non-load bearing systems include components which do not contribute to the stability of the construction, they only transmit their dead or wind load. These are, for instance, simple suspend-ed ceilings and false ceilings, pipelines and façade claddings.

When using fixings for multiple use, it is assumed that if excessive slippage or failure of a fixing point occurs, that the load will be transferred to neighbouring fi xing point. A fixing point can be defi ned as a single anchor or a group of anchors.

This is known as a redundant system, where stability is not affected by an individual anchor failure.

Possible assessment options according to EAD

Options	Cracked concrete	Non-cracked concrete	One value for all concrete strengths	Different values for C20/25 to C50/60	One value for load direction	Separate values for tensile and shear capacity	^{c}cr / ^{s}cr	$^{c}min < ^{c}cr$ / $^{s}min < ^{s}cr$	Design method as per EN 1992-4
1	✓	✗	✗	✓	✗	✓	✓	✓	A
2			✓	✗					
3			✗	✓	✓	✗			B
4			✓	✗					
5			✗	✓			✓	✗	C
6			✓	✗					
7	✗	✓	✗	✓	✗	✓	✓	✓	A
8			✓	✗					
9			✗	✓	✓	✗			B
10			✓	✗					
11			✗	✓			✓	✗	C
12			✓	✗					

Design of fastenings

Two different anchor designs are differentiated.

Method with global safety factors

Permissible loads are determined from the average failure load or from the 5 % fractile load and compared with the action load.

The safety factor depends on the anchoring system, the type of installation and external infl uences such as temperature and or humidity. Global safety factors are generally = 3 for steel and bonded anchors and = 5 for plastic anchors.

Methods with partial safety factors

According to this method, it is shown that the value of the design actions S_d does not exceed the value of the design resistance R_d ($S_d \leq R_d$).

The action on fi xings are determined according to the same rules and used the same partial safety factors employed in reinforcred concrete design (see Eurocode 1990; national appendix must be observed).

The design resistance is determined by using the characteristic resistance and the partial safety factor of the material ($_M$), which takes into account the scatter of the material. The values can be taken directly form the ETA. Safety is national law. The design method as well as the related partial safety factors are determined by the Member State.

Only the product specific coefficient for installation is specified in the ETA, which is used to calculate the partial factor $_M$. The design standard EN 1992-4, which is expected to be ratified in 2018, contains the national determined partial safety factors (observe the respective national appendex).

The design method as set down according to ETAG 001, Annex C - design method for metal anchors and the design method according to TR029 - bonded anchor design in concrete, as well as CEN/TS 1992-4, Section 4 (mechanical anchors) and Section 5 (chemical anchors) are the current methods for anchor design based on a European Technical Approval or Assessment (ETA). Moreover, the ETAG 001 Annex C distinguishes between three different design methods (A, B and C), method A being the most important and the most economical method since anchors are considered separately for all load directions and failure modes. Methods B and C play a minor role and are hardly used.

Other important design provisions are:

EOTA TR020 Anchor design in concrete under fi re exposure, or CEN/TS 1992-4, Part 1, Appendix D

EOTA TR045
Anchor design in concrete for seismic actions
The applicable assessment design methods are generally indicated in the respective ETA. It is important that design methods are not commingled.

The design for metal anchor (under static and seismic loads as well as under fire exposure) is summarised in EN1992-4, i.e. in Section 4 of the Eurocode 2, but then must be ratified by each Member State and, if applicable, adapted for national annexes. As soon as EN1992-4 is published, all other design methods (ETAG 001 Annex C, TR045, TR020, TR029 and CEN/TS 1992-4) are no longer valid.

fischer has developed a simple yet powerful design software for daily use: the fischer - C-FIX. The software enables designers and users to carry out anchor designs according to different design methods. Complex anchor arrangements can be calculated quickly and easily. The feature "multple design" makes it possible to select the best technical and cost saving solution.

Approvals, markings and their importance

The most important symbols are presented below.



European Technical Approval / Assessment
Issued by a European approval authority (e. g. DIBt) on the basis ofthe guidelines for European technical approvals (ETAG). ETA (Eng-lish): European Technical Approval/Assessment. CE: The CE marks the conformity of the product to all applicable legal provisions in which their installation is intended. This means that the CE mark only certifies that the requirements determined in the relevant har-monisation legal provisions of the union have been complied with.Products with the CE mark can be freely traded in the European Economic Market.



ICC International Code Council
ICC Evaluation Service Inc. (ICC ES) issues reports, e. g. for subsequent anchoring on the basis of the International Building Code® and the related standards in the United States of America



FM Certificate
Recognised for use in local water- based fire extinguisher systems (Factory Mutual Research Corporation for Property Conservation, American insurance company).



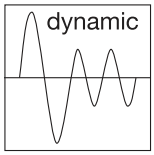
General building authority approval
German approval, issued by the DIBt, Berlin with the accompanying certificate of conformity for construction products with the general building authority approval. Confirmed by a material testing institute.



Fire-tested fixing
The anchor was subjected to a fire test. It is an "investigation report to test the anchor under fire exposure (fire behaviour) (with R-Class). Fire tests are not required when using the simplified verification method according to TR020 - then the values can be transferred directly to the ETA.



This product is made from **high corrosion resistant steel** of corrosion resistance class V, e. g. 1.4529.



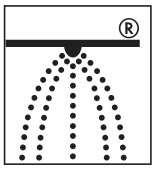
Dynamically loadable anchors
The anchor is suitable and approved for anchoring of "not predominantly static" (i.e. dynamic) loads.static" (i.e. dynamic) loads.static" (i.e. dynamic) loads.



General construction-related test certificate



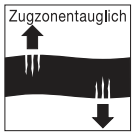
The fixing is suitable for anchoring under **seismic influence.** Please note: The ICC-ESRs also allow seismic stress (see Category C1 and C2 in accordance with the ETAG 001 Annex E).



Mark for labels that confirm compliance with the VDS-CEA guidelines for **sprinkler systems, planning and installation.** Fixings labelled as such may be used for fixing pipes for extinguishing systems.



Tested for **flammability** in accordance with VDE.



Fixings for tensile zones
The fixing is suitable and approved for anchoring in cracked concrete (tensile zone) and in uncracked concrete (compression zone).



Fixing made of high-quality, ageing-resistant **nylon** (polyamide).



Component test with window frame screws in accordance with ift guideline M0-01/1; Testing structural connections on windows.

The term "approvals" used in the catalogue consists of documents that are available and can be used as evidence of the usability of building products for which the documents were issued. These are (fire) reports, general construction-related approvals issued by the German Institute for Construction Technology Berlin (e.g. Z-21...) or European Technical Approvals or Assessments (ETA). In general, the usability of construction products in an EU Member State is given, if the performance of the significant characteristics required in each Member State has been clarified/ confirmed by the manu-facturer. Information on the significant necessary characteristics in a country can be found at the national Product Information Contact (Link: http://ec.europa.eu/Docs- Room/documents/4170/attach-ments/1/translations/en/renditions/native).

Fire prevention

Fire prevention is a critical consideration for those who are responsible for creating the design, specification and construction of new buildings, with consideration in the ongoing maintenance of occupied premises.

As the causes of fire vary and are often unpredictable, construction measures are being designed to influence the formation and spread of fire, smoke and toxic gases, by minimising the available factors needed to create a fire or to limit the spread of fire once it has started. Effective fire fighting within a building is generally achieved through a combination of active and passive FireStop systems and, when used in conjunction with each other, provide a balanced fire protection strategy.

Active FireStop systems

Active fire prevention systems are designed to react to the outbreak of a fire, which is then suppressed with the help of sprinkler systems, halogen installations, fire extinguishers or other proactive mechanical systems. The effects of the fire may also be lessened by the removal of smoke from the equation. By including alarms and emergency lighting, active systems also serve to provide escape paths for people inside the building.

Passive fire prevention systems

Passive fire prevention is an integral component, which is designed and built in to the fabric of the structure. It is also an essential element of the fire safety of a building. The risk of fire can be minimised by dividing the building into a series of compartment/cells bounded by fire rated walls and floors. To maintain the firestopping integrity of a compartment/cells, any gaps, openings, void or channels within the fire rated walls or floors must be sealed with an approved or certfied system to prevent the passage of fire, smoke and toxic gases.

Building codes and national regulations

Most model building codes have very clear requirements on passive fire protection. “Fire investigation reports have consistently shown that unprotected or improperly protected penetrations and joints cause millions in property damage and contribute to the loss of life and injuries due to the uncontrolled migration of fire, smoke and toxic gases.” In order to promote life safety and property protection, the national building codes include fire testing and performance requirements for penetration firestop and fire resistive joint systems. The following regulations are published as statutory instruments by Parliament with respect to life safety purposes:

ENGLAND AND WALES: 1991

Section 11.2 of Approved Document B3 states: “If a fire separating element is to be effective, then every joint, or imperfection of fit, or opening to allow services to pass through the element, should be adequately protected by sealing or fire stopping so that the fire resistance of the element is not impaired”

Section 11.12 adds, under the heading of ‘Fire stopping’, a requirement that: “Joints between fire separating elements should be fire stopped; and all openings for pipes, ducts, conduits or cables to pass through any part of a fire separa-ting element should be:

Kept as few in number as possible and kept as small as practical fire-stopped (which in the case of a pipe or duct, should allow for thermal movement)”

BS 7671: 2008: UNITED KINGDOM

The 17th edition of the IEE Wiring Regulations (BS 7671:2008) is the national standard in the United King-dom for all commercial, domestic and industrial wiring installations.

Section: 527-02-01 states “Where a wiring system passes through elements of building construction such as floors, walls, roofs, ceilings, partitions or cavity barriers the openings remaining after passage of the wiring systems shall be sealed according to the degree of fire resistance required of the element concerned.”

Section: 527-02-02 states “where a wiring system such as conduit, cable ducting, cable trunking, busbar or busbar trunking penetrates an element of building construction ha-ving specified fire resistance it shall be internally sealed so as to maintain the degree of fire resistance of the respec-tive element as well as being externally sealed to maintain the required fire resistance.”

GERMANY: FEDERAL STATE BUILDING ORDER

In Germany, the Federal State Building Order is regulated at the level of the federal states. Therefore, there are 16 regional state building codes with their own regulations and guidelines. The 2002 Directive Building Code and the 2005 Directive Guidelines for conduit and ventilation systems form the basis for further consideration. The list of the Technical Building Regulations – M-ETB, includes other codes, such as the MLAR and the German Ventilation Systems Directive – MLüAR. Once guidelines are adopted into the list at regional state level List of Technical Building Regulations–LTB, the guidelines become legally binding.

NFPA 101 LIFE SAFETY CODE: UNITED STATES

Life Safety Code addresses those construction, protection, and occupancy features necessary to minimise danger to life from the effects of fire, including smoke, heat, and toxic gases created during a fire. The Code establishes minimum criteria for the designs of egress facilities, so as to allow prompt escape of occupants from buildings or, where desirable, into safe areas within buildings. The Code also addresses protective features and systems, building services, operating features, maintenance activities, and other provisions in recognition of the fact that achieving an acceptable degree of life safety depends on additional safeguards to provide adequate egress time or protection for people exposed to fire. Relevant firestop requirements can be found in below mentioned references:
8.2.2 Compartmentation Continuity
8.2.3.2.4 Penetrations and Openings In Fire barriers
8.2.4.4 Penetrations and Openings In Smoke Partitions
8.3.2 Continuity of Smoke Barriers

NFPA 5000 BUILDING CONSTRUCTION AND SAFETY CODE

NFPA 5000 – Building Construction and Safety Code is a model building code developed by the National Fire Protection Association. For the most part, the requirements for fire stops are the same in NFPA 5000 as they are in the IBC. It also addresses joints between assemblies in a similar manner to the IBC. NFPA 5000 states openings must be protected by „a system or material capable of restricting the transfer of smoke". It addresses protection for through-penetrations and membrane penetrations in Section 8.8 using the same test methods as the IBC. The requirements for F and T ratings are also the same. Joint systems, including perimeter joints at curtain walls, are addressed in the same manner as the IBC.

IBC INTERNATIONAL BUILDING CODE: UNITED STATES

In the Past: The Regional Model codes developed by the Building Officials Code Administrators International (BOCA) were used on the East Coast and throughout the Midwest of the United States, while the codes from the Southern Building Code Congress International (SBCCI) were used in the Southeast and the codes published by the International Conference of Building Officials (ICBO) covered the West Coast and across to most of the Midwest. After three years of extensive research and development, the first edition of the International Building Code was published in 1997. The code was patterned on three legacy codes previously developed by the organizations (BOCA, SBCCI, ICBO) that constitute IBC. By the year 2000, ICC had completed the International Codes series. Relevant firestop requirements can be found in below mentioned references:
702 Definitions
704.9 Separation of Vertical Openings - Sprinkler Exception
708 Fire Partitions 1 Hour Rating
709 Smoke Barriers 1 Hour Rating
710 Horizontal Assemblies
711 Penetrations (General)
711.3.2 Sprinkler Heads Electrical Boxes
711.4.1.2 „F" & „T" Rating Requirements
712 Fire-Resistant Joint Systems
712.4 Curtain Wall to Edge of Slab

OTHER RELEVANT CODES FROM IBC:UNITED STATES

The International Building Code and International Residen-tial Code are just a few of the comprehensive I-Codes the Code Council has created. The publications of the codes allow for easier following from members and allow them to observe and study the model code. Some of these codes have specific practices, such as the International Fire Code and the International Green Construction Code, or the IGCC. Here is the current list of I-Codes developed and published by the Code Council:
International Building Code
International Residential Code
International Fire Code
International Plumbing Code
International Mechanical Code
International Fuel Gas Code
International Energy Conservation Code
IBC Performance Code
International Wildland Urban Interface Code
International Existing Building Code
International Property Maintenance Code
International Private Sewage Disposal Code
International Zoning Code
International Green Construction Code.

OTHER RELEVANT CODE

NFPA is responsible for 300 codes and standards that are designed to minimize the risk and effects of fire by establi-shing criteria for building, processing, design, service, and installation.
Some of the other widely used NFPA codes are:
NFPA 70 NEC – National Electrical Code
NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
NFPA 221 - Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls

Approvals, markings and their importance

British Standard
BS 476-20

BS 476-20:1987
Fire tests on building materials and structures. Method for deter-mination of the fire resistance of elements of construc-tion (general principles).

BS EN13501-1

EN13501-1:2007+A1:2009
Fire classification of construction products and building elements. Reaction to Fire.

BS EN13501-2

EN13501-2:2007+A1:2009
Fire classification of construction products and building elements. Resistance to Fire.

BS EN1366-3: 2004

EN1366-3:2004
Fire resistance tests for service installations - Penetration seals.

BS EN1366-4: 2006

EN1366-4:2006
Fire resistance tests for service installations - Linear joint seals.

DIN

DIN 4102:Part1
Fire behaviour of building materi-al and elements - Part 1: Building materials, concepts.

American Standard
ASTM E 84 (UL 723)

ASTM E 84
Test method for Surface Bur-ning Characteristics of Building materials. The test evaluates the spread of flame along the surface of the material. It is not a resistance test.

American Standard
ASTM E 1966
(UL 2079)

ASTM E 1966
Test method for Fire-Re-sistive Joint Systems. This test is used to evaluate the performance of a joint after a cyclic movement test and fire exposure test. UL 2079 - equivalent.

American Standard
ASTM E 814 (UL 1479)

ASTM E 814
Test method for Fire Tests of Through Penetrations Fire Stops. This test is used to evaluate the performance of a firestop system, following fire ex-posure a hose stream test is conducted. UL 1479 - equivalent.

BS EN ISO 10140

BS EN ISO 10140:2010
The laboratory measurement of airborne sound insulation of buildng elements.

BS EN 1026

BS EN 1026: 2000
Air permeability test method.

BS EN 1027

BS EN 1027: 2000
Water permeability test method.

ETA
CE
ETA-XX/XXXX
ETAG XXX-X
xxx

CE marking is a declaration by the manufacturer (through verified testing) that the product meets all the appropriate provi-sions of the relevant legislations implementing certain European Directives. ETA - The European Technical Assess-ment provides information about the construction product to be declared in relation to its essential characteristics.

CLASSIFIED
C UL US

UL is an abbreviation for Under-writers Laboratories Inc. which is an independant, not for profit product safety testing and certifi-cation organisation.

UL EU

UL-EU Mark is intended for use on products destined for the European marketplace.

FM
APPROVED

FM Approvals is an internatio-nal leader in third-party certifica-tion and approval of commercial and industrial products.

warrington certifire certification
APPROVED PRODUCT
CF xxxx

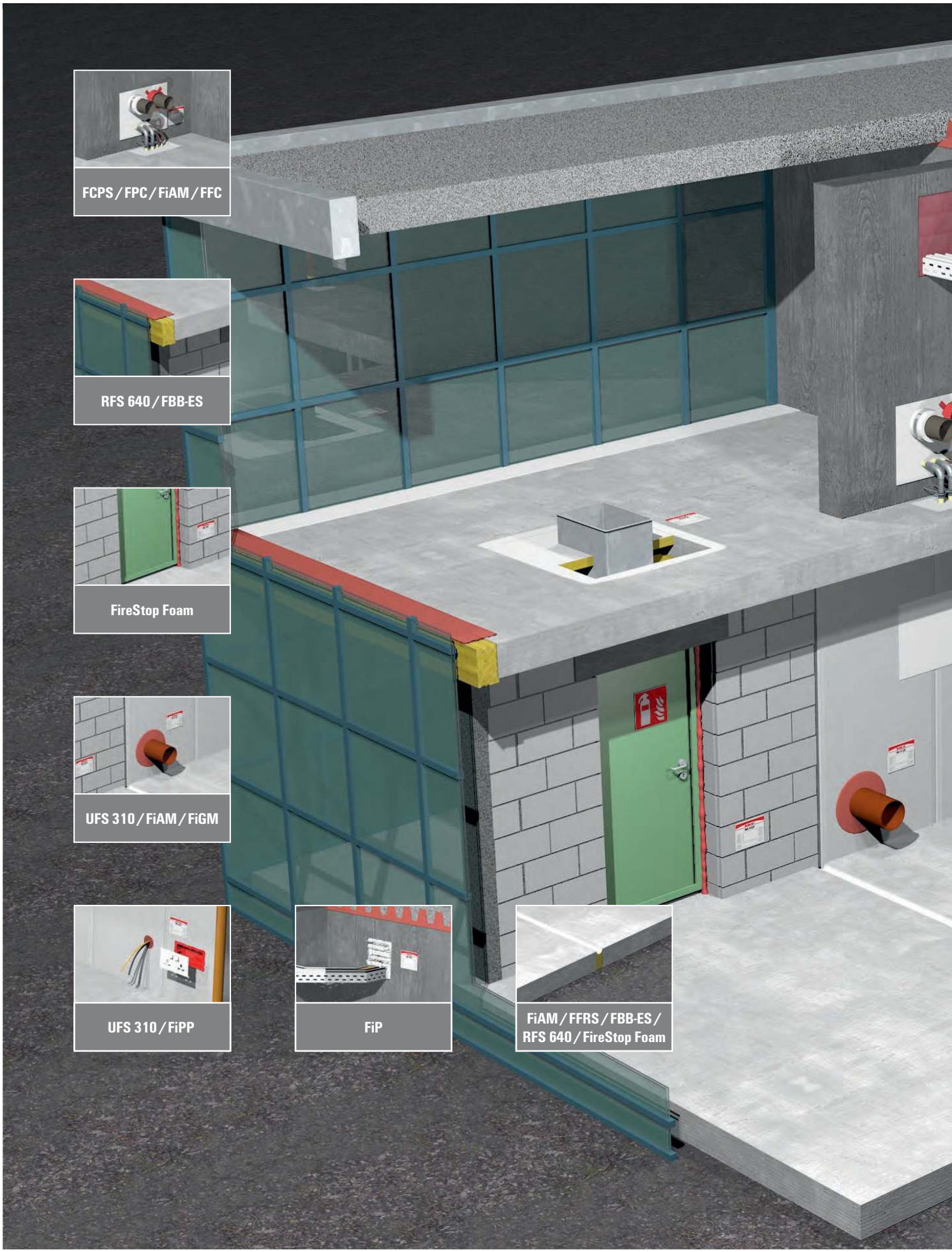
Certifire is an independant Third Party Certification organisation. The scheme under-takes require-ments such as the manufacturing of products under a Third Party Quality Management System, Independent Audit Testing, and a Comprehensive Field of Applica-tions document based on careful chosen test that helps to ensure the products and systems are used within their approval scope.

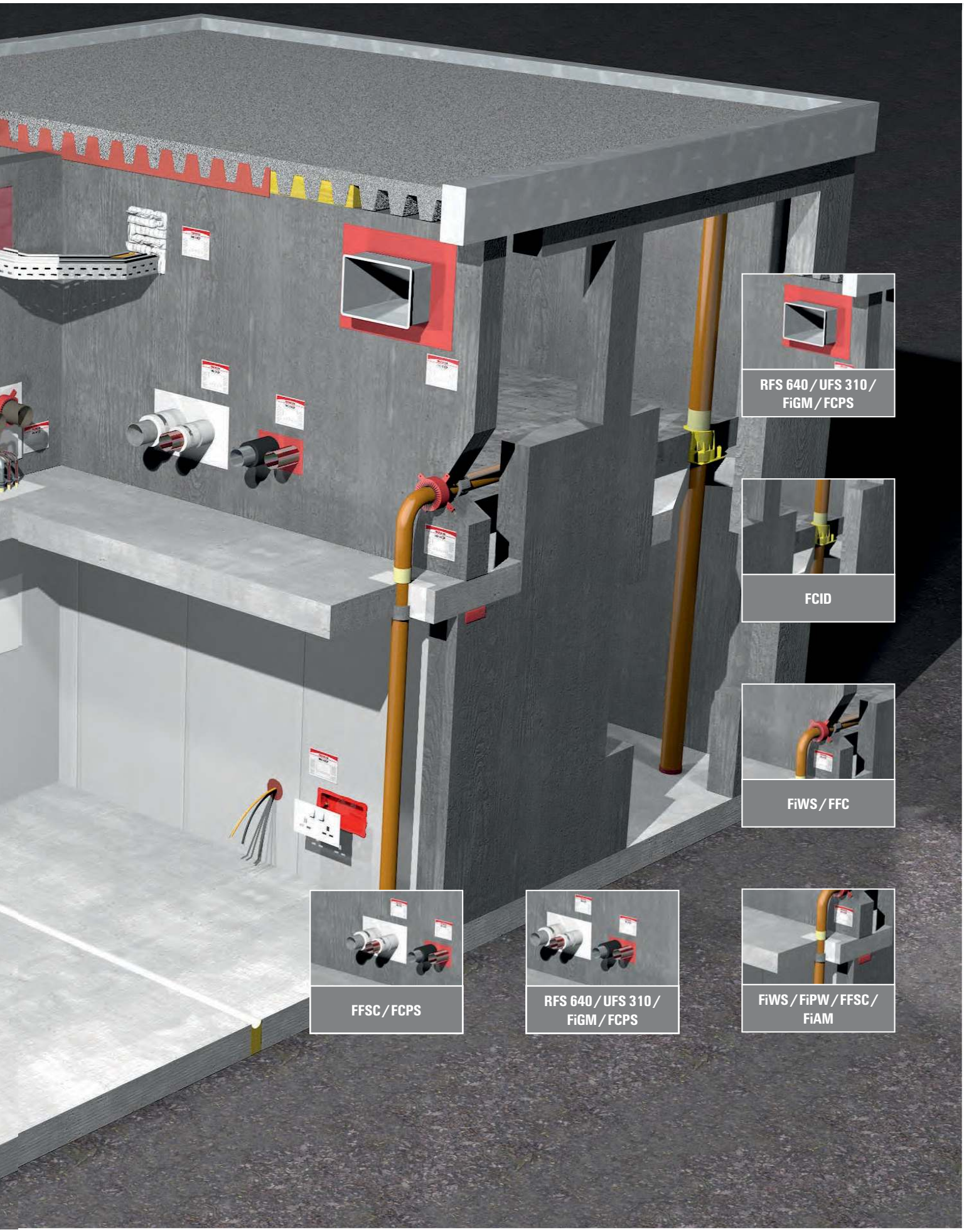
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Advanced product selection guide

The most important symbols are presented below.

Product	Tested to								Approved to				Application								Page
	BS 476: Part 20	BS EN 1366-3	BS EN 1366-4	DIN 4102	AS 1530	ASTM E 814 (UL 1479)	ASTM E 1966 (UL 2079)	ASTM E84 (UL 723)	ETA/CE marking	UL approved	Certifire approved	FM approval	Construction joint	Perimeter joints	Metallic pipes	Insulated pipes	Non-metallic pipes	Cable and cable trays	Air ducts	Insulated air ducts	
Intumescent Acoustic Mastic FiAM	■	■	■				■	■	■	■	■		■		■			■	■		
Fire Rated Silicone Sealant FFRS	■		■						■		■		■								
Rapid Fire Seal RFS 640	■					■	■	■		■		■	■	■	■			■	■		
Fire | Barr ElastoSeal FBB-ES	■		■						■				■	■							
Universal FireStopping Sealant UFS 310	■					■	■	■		■		■	■		■	■	■	■	■	■	
Intumescent Graphite Mastic FiGM	■	■	■						■		■		■		■	■	■	■	■		
Intumescent Pipe Wrap FiPW	■	■							■		■					■	■				
Intumescent Wrap Strip FiWS						■		■		■		■			■	■	■				
Fire Collar FFC	■	■							■							■	■				
Cast in Device FCID	■				■												■				
Intumescent Pillows FiP	■	■							■		■				■			■	■		
Intumescent Putty Pad FiPP	■	■																■			
Coated Panel System FCPS	■	■							■		■				■	■	■	■	■		
FireStop Compound FFSC	■	■			■		■		■	■					■	■	■	■	■		
Fire | Barr Cavity Barriers	■		■										■	■							
FireStop Foam	■		■	■									■								
Thermal Defense Wrap DTW	■	■							■						■	■		■	■	■	


FCPS / FPC / FiAM / FFC
RFS 640 / FBB-ES
FireStop Foam
UFS 310 / FiAM / FiGM
UFS 310 / FiPP
FiP
FiAM / FFRS / FBB-ES / RFS 640 / FireStop Foam


RFS 640 / UFS 310 / FiGM / FCPS
FCID
FiWS / FFC
FFSC / FCPS
RFS 640 / UFS 310 / FiGM / FCPS
FiWS / FiPW / FFSC / FiAM

Engineering judgement request form

Project name: _____
Consultant: _____
Contactor: _____
Contact: _____
Email: _____
Phone: _____
Fax: _____

Requested by: _____
Company: _____
Email: _____
Phone: _____
Fax: _____
Supplier: _____
fischer engineer: _____

Fire rating requirements

Frating (hours):

Trating (hours):

Approval type:

Through penetration

Assembly details: ☐ Wall ☐ Floor

Base material: ☐ Concrete ☐ Blocks ☐ Drywall

Thickness: _____

Other please specify: _____

Opening details: ☐ Circular ☐ Rectangular
Sleeved ☐ Yes ☐ No
Size
Sleeve type ☐ PVC ☐ Steel

Annular Space: Min: _____ Max: _____

Penetration details:

☐ Pipe	☐ Duct	☐ Cables	☐ Cable trays/ladders	☐ Bus Bars
Size _____	Size _____	Size _____	Size _____	Size _____
Type	Type	Type	Type	Type
Insulation	Insulation	Insulation	Insulation	Insulation
Type _____	Type _____	Type _____	Type _____	Type _____
Thick _____	Thick _____	% fill _____	Nos _____	_____

Joint

Joint type: ☐ Head of wall ☐ Wall to wall ☐ Bottom of wall ☐ Perimeter joint ☐ Floor to floor ☐ Floor to wall

Base material: ☐ Concrete ☐ Drywall ☐ Blocks ☐ Steeldeck ☐ Concrete ☐ Drywall ☐ Blocks ☐ Steeldeck

Joint details: ☐ Static ☐ Dynamic
Width _____

Movement required: _____

Curtain wall details: _____

Special conditions / comments / drawings / standards

_____
_____
_____
_____
_____
_____

Calculation of Consumption Guide

CALCULATIONS FOR MASTIC / SEALANT

a = Hole diameter in mm
b = Depth of sealant in mm/wet fi lm thickness for spray material (see recommendations)
c = Pipe or bunched cables diameter in mm
d = Annular space in mm (see recommendations)
l = Length of square opening/joint
w = Width of square opening/joint
h = Cartridge or spray bucket size in ml
n = Number of holes
e = Area of hole in $mm^2 = \pi(a \div 2)^2$
f = area of pipe in $mm^2 = \pi (a \div 2)^2$
g = Amount of mastic needed per hole in ml = ((e-f) x b) ÷ 1,000

Round holes

No. of cartridges needed = n x $(\frac{g}{h})$
Area of hole e = π x $(a \div 2)^2$ mm^2
Area of pipe f = π x $(c \div 2)^2$ mm^2
Mastic volume = g = ((e-f) x b) ÷ 1,000 ml

Example:
a = 90 mm
b = 40 mm
c = 50 mm
h = 310 ml
n = 20

e = 3.14 x 45^2 = 6,361.73 mm^2
f = 3.14 x 25^2 = 1,963.50 mm^2
g = ((6,361.73 - 1,963.50) x 40) ÷ 1,000 = 175.92 ml

No. of cartridges = 20 x $(\frac{175.92}{310})$
= 11.35 cartridges

Square holes

No. of cartridges needed = n x $(\frac{g}{h})$
Area of hole e = l x w mm^2
Area of pipe f = π x $(c \div 2)^2$ mm^2
Mastic volume = g = ((e-f) x b) ÷ 1,000 ml

Example:
l = 90 mm
w = 100 mm
b = 40 mm
c = 50 ml
h = 310 ml
n = 20

e = 90 x 100 = 9,000 mm^2
f = 3.14 x 25^2 = 1,963.50 mm^2
g = ((9,000 - 1,963.50) x 40) ÷ 1,000
= 281.46 ml

No. of cartridges = 20 x $(\frac{281.46}{310})$ = 18.1 cartridges

Linear joints

No. of cartridges/buckets = $(\frac{g}{h})$
Area of joint = e = l x w mm^2
Mastic volume = ((e-f) x b) ÷ 1000 ml
= g

Example for mastic/sealant:
w = 20 mm
l = 30m = 30,000 mm
b = 10 mm
h = 310 ml
e = 20 x 30,000 = 60,000 mm^2
g = (60,000 x 10) ÷ 1,000 = 6,000 ml
No. of cartridges = $(\frac{6,000}{310})$
= 19.4 cartridges

Example of joint Spray:
w = 100 mm, w1 = 125 mm (with overspray)
l = 300 m = 300,000 mm
b = 1.5 mm
h = 19 litres = 19,000 ml
e = 125 x 300,000 = 37,500,000 mm^2
g = (37,500,000 x 1.5) ÷ 1,000 = 56,250 ml
No. of buckets = $(\frac{56,250}{19,000})$ = 2.96 buckets

Calculation of Consumption Guide

CALCULATIONS FOR COMPOUND

l = length of the opening b = width of the opening
d = depth as per required fi re rating C = penetrant area or cross sectional area of services
Y = coverage/yield of 1 bag in litres
Volume of compound required = volume of opening - volume of services
= [(lxbxd) - (Cxd)] m3
= [(lxbxd) - (Cxd)] x 1,000 litres
= V

$$\text{No. of bags} = \frac{V}{Y}$$

Example
l = 1,000 mm = 1 m b = 500 mm = 0.5 m
d = 100 mm = 0.1 m C = 20 % of opening = l x b x 20 % = 1 x 0.5 x 0.2 = 0.1
Y = 24 litres per 22 kg bag
Volume of compound required = [(1 x 0.5 x 0.1) - (0.1 x 0.1)] x 1,000 litres
V = 40 litres

$$\text{Numbers of bags required} = \frac{40}{24}$$

= 1.67 bags

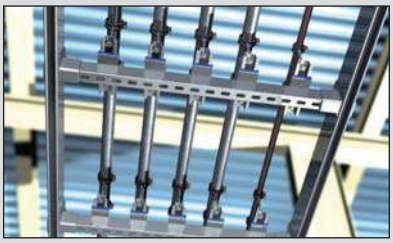
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CALCULATIONS FOR PILLOWS FIP

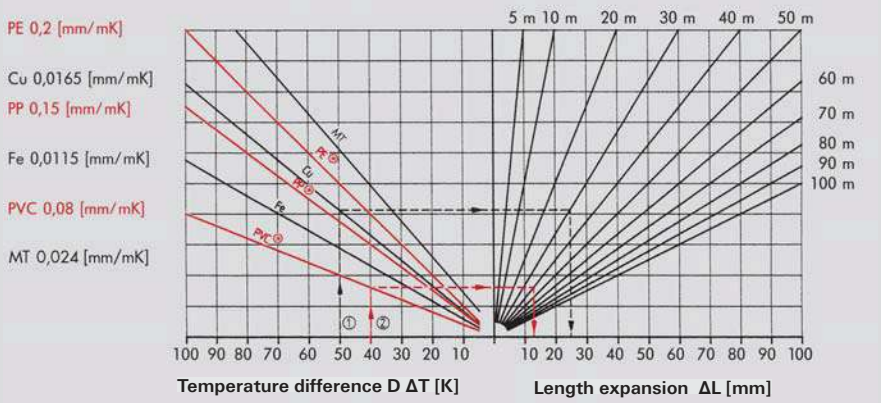
Estimation of large and medium size pillows in walls and floors openings of size up to 1 sq. meter.

Width [mm]	Size / Seal type	Length [mm] 100 Large	100 Medium	300 Large	300 Medium	500 Large	500 Medium	700 Large	700 Medium	900 Large	900 Medium	1,000 Large	1,000 Medium
200	Wall	3	5	7	13	12	22	17	31	21	39	24	47
	Floor	2	3	4	7	6	12	9	17	11	22	12	27
400	Wall	5	9	14	26	24	44	33	61	42	78	47	95
	Floor	3	5	7	15	12	24	17	34	22	43	24	52
600	Wall	7	13	21	39	35	65	49	91	63	117	70	143
	Floor	4	7	11	22	18	36	25	51	33	65	36	79
800	Wall	9	18	28	52	47	87	66	122	84	157	94	192
	Floor	5	10	15	29	24	48	34	67	33	87	48	107
1,000	Wall	10	22	35	65	59	109	82	152	105	196	117	217
	Floor	6	12	18	36	30	60	42	84	54	108	60	120

Elongation



Materials expand with heat. For long components, the change in length is mainly con-sidered. So it is not always a matter of expansion. Shrinkage upon cooling is to also be included in the calculation. This is important when installing pipes. Within piping, the change in length is to be specifi cally steered. Not doing this during installation results not only in pipe defects, but also in serious damage to components. It is therefore essential to determine how great the change in the length of a pipe can be. For this pur-pose, the pipe length and the expansion coeffi cient of the pipe material, as well as the expected temperature diff erence, must be known. This is to be determined such that not only the normal operating temperatures, but also the maximum temperatures that can arise in a case of malfunction, are taken into account. The range is therefore from around 10 °C assembly temperature up to 95°C service temperature for water fi lled systems.



Note:
For plastic pipes (PE, PP, PVC), the length expansionread from the diagram is to be multiplied by a factor of 10.

Example:

① Copper pipe, Cu – Length of pipe span 30 m
Temperature difference △T = 50 K
Length expansion △ L= 24,75 mm

② PVC pipe – Length of pipe span L = 40 m
Temperature difference △ T = 40 K
Length expansion △ L = 128 mm (table value x10)

Length expansion calculation formula

$\triangle L = L \cdot \triangle T \cdot \alpha$

[mm] [m] [K] [mm/m K]

△ L = Change in length
L = Length of the pipe span/section
△ T = Temperature difference
α = Length expansion coefficient

Soundproofing



As defined in the appropriate standards, the goal of soundproofing is to reduce the transmission to other apartments or usage areas to a given noise range. The upper limits for permissible residual noise levels are defined in the standards.

Soundproofing - VDI 4100

In principle, the VDI 4100 values are, among other things, protection against noise from building systems that are mounted in the neighbouring area. According to VDI 4100, living areas are rooms that are in need of protection; in apartments, these are all rooms with a floor space of > 8m2. This includes kitchens, bathrooms, toilets, hallways and ancillary rooms. VDI 4100 further recommends agreeing with the contracted companies the sound insulation values SSt EB I = 35 dB or SSt EB II = 30 dB for noise emerging from one's own area. Exceptions to this are all sounds that are influenced by the residents, i.e. self-installed air conditioners in the apartment or noises from flushing toilets, etc.

Soundproofing - DIN 4109

The DIN 4109 from 2016-07 still supplemented by A1 (2001-01), in which the permissible sound pressure level in living and sleeping areas for noise from building installations was reduced from 35 to 30 dB(A). The standard is not applicable to the protection against noise from building installations in one's own living area, but only to sounds coming from "external" areas as defined in VDI4100. For increased sound insulation, DIN 4109 Addendum 2 (from 1989) specifies a reduction in the permissible values by 5 dB(A) (to 25 dB(A)) as effective for noises from building installations.

Soundproofing - important influential factors for pipe mounting

Sound propagates in vibrations. These sound waves can propagate in solid, liquid and gaseous media, where the speed of this sound propagation differs greatly in the various media. So the sound in pipe installations is primarily forwarded through the pipeline itself and not through the carried medium. Transmission over the metal pipe is faster than in water, for example. In welded heating systems, for example, the individual sounds of striking a pipe can propagate throughout the entire building. The sound waves are transmitted in a medium in that the molecules constantly jolt one another, thereby transmitting the wave. Steel pipes or metallic mounting elements have an ordered metallic lattice, wherein forwarding is faster and with less loss than in amorphous materials, such as rubber (general elastomers). It can thus be determined that an inversely proportional relationship exists between the speed of sound [symbol; c] and the insulating behaviour of materials. That is, materials with a low sound speed always have better insulating properties than materials with a high sound speed (steel c = 5100 m/s). Rubber (c ~40 m/s) is therefore eminently suitable for sound insulation.
In rubber, the sound waves stop dead, so to speak, wherein the energy is converted into heat.

Therefore, the sound isolation must in principle occur between the pipes and the structure. Here, we recommend the installation of a sound insulating element as close to the sound source as possible; in the simplest case, with an insulating insert in the pipe clamp itself. Sound tested pipe clamps by fischer FRS Plus pipe clamp, FRS pipe clamp and FRS-L Universal pipe clamp.

Corrosion protection



In most cases , pipes and supply lines are installed in dry rooms. Therefore, in addition to corrosion resistant materials, such as plastics or stainless steel and copper, the steel products used for installation systems are galvanised. A zinc coating thickness of 5-8 µm by means of electrolytic process (galvanising) is standard.

For mounting rails, Sendzimir galvanised material is mainly used. Sendzimir galvanising is a method in which the material is drawn through a molten zinc bath, thereby achie-ving a zinc layer thickness of 12-20 µm. This method is used when there is no more welding for the subsequent processing. This is the case for mounting rails because they are cold-formed after galvanising. By cutting and stamping the holes, the surface in this area is not completely covered by a protective layer. Punched mounting rails are therefore only recommended for the dry interior rooms.

For cantilever brackets, non-galvanised channel pieces are used which are welded to the base plate. Following completion, the entire component is galvanised, creating a zinc coating thickness of 5-8 µm.

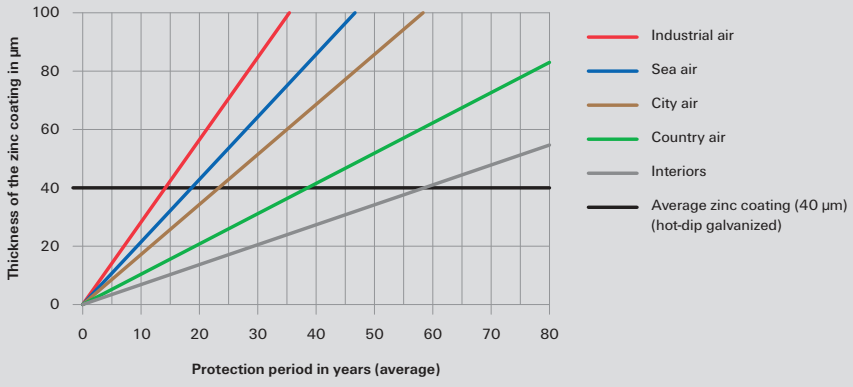
Threaded parts are either galvanised or made of stainless steel. Hot dip galvanising is less suitable for this because the large zinc layer thickness of 40-150 µm severely impairs the thread engagement

.If installation systems are installed outdoors or in wet interior rooms, they must be made of either hot dip galvanised steel or stainless steel.

Hot dip galvanising is very well suited to the protection of steel. The corrosion process is thus 10 times slower than with galvanising. The zinc loss depends on the surrounding atmoshpere and humidity. An annual zinc reduction of 1 - 10 µm can, however, be assumed. The layer thickness is therefore crucial to the durability of the material.

Crucial here are the environmental infl uences under which the systems are installed. An overview of the expected impact on the protective action can be seen in the following diagram and tables.

hot-dip galvanized steel:

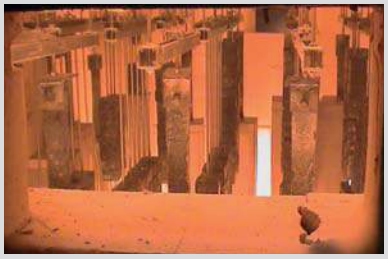


Stainless steel

Steel Grade					Corrosion	
Material No.	Short Name	AISI	UNS	Designation of the Steel Group with	Resistance Class	Exposure and Typical Applications
1.4305	X8CrNiS18-9	303	S 30300	A1	I / light	Indoor climate except damp location.
1.4301	X5CrNi18-10	304	S 30400	A2	II / moderate	Accessible constructions without nameable content of chlorides or sulfur dioxide, except industrial atmosphere.
1.4307	X2CrNi 18-9	304L	S 30403	A2L		
1.4362	X2CrNiN23-4	324	S32304	A4	III / medium	Constructions with moderate chloride and sulfur dioxide exposure and inaccessible constructions.
1.4401	X5CrNiMo17-12-2	316	S 31600			
1.4404	X2CrNiMo17-12-2	316 L	S 31603	A4L		
1.4571	X6CrNiMoTi17-12-2	316 Ti	S 31635	A5		
1.4529	X1NiCrMoCuN25-20-7	-	N 08926	1.4529	IV / strong	High corrosion exposure due to chlorine, chloride and/or sulfur dioxide, high humidity as well as accumulation of hazardous substances.

6

Fire protection



Fire protection in pipe installations according to the latest standards.

- Fire-proof installations for individual pipes and pipe routes from R30 - R120 or F30 to F120.
- Proof of compliance with the criteria of MLAR (German standard pipe system directive) for installation in escape and rescue routes

Fire protection - protection goals

Firstly, fi re protection serves to protect people, and is regulated by the building laws in the respective countries (or regional states). Secondly, fi re protection serves to protect property and this is regulated by the insurance associations, such as VdS and FM. These requirements partially go beyond the building legislation. This is particularly evident in the installation of fi re protection systems, such as sprinklers, etc., as approved or recogni-sed components must be used here. (See the following section for further details on this)

Fire inspection reports for the mounting of pipe clamps and mounting rails

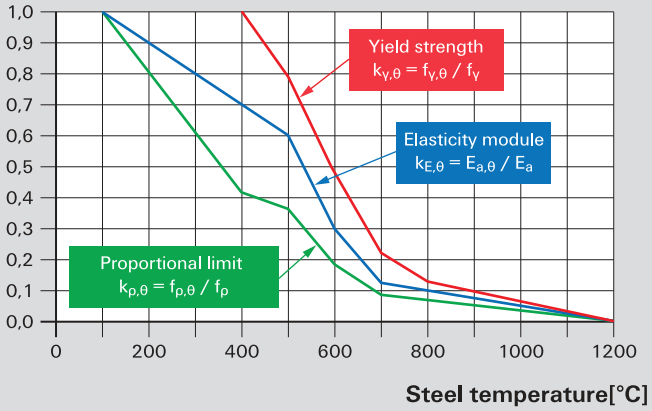
Fire safety inspection reports meet the requirements for fi re protection according to the building regulations of the countries and, especially for Germany, according to the nati-onwide homonymic German pipe systems directive (LAR), based on the standard pipe systems directive of 2005 (MLAR 2005).

Personal protection is defi ned in the MLAR Directive through clear rules for escape routes, such as corridors, stairwells and hallways between stairwells and the exit.

The key message is to ensure the safety of the escape route by ensuring the functioning of the fi re-proof sub-ceiling. To this end, compliance with the minimum distance of min a ≤ 50 mm according to MLAR is required between installations and underlying suspen-ded fi re-proof F30 sub-ceilings (fi re resistance of 30 minutes). Based on the fi re inspec-tions, load information for a fi re resistance of 30 minutes in relation to the maximum

Permissible deformation of mounting rails or pipe clamps, for example, was determined. The necessity for these considerations arises from the properties of the steel, which at 30 minutes is subjected to a temperature of > 800° C according to the standard temperature curve (ISO curve).

Reduction factors k_θ



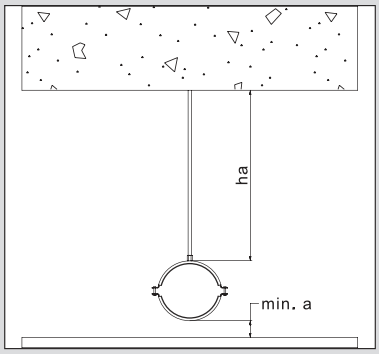
Dependency of the yield strength, proportional limit and elasticity module on the temperatutre (basis: EN1993-1-2:2012-12 Eurocode 3).

Additionally, the same information is documented in the inspection reports for a fire resistance rating of R30, R60, R90 and R120 according to EN1363-1 and DIN4102-2. (see following load tables)

Product overview with proof in inspection reports and supplementary sheets.

Product	Document no.	MLAR	R30 – R120	F30 – F120
FRS	MFPA Leipzig - GS 3.2/14-175-2	•	•	
FUS / FCA	MFPA Leipzig - GS 3.2/14-175-4	•	•	
FRS-L Universal	MFPA Leipzig - GS 3.2/15-141-3	•	•	
FLS / ALK	MFPA Leipzig - GS 3.2/15-141-4	•	•	
SB	MPA-NRW - 210005109-7			•
SBS	MPA-NRW - 210005109-4	•		•
PDH-K	MPA-NRW - 210005109-6	•		•

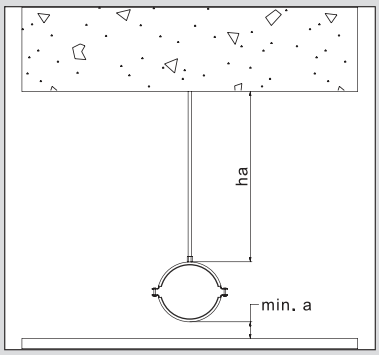
Load tables based on fire protection inspection reports.



Pipe clamp FRS - Load table based on the Adivisory Opinion No. GS 3.2/14-175-2

The following figures are valid for all FRS-L universal pipe clamps, galvanized, hdg and stainless steel.

FRS M8/M10		MLAR-loads		Max. Loads				
Threaded rods ≥ 4.8		Strain	F-resistance	Max. Strain	Fire resistance time [minute]			
Clamping range	h_a	min a	30	min a	30	60	90	120
[mm]	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
12 - 67	≤ 250	≤ 50	0.56	51	0.56	0.29	0.20	0.15
	≤ 500	≤ 50	0.56	54				
	≤ 750	≤ 50	0.56	57				
	≤ 1000	≤ 50	5.51	60				
72 - 92	≤ 250	≤ 50	0.65	50	0.79	0.49	0.36	0.29
	≤ 500	≤ 50	0.62	53				
	≤ 750	≤ 50	0.59	56				
	≤ 1000	≤ 50	0.57	59				
108 - 116	≤ 250	≤ 50	0.48	61	0.63	0.39	0.29	0.23
	≤ 500	≤ 50	0.43	64				
	≤ 750	≤ 50	0.39	66				
	≤ 1000	≤ 50	0.35	69				
121 - 168	≤ 250	≤ 50	0.96	61	1.00	0.51	0.34	0.25
	≤ 500	≤ 50	0.89	63				
	≤ 750	≤ 50	0.82	66				
	≤ 1000	≤ 50	0.85	69				



Pipe clamp FRS-L universal load table based on the Adivisory Opinion No. GS 3.2/15-141-3

The following figures are valid for all FRS-L universal pipe clamps, galvanized, hdg and stainless steel.

FRS-L universal M8/M10		MLAR-loads		Max. loads				
Threaded rods ≥ 4.8		Strain	F-resistance	Max. Strain	Fire resistance time [minute]			
Clamping range	h_a	min a	30	min a	30	60	90	120
[mm]	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
8 - 37	≤ 250	≤ 50	0.27	54	0.27	0.14	0.09	0.07
	≤ 500	≤ 50	0.26	57				
	≤ 750	≤ 50	0.24	60				
	≤ 1000	≤ 50	0.22	62				
38 - 66	≤ 250	≤ 50	0.17	72	0.29	0.14	0.09	0.06
	≤ 500	≤ 50	0.16	75				
	≤ 750	≤ 50	0.15	78				
	≤ 1000	≤ 50	0.13	80				
67 - 119	≤ 250	≤ 50	0.53	75	0.53	0.35	0.27	0.22
	≤ 500	≤ 50	0.53	78				
	≤ 750	≤ 50	0.53	81				
	≤ 1000	≤ 50	0.53	83				

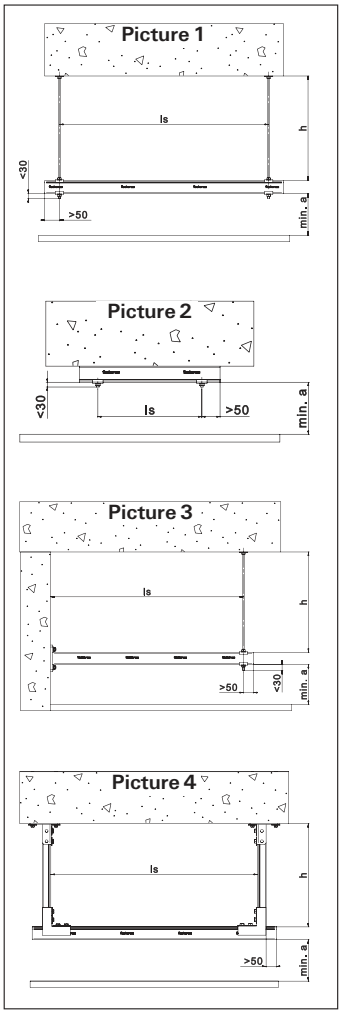
FUS-Channel/FCA-Cantilever arm - Load table based on the Adivisory Opinion No. GS 3.2/14-175-4

The following figures are valid for FUS channels and FCA cantilever arms, galvanized, hdg and stainless steel

FUS / FCA 41/2,5 (picture 1-3)		**MLAR -loads**		**Max. Loads**				
Threaded rods ≥ 4.8		strain	F-resistance	Max. strain	Fire resistance time [minute]			
Load case	l_s	min a [1]	30	min a [2]	30	60	90	120
	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
Point load	≤ 400	≤ 50	0,90	278	2,40	1,33	0,92	0,72
	≤ 700	≤ 50	-	320	1,61	1,04	0,80	0,67
Multiple load [3]	≤ 400	≤ 50	0,90	278	2,40	1,33	0,92	0,72
	≤ 700	≤ 50	-	320	1,61	1,04	0,80	0,67
Uniformly distributed load	≤ 400	≤ 50	1,50	258	3,00	2,10	1,41	1,06
	≤ 700	≤ 50	0,60	299	2,44	1,57	1,21	1,00
	≤ 1250	≤ 50	-	468	3,29	1,81	1,27	0,98
FUS / FCA 62/2,5 (picture 1-3)		**MLAR -loads**		**Max. Loads**				
Threaded rods ≥ 4.8		strain	F-resistance	Max. strain	Fire resistance time [minute]			
Load Case	l_s	min a [1]	30	min a [2]	30	60	90	120
	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
Point load	≤ 400	≤ 50	1,76	25	1,76	1,06	0,78	0,62
	≤ 1000	≤ 50	-	460	2,27	1,31	0,93	0,72
Multiple load [3]	≤ 400	≤ 50	1,76	25	1,76	1,06	0,78	0,62
	≤ 960 [4]	≤ 50	4,30	550	4,30	2,14	1,39	1,01
	≤ 1000	≤ 50	0,55	661	2,52	1,60	1,21	0,99
Uniformly distributed load	≤ 400	≤ 50	1,76	25	1,76	1,06	0,78	0,62
	≤ 960 [4]	≤ 50	4,30	550	4,30	2,14	1,39	1,01
	≤ 1000	≤ 50	0,55	661	2,52	1,60	1,21	0,99
	≤ 1250	≤ 50	0,50	592	2,41	1,65	1,31	1,11
FUS 62/2,5 (picture 4)		**MLAR -loads**		**Max. Loads**				
Vertical FUS 41/2,5		strain	F-resistance	Max. strain	Fire resistance time [minute]			
Load case	l_s	min a [1]	30	min a [2]	30	60	90	120
	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
Point load	≤ 1000	≤ 50	0,57	369	1,33	0,87	0,68	0,57
Multiple load [3]	≤ 1000	≤ 50	0,62	649	1,92	1,34	1,08	0,92
Uniformly distributed load	≤ 1000	≤ 50	0,62	649	1,92	1,34	1,08	0,92

[1] Valid for a suspension height ha ≤ 500 mm
[2] Based on suspension height ha = 250mm, Expansion length of threaded rods in case of fire ~ 10mm/m
[3] Given load values apply for multiple loads as summated point loads symmetrical allocated
[4] This values are valid for FCA 62/2,5 with additional support by threaded rod

Picture 1 - 3 are valid for FUS/FCA and FLS/ALK load tables

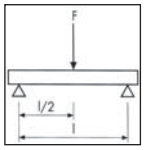


FLS-Channel/ALK-Cantilever arm - Load table based on the Adivisory Opinion No. GS 3.2/14-175-?

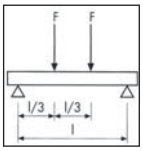
The following figures are valid for FLS channels and ALK cantilever arms, galvanized, hdg and stainless steel

FUS / FCA 41/2,5 (picture 1-3)		**MLAR -loads**		**Max. Loads**				
Threaded rods ≥ 4.8		strain	F-resistance	Max. strain	Fire resistance time [minute]			
Load case	l_s	min a	30	min a	30	60	90	120
	[mm]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	[kN]
Point load	≤ 400 [1]	≤ 50	0,24	93	0,24	0,13	0,10	0,09
	≤ 400 [2]	≤ 50	0,09	289	0,47	0,38	0,33	0,30
	≤ 400 [4]	≤ 50	0,32	226	1,33	0,78	0,53	0,40
Multiple load [3]	≤ 400 [1]	≤ 50	0,72	93	0,72	0,38	0,30	0,27
	≤ 400 [2]	≤ 50	0,26	289	1,42	1,13	0,99	0,90
	≤ 400 [4]	≤ 50	0,81	226	1,33	0,78	0,53	0,40
Uniformly distributed load	≤ 400 [1]	≤ 50	0,72	93	0,72	0,38	0,30	0,27
	≤ 400 [2]	≤ 50	0,35	308	1,37	1,19	1,06	0,95
	≤ 400 [4]	≤ 50	0,81	226	1,33	0,78	0,53	0,40

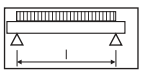
[1] Valid for a suspension height ha = 0 mm, s. picture 2
[2] Valid for a suspension height ha = 500mm, s. picture 1 (Expansion length of threaded rods in case of fire ~ 10mm/m)
[3] Given load values apply for multiple loads as summated point loads symmetrical allocated
[4] This values are valid for ALK 37-450 with additional support by threaded rod, s picture 3 (ha = 500 mm)



Single load
Spot load, e.g. a pipe clamp on the rail.



Multiple load
More than one load point on the rail, e.g. several pipe clamps.



Uniform load
Uniform distribution of load on the rails, e.g. bend-proof ventilation duct.

Mounting sprinkler systems



Sprinkler systems are usually created according to diff erent standards. For example, according to the VdS standard (VdS CEA 4001), the American FM standard 1951 (Factory Mutual Insurance Company" (FM Global)), UL 203 (Underwriters Laboratories (UL)), NFPA 13 regulations (National Fire Protection Association (NFPA)) or EN 12845.

The European Directive CEA 4001 was created in 1995 by the insurance industry in coo-peration with the manufacturers' association EUROFEU, and VdS CEA 4001 was created in Germany in 2003 by the "Association of Property Insurers" (VdS).

EN 12845 was developed on the basis of CEA 4001 from 1995 and the VdS CEA 4001 from 2003, creating a standard that was practically the same word for word. National practices, such as those for Germany, are to be included in a revised DIN 14489 as a national annex to EN 12845.

The American rules correspond to the requirements for mounting pipe installations, but they must be checked in detail in each case.

For mounting sprinkler pipes, the diff erent load values, mounting distances and connection sizes for pipe loops and pipe clamps, which are listed in the following table for the most common directives, are applicable.

	FM1951				NFPA13				VdS CEA 4001			
Pipe sizes	Test load	Max. distance	Min rod size		Test load calcula-ted	Max. distance	Min rod size		Loading capacity	Max. distance	Min rod size	
DN	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[metric]	[inch]
15	no data	no data	no data	no data	1.4	3.60	9.5	3/8	2.0	4.00	M8	no data
20	1.512	3.6	M10	3/8	1.5	3.60	9.5	3/8	2.0	4.00	M8	no data
25	1.824	3.6	M10	3/8	1.7	3.66	9.5	3/8	2.0	4.00	M8	no data
32	1.913	3.6	M10	3/8	1.9	3.66	9.5	3/8	2.0	4.00	M8	no data
40	2.313	4.6	M10	3/8	2.4	4.57	9.5	3/8	2.0	4.00	M8	no data
50	2.825	4.6	M10	3/8	2.9	4.57	9.5	3/8	3.5	4.00	M10	no data
65	4.181	4.6	M10	3/8	3.8	4.57	9.5	3/8	3.5	6.00	M10	no data
80	4.715	4.6	M10	3/8	4.8	4.57	9.5	3/8	3.5	6.00	M10	no data
90	5.583	4.6	M10	3/8	5.7	4.57	9.5	3/8	3.5	6.00	M10	no data
100	6.561	4.6	M10	3/8	6.7	4.57	9.5	3/8	5.0	6.00	M10	no data
125	8.896	4.6	M12	1/2	9.0	4.57	12.7	1/2	5.0	6.00	M12	no data
150	11.632	4.6	M12	1/2	11.8	4.57	12.7	1/2	8.5	6.00	M12	no data
200	16.903	4.6	M12	1/2	18.2	4.57	12.7	1/2	8.5	6.00	M16	no data
250	26.044	4.6	M16	5/8	26.7	4.60	15.9	5/8	no data	6.00	no data	no data

	FM1951				NFPA13				VdS CEA 4001			
Pipe sizes	Test load	Max. distance	Min rod size		Test load calcula-ted	Max. distance	Min rod size		Loading capacity	Max. distance	Min rod size	
DN	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[metric]	[inch]
300	35.141	4.6	M16	5/8	36.0	4.60	15.9	5/8	no data	6.00	no data	no data
350	no data	no data	no data	no data	42.9	4.60	no data	no data	no data	6.00	no data	no data
400	no data	no data	no data	no data	55.7	4.60	no data	no data	no data	6.00	no data	no data
450	no data	no data	no data	no data	70.1	4.60	no data	no data	no data	6.00	no data	no data
500	no data	no data	no data	no data	84.4	4.60	no data	no data	no data	6.00	no data	no data

Dimensions and weights of pipes, ventilation ducts and ventilation pipes

Schedule 40 pipe table

S.no.	Nom. Pipe Size	Out Diameter	Inner Diameter	Out Diameter	Inner Diameter	Weight of pipe	Weight of water in pipe	Total pipe weight filled with
		in	in	mm	mm	kg/M`	kg/M`	kg/M`
1.	1/8"	0.405	0.269	10.3	6.8	0.4	0.04	0.4
2.	1/4"	0.540	0.364	13.7	9.2	0.6	0.1	0.7
3.	3/8"	0.675	0.493	17.1	12.5	0.8	0.1	1.0
4.	1/2"	0.840	0.622	21.3	15.8	1.3	0.2	1.5
5.	3/4"	1.050	0.824	26.7	20.9	1.7	0.3	2.0
6.	1"	1.315	1.049	33.4	26.6	2.5	0.6	3.1
7.	11/4"	1.660	1.380	42.2	35.1	3.4	1.0	4.3
8.	11/2"	1.900	1.610	48.3	40.9	4.0	1.3	5.4
9.	2"	2.375	2.067	60.3	52.5	5.4	2.2	7.6
10.	21/2"	2.875	2.469	73.0	62.7	8.6	3.1	11.7
11.	3"	3.500	3.068	88.9	77.9	11.3	4.8	16.0
12.	31/2"	4.000	3.548	101.6	90.1	13.6	6.4	19.9
13.	4"	4.500	4.026	114.3	102.3	16.1	8.2	24.3
14.	5"	5.563	5.047	141.3	128.2	21.8	12.9	34.6
15.	6"	6.625	6.065	168.3	154.1	28.2	18.6	46.8
16.	8"	8.625	7.981	219.1	202.7	42.5	32.1	74.6
17.	10"	10.750	10.020	273.1	254.5	60.2	50.7	111.0
18.	12"	12.750	11.938	323.9	303.2	79.7	72.2	151.8
19.	14"	14.000	13.000	355.6	330.2	94.3	87.0	181.3
20.	16"	16.000	15.000	406.4	381.0	123.2	113.8	237.0
21.	18"	18.000	16.874	457.2	428.6	155.9	144.6	300.5
22.	20"	20.000	18.814	508.0	477.9	182.9	179.2	362.0
23.	24"	24.000	22.626	609.6	574.7	254.7	259.2	513.9

Weights of galvanized ventilation ducts in kg/m without insulation

Sheet metal 0.75			Sheet metal 0.88						Sheet metal 1.0						Sheet metal 1.13						Sheet metal 1.25				
200	224	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	2000	2240	2500	2800	3150	◄B ▼H
6.6	7.0	7.4	9.3	10.0	10.7	11.6	12.6	13.6	16.7	18.3	20.0	22.0	24.2	26.4	32.8	36.0	39.8	44.7	49.7	54.7	70.2	77.6	86.3	96.3	200
	7.4	7.8	9.8	10.4	11.2	12.1	13.0	14.0	17.2	18.8	20.5	22.5	24.7	26.9	33.4	36.6	40.4	45.3	50.3	55.3	70.8	78.3	86.9	97.0	224
		8.3	10.3	10.9	11.7	12.6	13.6	14.5	17.8	19.4	21.1	23.1	25.3	27.5	34.1	37.3	41.0	46.0	51.0	55.9	71.6	79.1	87.7	97.8	250
			10.8	11.5	12.3	13.2	14.1	15.1	18.5	20.0	21.8	23.8	26.0	28.2	34.8	38.0	41.8	46.7	51.7	56.7	72.5	79.9	88.6	98.6	280
				12.2	13.0	13.8	14.8	15.8	19.3	20.8	22.6	24.5	26.7	28.9	35.7	38.9	42.6	47.6	52.6	57.6	73.5	80.9	89.6	99.6	315
					13.7	14.6	15.6	16.6	20.1	21.7	23.4	25.4	27.6	29.8	36.7	39.9	43.6	48.6	53.6	58.5	74.6	82.1	90.7	100.8	355
						15.5	16.5	17.4	21.1	22.7	24.4	26.4	28.6	30.8	37.8	41.0	44.7	49.7	54.7	59.7	75.9	83.4	92.0	102.1	400
							17.4	18.4	22.2	23.8	25.5	27.5	29.7	31.9	39.0	42.3	46.0	51.0	55.9	60.9	77.3	84.8	93.4	103.5	450
								19.4	23.3	24.9	26.6	28.6	30.8	33.0	40.3	43.5	47.2	52.2	57.2	62.2	78.8	86.3	94.9	104.9	500
									24.6	26.2	27.9	29.9	32.1	34.3	41.8	45.0	48.7	53.7	58.7	63.6	80.5	88.0	96.6	106.7	560
										27.6	29.5	31.5	33.7	35.9	43.5	46.7	50.5	55.4	60.4	65.4	82.5	90.0	98.6	108.7	630
											31.2	33.2	35.4	37.6	45.5	48.7	52.5	57.4	62.4	67.4	84.4	92.3	100.9	111.0	710
												35.2	37.4	39.6	47.7	51.0	54.7	59.7	64.6	69.6	87.4	94.9	103.5	113.6	800
													39.6	41.8	50.2	53.4	57.2	62.2	67.1	72.1	90.3	97.8	106.4	116.4	900
														44.0	52.7	55.9	59.7	64.6	69.6	74.6	93.2	100.6	109.3	119.3	1000
															55.7	58.9	62.6	67.6	72.6	77.6	96.6	104.1	112.7	122.8	1120
																62.2	65.9	70.9	75.8	80.8	100.3	107.8	116.4	126.5	1250
																	69.6	74.6	79.6	84.5	104.7	112.1	120.8	130.8	1400
																		79.6	84.5	89.5	110.4	117.9	126.5	136.6	1600
																			89.5	94.5	116.2	123.6	132.3	142.3	1800
																				99.4	121.9	129.4	138.0	148.1	2000
																					128.8	136.3	144.9	155.0	2240
																						143.8	152.4	162.4	2500
																							161.0	171.1	2800
																								181.5	3150

The weights in kg/m are reference values. The weights can deviate, depending on the sheet metal thickness and the type of flange used. The flange weight is included flat-rate. The loads based on a mineral wool weight of 80 kg/m2 and a thickness of 5 cm.

Weights of galvanized ventilation ducts in kg/m with (80 kg/m³ , 5 cm thickness)

Sheet metal 0.75			Sheet metal 0.88						Sheet metal 1.00						Sheet metal 1.13						Sheet metal 1.25				
200	224	250	280	315	355	400	450	500	560	630	710	800	900	1000	1120	1250	1400	1600	1800	2000	2240	2500	2800	3150	◄B ▼H
9.1	9.6	10.2	12.1	13.0	14.0	15.2	16.4	17.7	21.0	22.9	25.1	27.6	30.4	33.2	39.8	43.8	48.3	54.3	60.4	66.4	79.4	87.8	97.6	109.0	200
	10.2	10.8	13.8	13.6	14.6	15.8	17.0	18.3	21.7	23.6	25.8	28.3	31.1	33.8	40.6	44.5	49.0	55.0	61.1	67.1	80.2	88.6	98.4	109.8	224
		11.4	14.5	14.3	15.3	16.4	17.7	19.0	22.4	24.3	26.5	29.0	31.8	34.5	41.3	45.3	49.8	55.8	61.9	67.9	81.0	89.5	99.2	110.6	250
			15.3	15.0	16.0	17.2	18.4	19.7	23.2	25.1	27.3	29.8	32.6	35.4	42.2	46.2	50.7	56.7	62.8	68.8	82.0	90.4	100.2	111.6	280
				15.9	16.9	18.1	19.3	20.6	24.2	26.1	28.3	30.8	33.6	36.3	43.3	47.2	51.8	57.8	63.8	69.9	83.1	91.6	101.3	112.7	315
					17.9	19.1	20.3	21.6	25.3	27.2	29.4	31.9	34.7	37.4	44.5	48.4	53.0	59.0	65.0	71.1	84.4	92.9	102.6	114.0	355
						20.2	21.5	22.7	26.5	28.5	30.7	33.2	35.9	38.7	45.9	49.8	54.3	60.4	66.4	72.4	85.9	94.3	104.1	115.5	400
							22.7	24.0	27.9	29.8	32.0	34.5	37.3	40.1	47.4	51.3	55.8	61.9	67.9	73.9	87.5	96.0	105.7	117.1	450
								25.3	29.3	31.2	33.4	35.9	38.7	41.4	48.9	52.8	57.3	63.4	69.4	75.4	89.1	97.6	107.4	118.7	500
									30.9	32.9	35.1	37.6	40.3	43.1	50.7	54.6	59.1	65.2	71.2	77.3	91.1	99.5	109.3	120.7	560
										34.8	37.0	39.5	42.3	45.0	52.8	56.7	61.3	67.3	73.3	79.4	93.4	101.8	111.6	123.0	630
											39.2	41.7	44.5	47.2	55.2	59.1	63.7	69.7	75.7	81.8	96.0	104.4	114.2	125.6	710
												44.2	47.0	49.7	57.9	61.9	66.4	72.4	78.5	84.5	98.9	107.4	117.1	128.5	800
													49.7	52.5	61.0	64.9	69.4	75.4	81.5	87.5	102.1	110.6	120.4	131.8	900
														55.3	64.0	67.9	72.4	78.5	84.5	90.5	105.4	113.9	123.6	135.0	1000
															67.6	71.5	76.0	82.1	88.1	94.1	109.3	117.8	127.5	138.9	1120
																75.4	80.0	86.0	92.0	98.1	113.5	122.0	131.8	143.1	1250
																	84.5	90.5	96.6	102.6	118.4	126.9	136.6	148.0	1400
																		96.6	102.6	108.6	124.9	133.4	143.1	154.5	1600
																			108.6	114.7	131.4	139.9	149.6	161.0	1800
																				120.7	137.9	146.4	156.2	167.5	2000
																					145.7	154.2	164.0	175.3	2240
																						162.7	172.4	183.8	2500
																							182.2	193.6	2800
																								204.9	3150

Important dimensions, variables and units

6

Material

S 250 GD

	Material No.	Tensile strength Rm N/mm² min.	Yield strength ReH N/mm² min.	Elongation at break A80% min.
S 250 GD	1.0242	≥ 330	≥ 250	≥ 19

DX 51 D

DX 51 D	1.0226	270 - 500	- *	≥ 22

*For fischer profiles defined 240 N/mm²

DC 01

DC 01	1.0330	270 – 410	≤ 280	≥ 28

S 235 JR

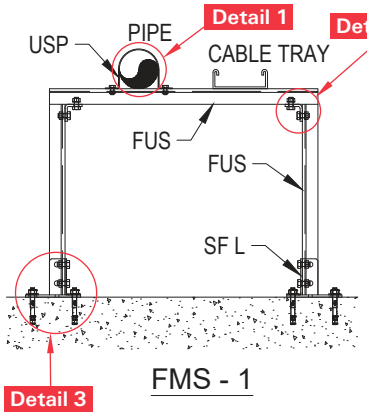
S 235 JR	1.0037	360 - 510	≥ 235	19/17

DD 11

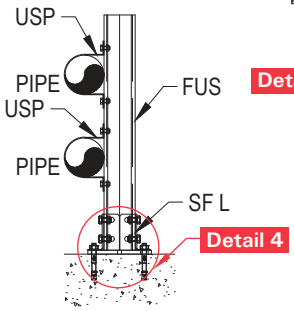
				L0 = 80mm		L0 = 5,65√S0
DD 11	1.0332	440	170 - 360	23	24	28

equivalents of carbon steel qualities			
DIN EN ISO			ASTM
Description	Material-no.		
S 250 GD+Z	1.0242	DIN EN 10346	A 569
DD11	1.0332	DIN EN 10111	A 569
DC01	1.0330	DIN EN 10130	A 366
St 22	1.0320	DIN 1614-1	n/a
DX51D+Z 275 NA-C	1.0226+Z	DIN EN 10327	A 653
S235JR	1.0037	DIN EN 10025	A 283
S 355 MC	1.0976	DIN EN 10149	Gr. 50
4.6; 4.8, 5.8, 8.8	DIN EN ISO 898-1		F 568M

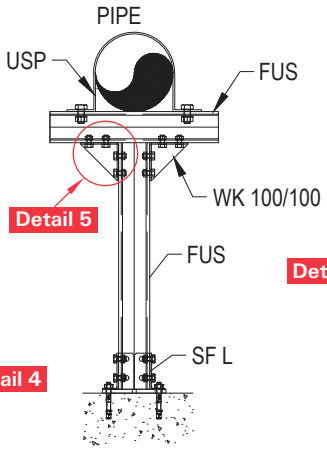
Floor Mounted Supports



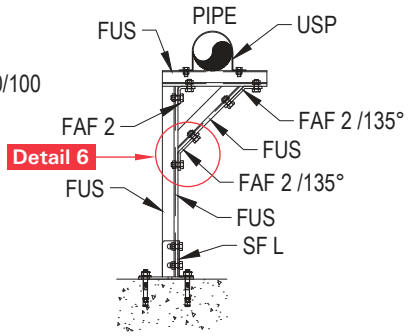
FMS - 1



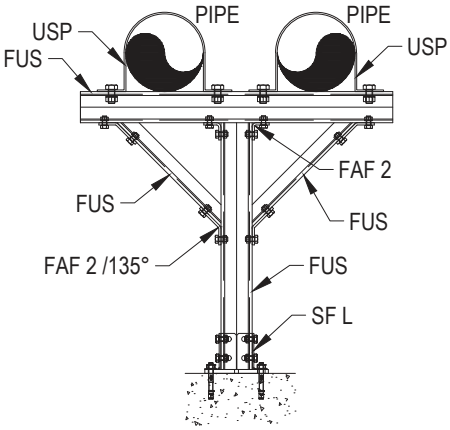
FMS - 2



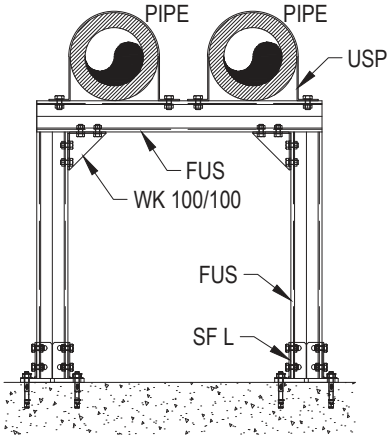
FMS - 3



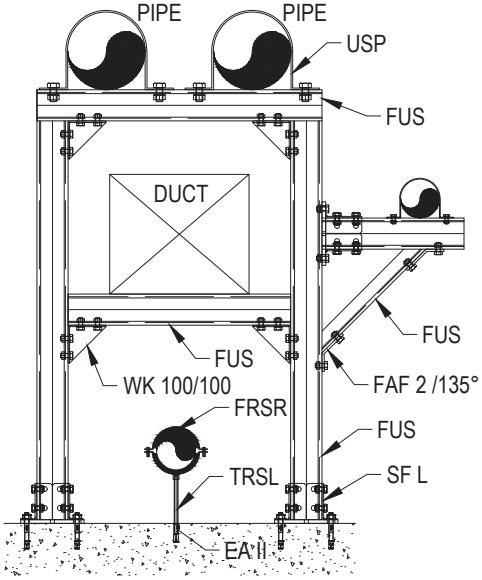
FMS - 4



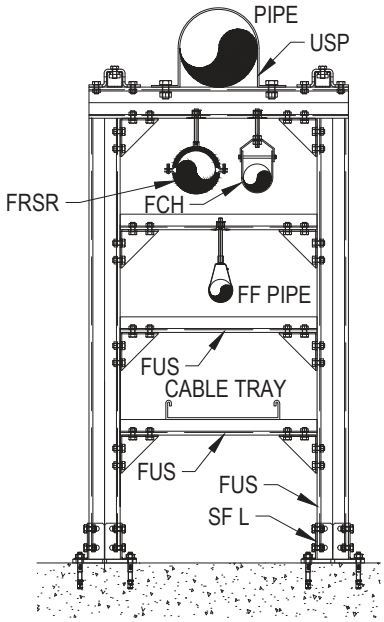
FMS - 5



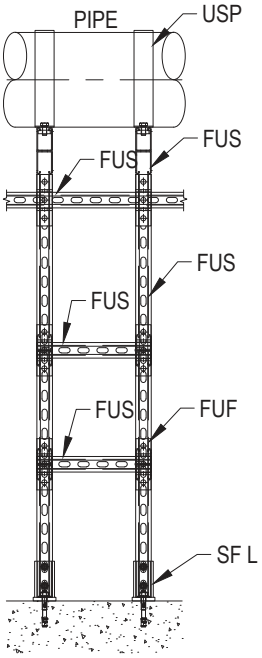
FMS - 6



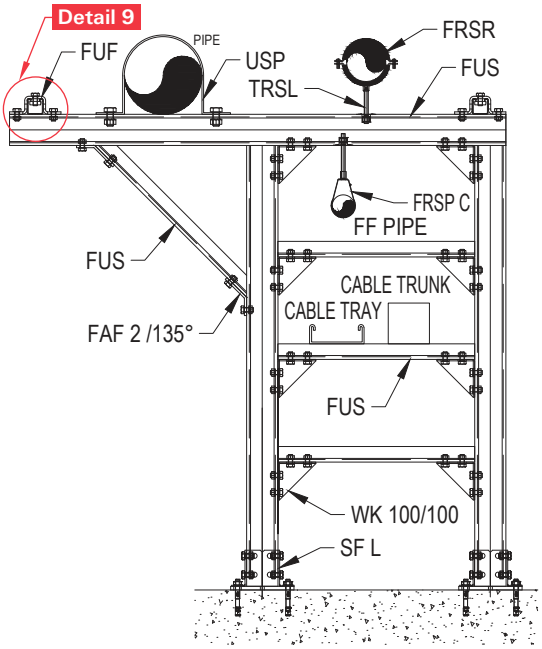
FMS - 7



FMS - 8

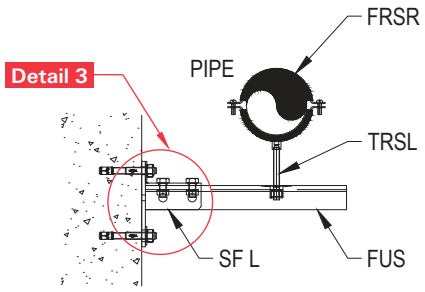


FMS - 9

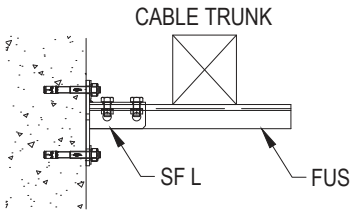


FMS - 10

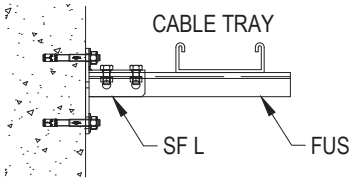
Wall Mounted / Cantilever Supports



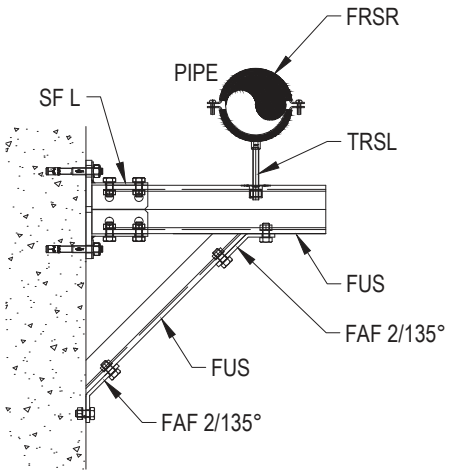
WMS - 1



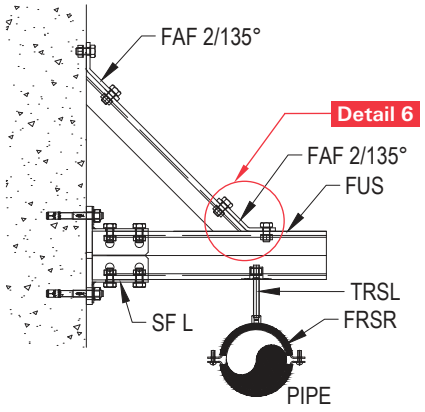
WMS - 2



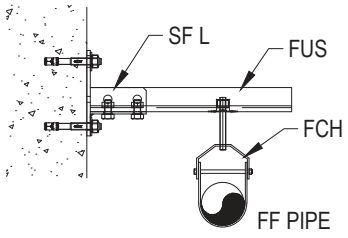
WMS - 3



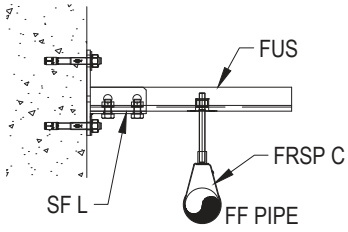
WMS - 4



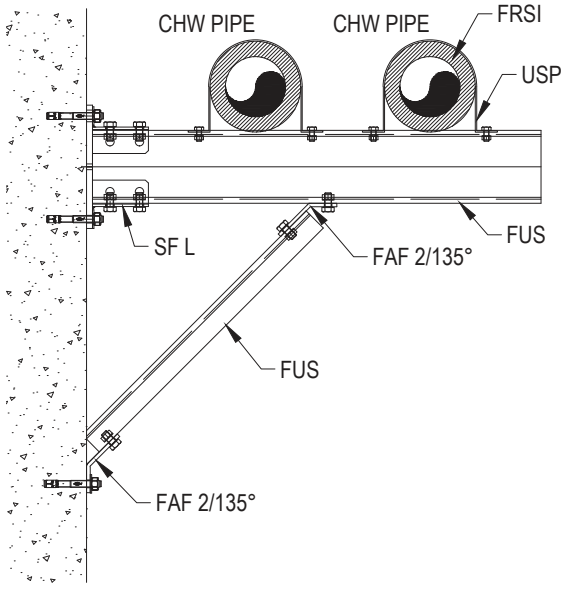
WMS - 5



WMS - 6

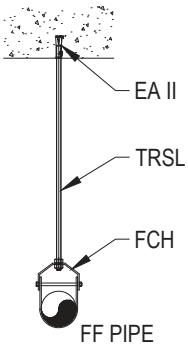


WMS - 7

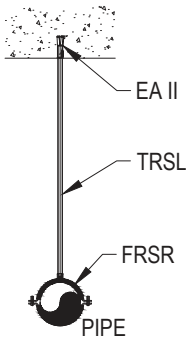


WMS - 8

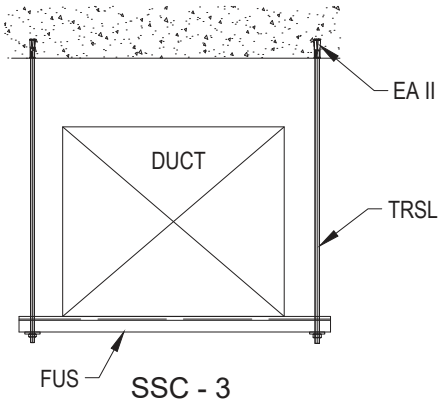
Suspended Supports (Ceiling)



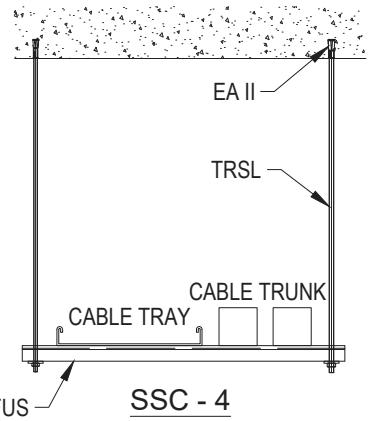
SSC - 1



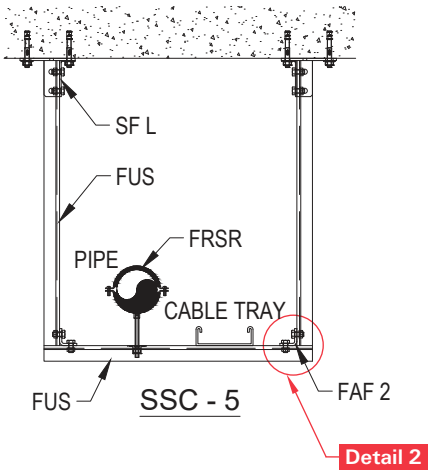
SSC - 2



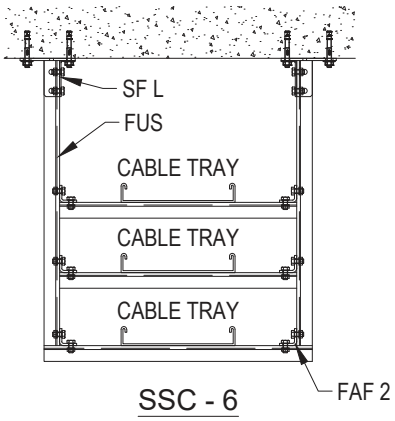
SSC - 3



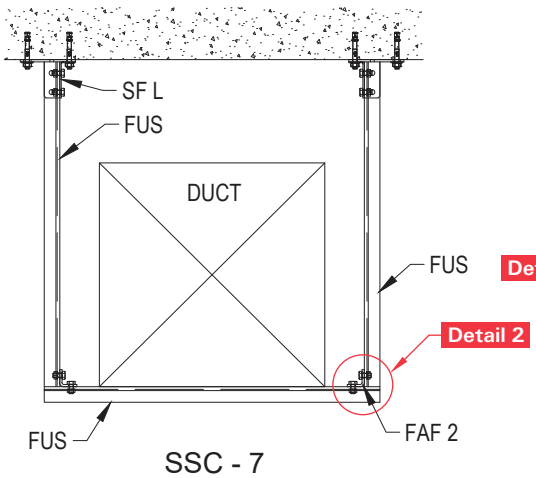
SSC - 4



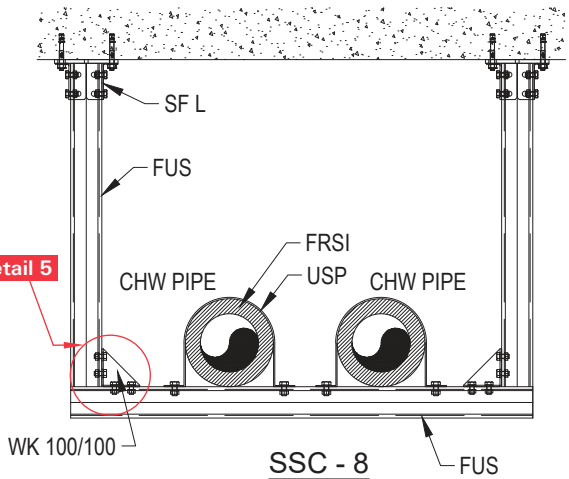
SSC - 5



SSC - 6

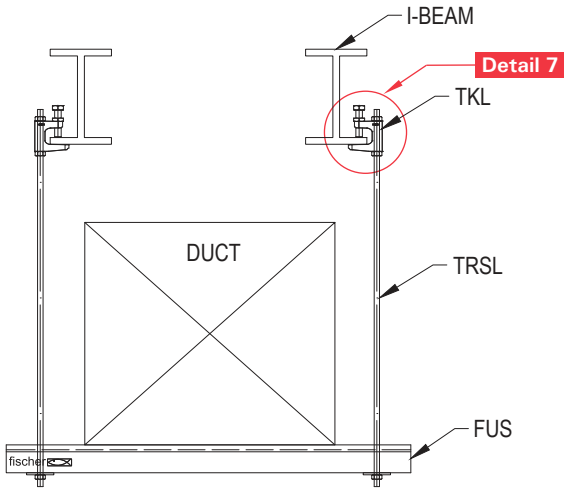


SSC - 7

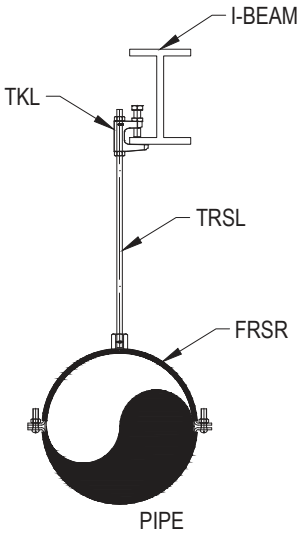


SSC - 8

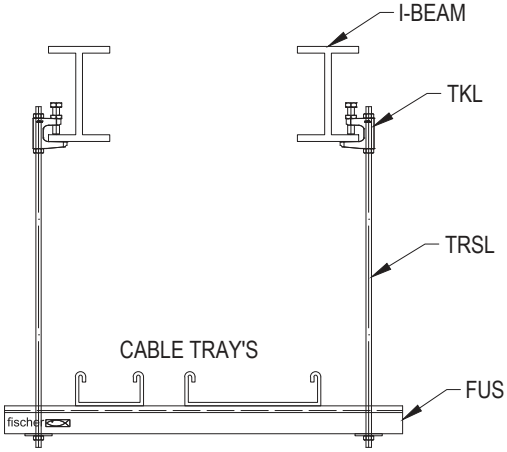
Suspended Supports (Structure)



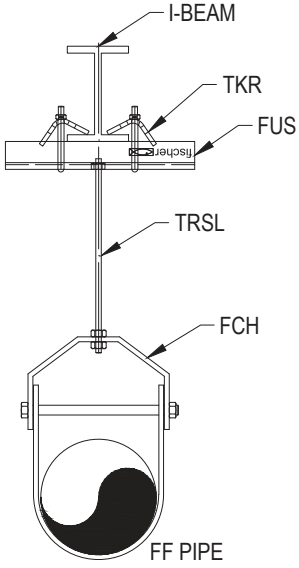
SSS-1



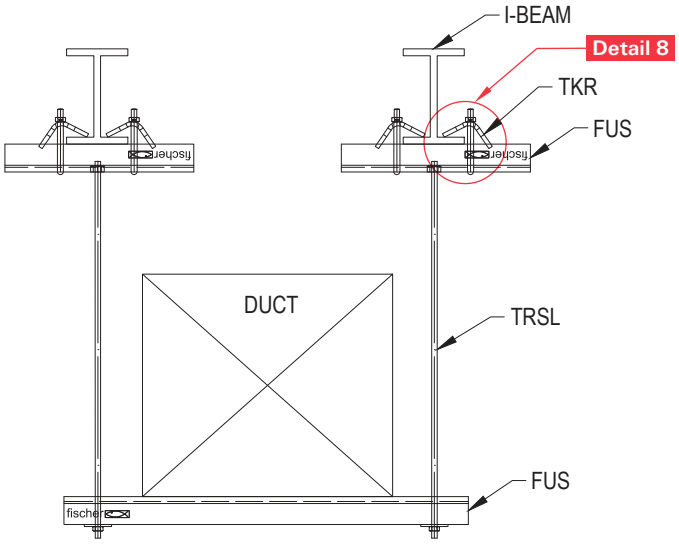
SSS-2



SSS-3

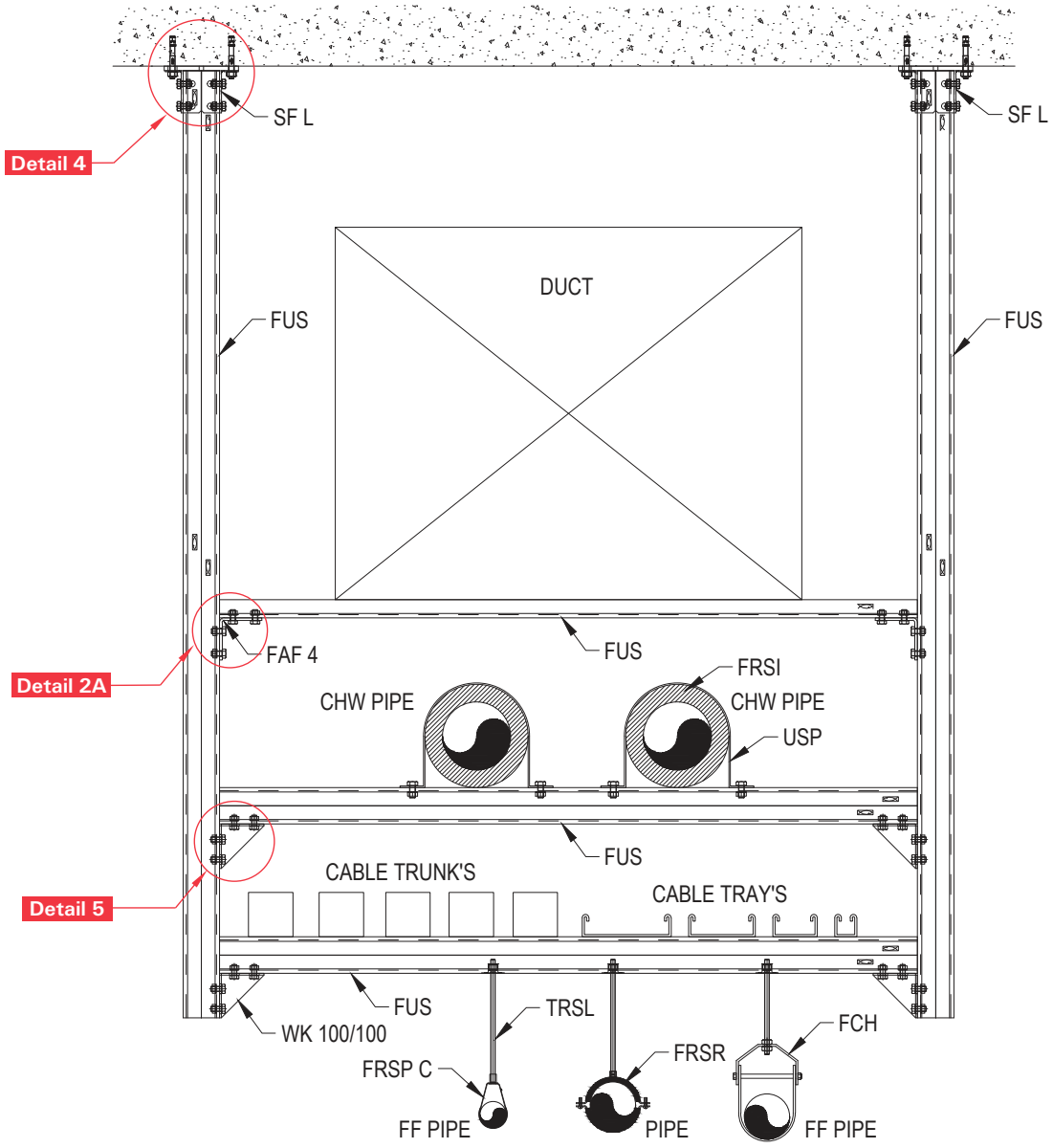


SSS-4

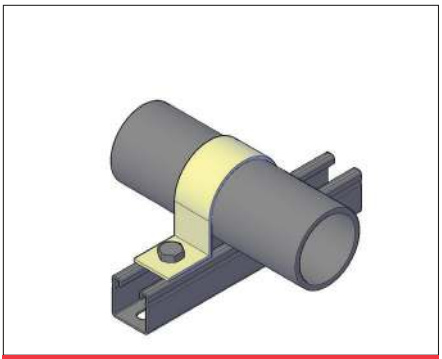


SSS-5

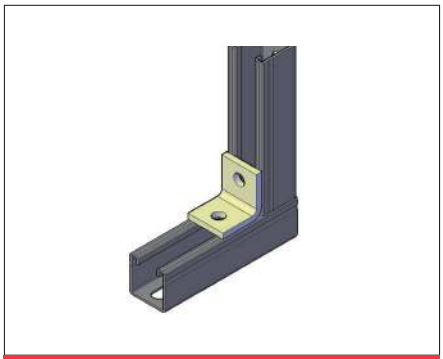
Combined Support for MEP Systems



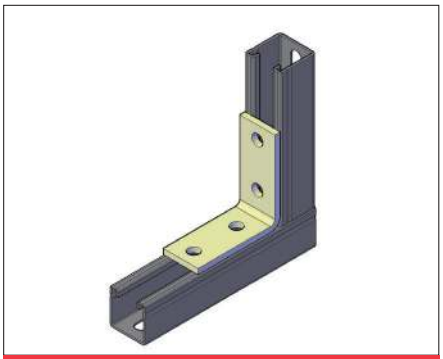
Details



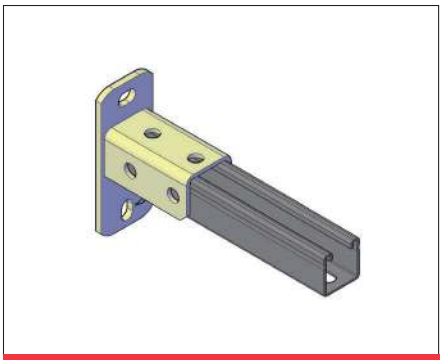
Detail 1 (U-STRAP)



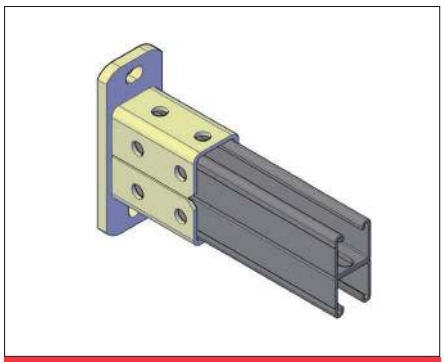
Detail 2 (FAF 2)



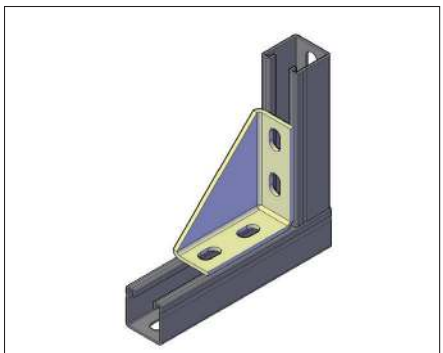
Detail 2A (FAF 4)



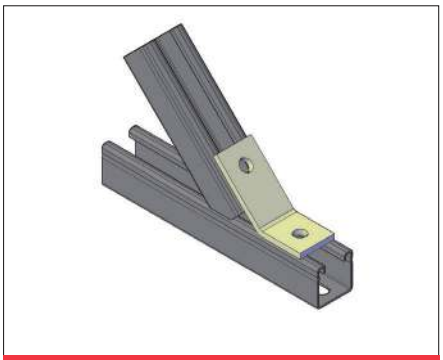
Detail 3 (SF L41)



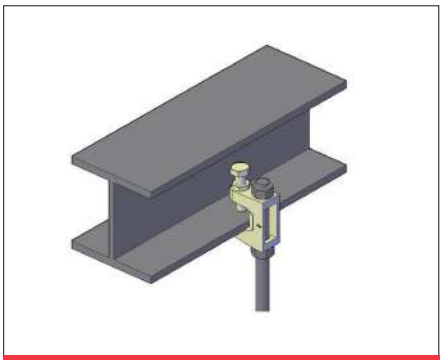
Detail 4 (SF L82)



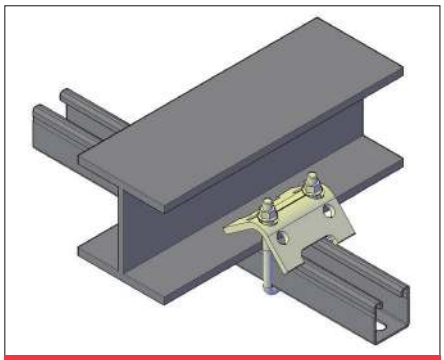
Detail 5 (WK100/100)



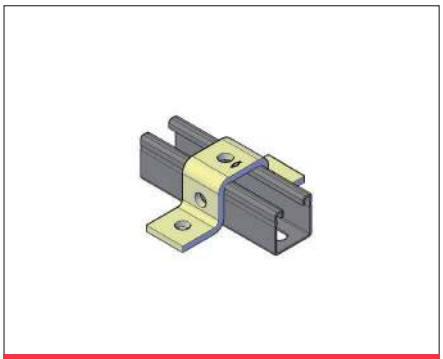
Detail 6 (FAF 2/135°)



Detail 7 (TKL)

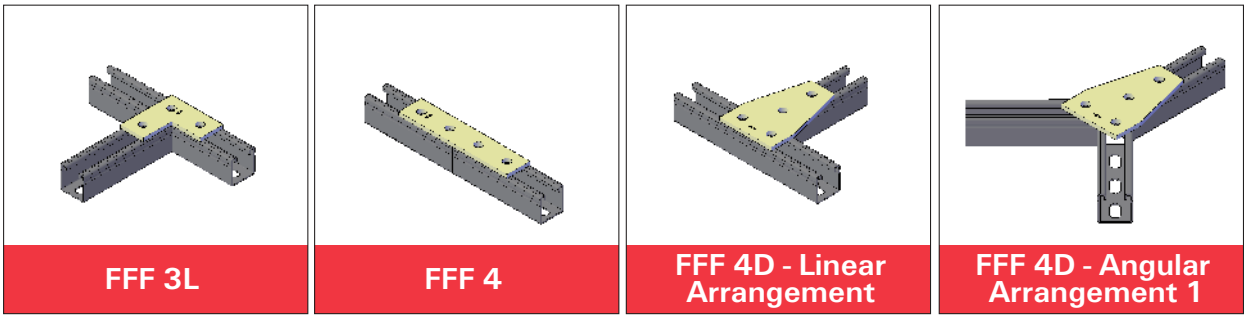


Detail 8 (TKR)

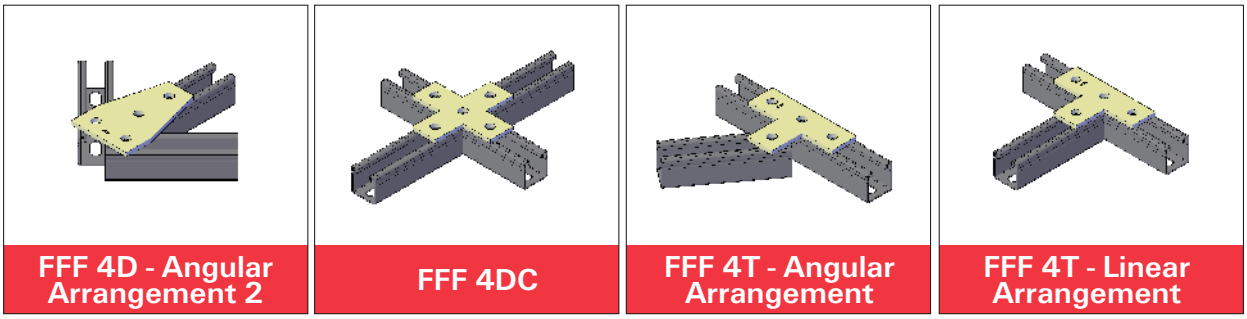


Detail 9 (FUF 41)

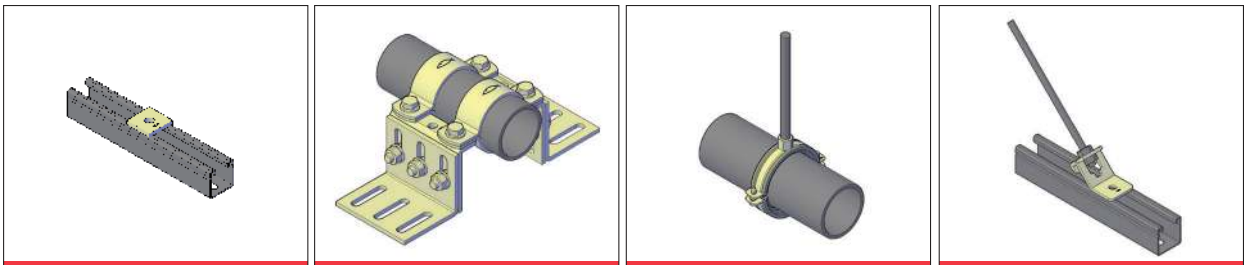
Typical Connection Details



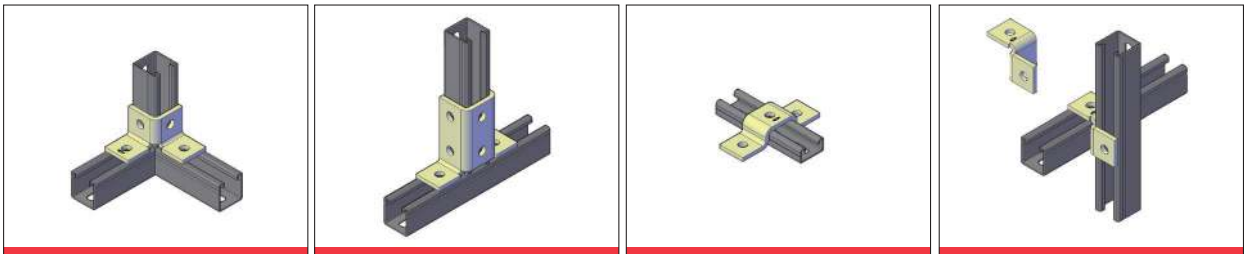
FFF 3L | FFF 4 | FFF 4D - Linear Arrangement | FFF 4D - Angular Arrangement 1



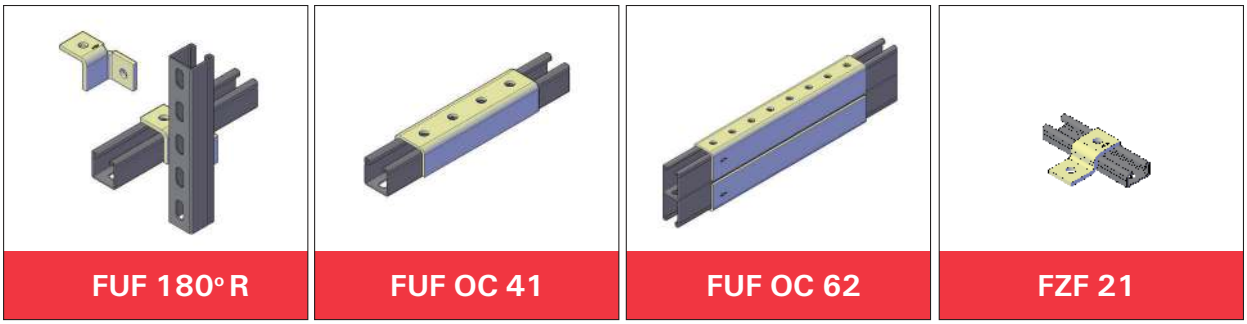
FFF 4D - Angular Arrangement 2 | FFF 4DC | FFF 4T - Angular Arrangement | FFF 4T - Linear Arrangement



FFF1 | FFPK FFFS | FRSR | FSB 45°

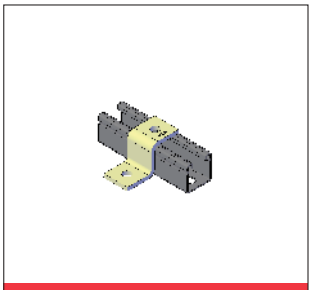


FUF 4Y | FUF 8T | FUF 21 | FUF 180° L

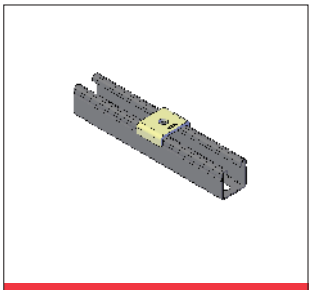


FUF 180° R | FUF OC 41 | FUF OC 62 | FZF 21

Typical Connection Details



FZF 41



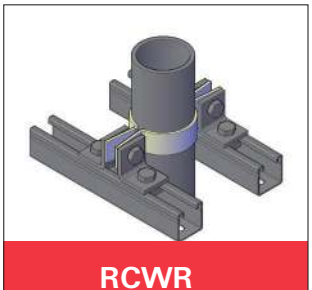
HK 41



PSAE



PVB



RCWR



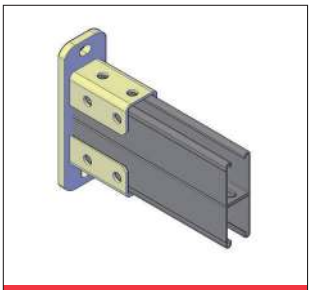
SF L41 with FUS 62



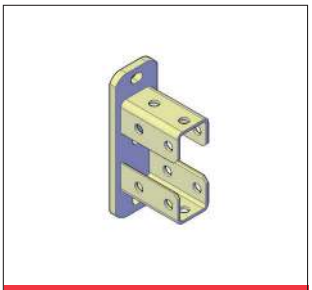
SF L41



SF L82



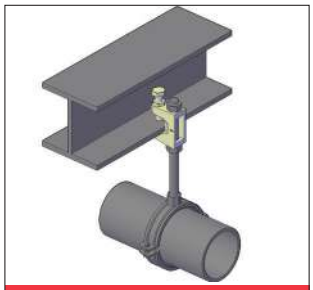
SF L124 with FUS 62D



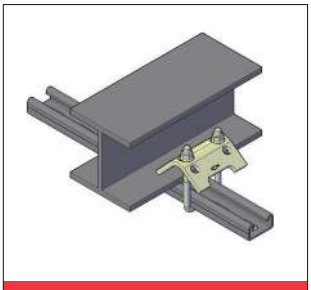
SF L124



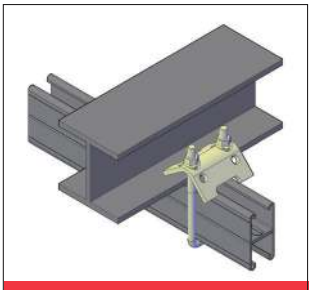
SKSL & FCN Clix Arrangement



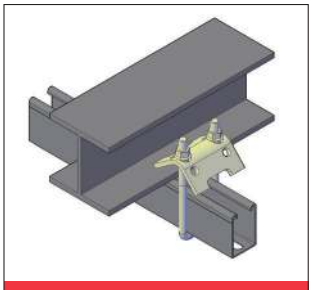
TKL



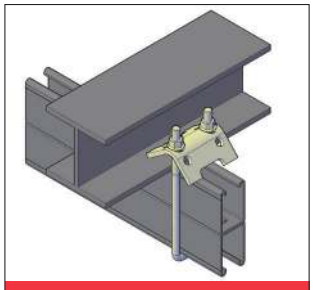
TKR 41 with FUS 21



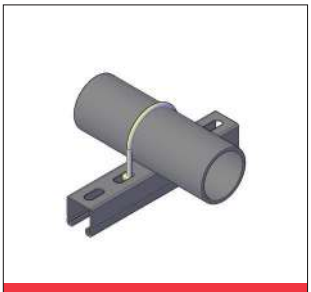
TKR 82 with FUS 41D



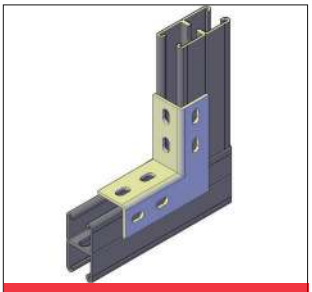
TKR 82 with FUS 62



TKR 124 with FUS 62D

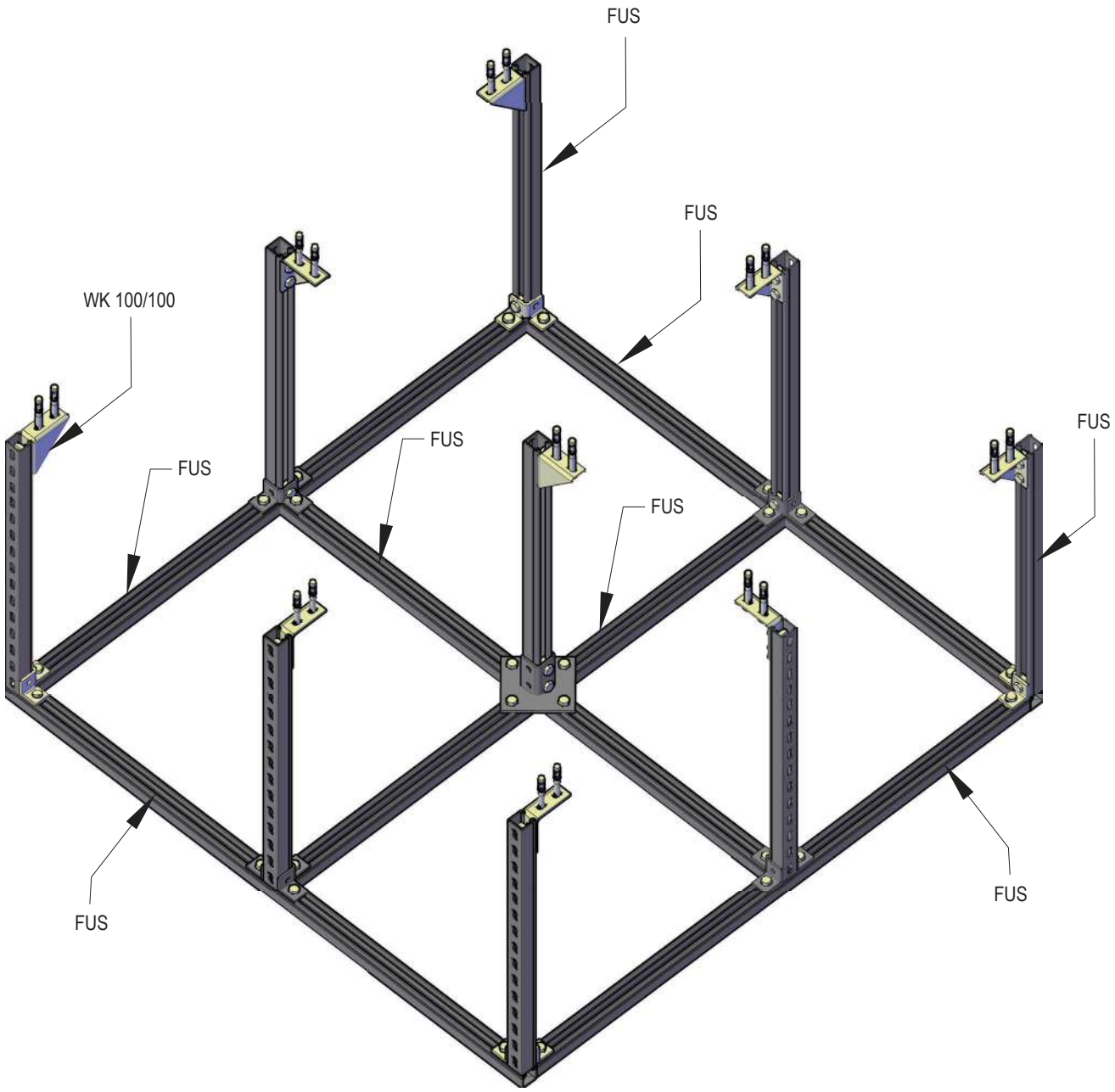


U-Bolt ETR

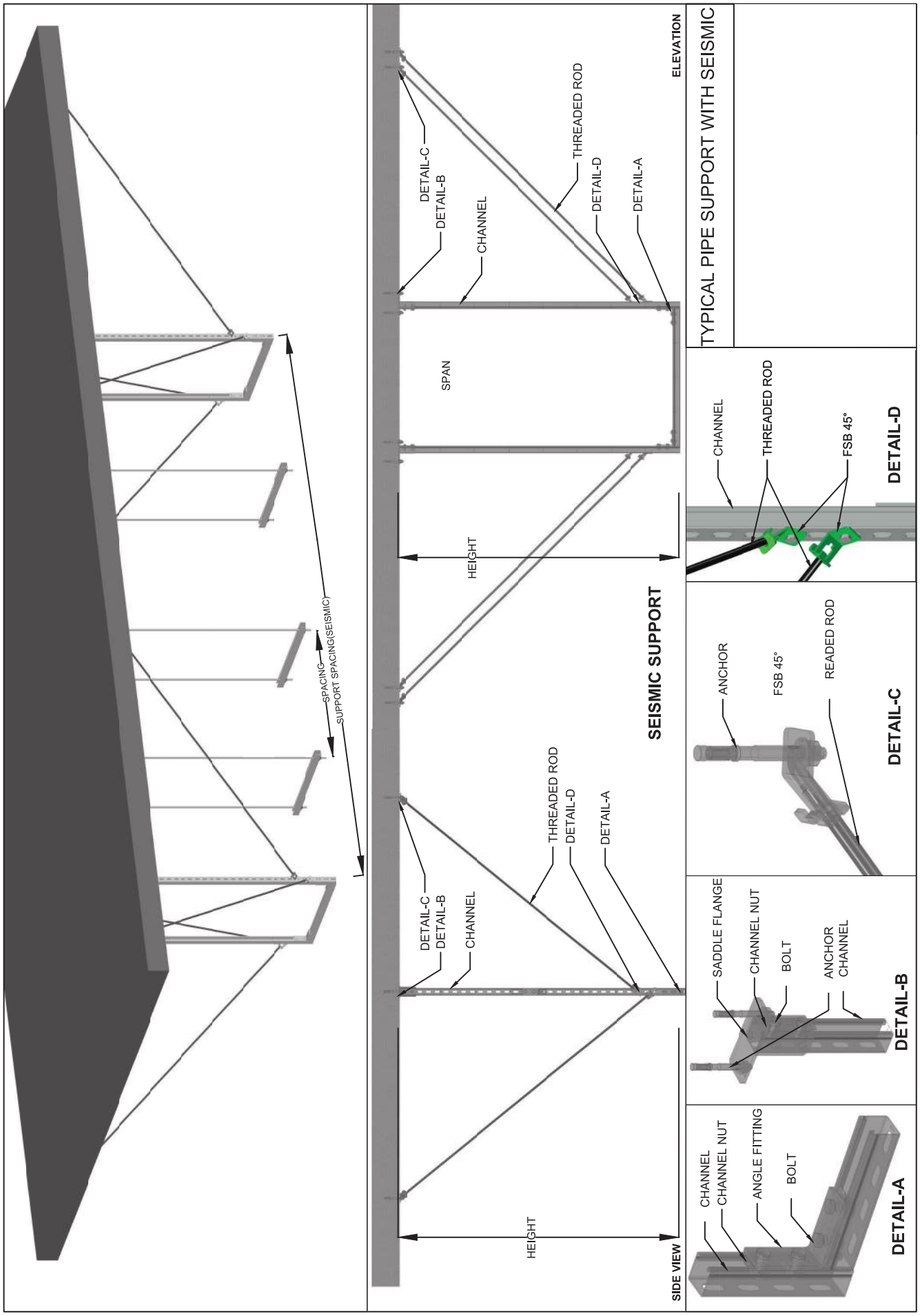


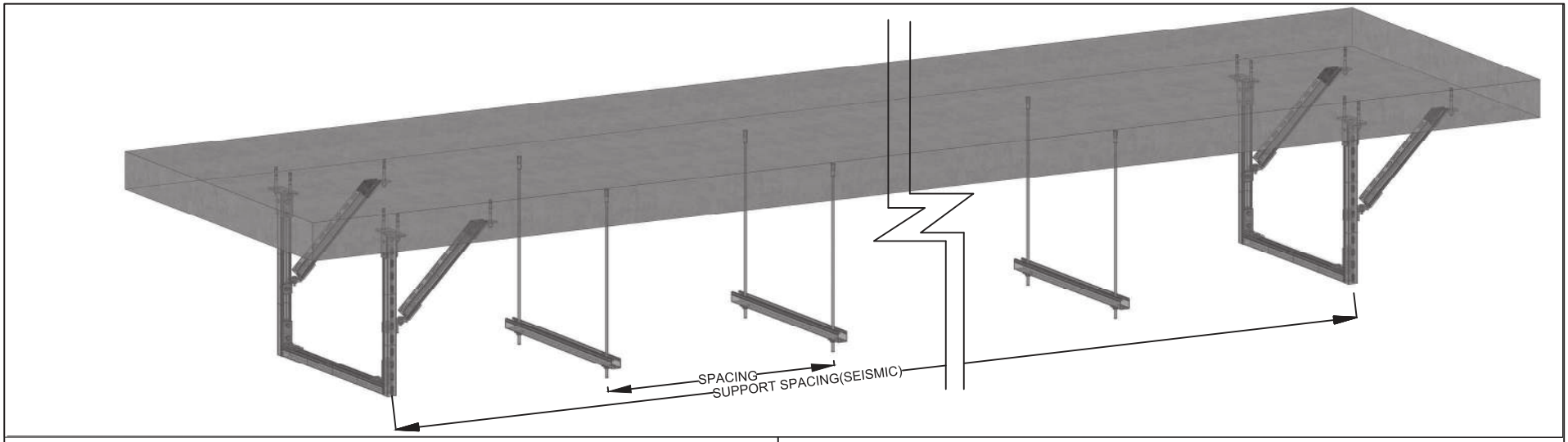
UW S

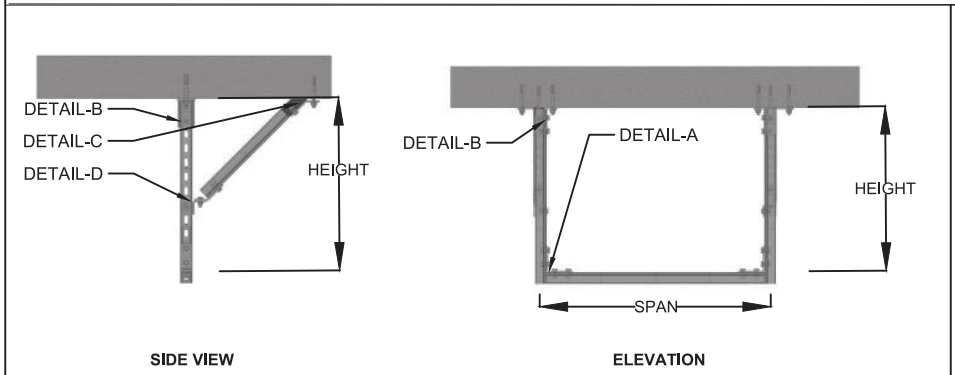
SaMontec Application - 3D Model



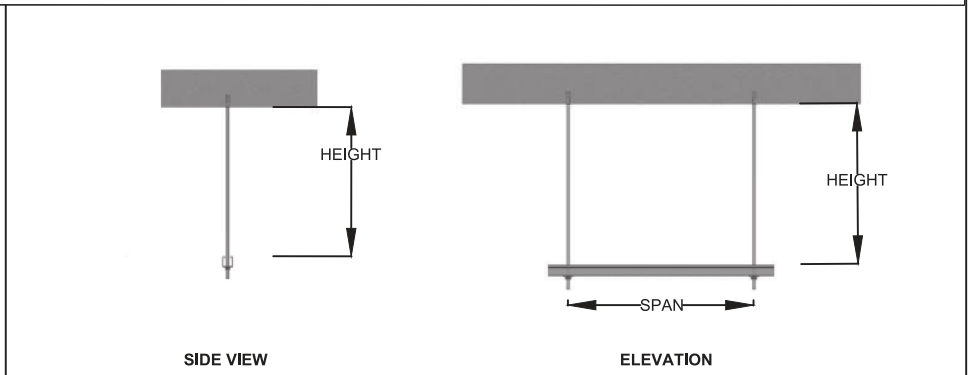
Ceiling Grid System


SPACING
SUPPORT SPACING(SEISMIC)
SIDE VIEW
HEIGHT
DETAIL-C
DETAIL-B
CHANNEL
THREADED ROD
DETAIL-D
DETAIL-A
SEISMIC SUPPORT
ELEVATION
SPAN
HEIGHT
DETAIL-C
DETAIL-B
CHANNEL
THREADED ROD
DETAIL-D
DETAIL-A
TYPICAL PIPE SUPPORT WITH SEISMIC
CHANNEL
CHANNEL NUT
ANGLE FITTING
BOLT
DETAIL-A
SADDLE FLANGE
CHANNEL NUT
BOLT
ANCHOR
CHANNEL
DETAIL-B
ANCHOR
FSB 45°
READED ROD
DETAIL-C
CHANNEL
THREADED ROD
FSB 45°
DETAIL-D

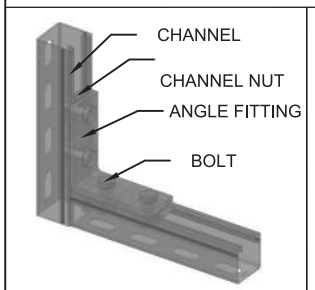




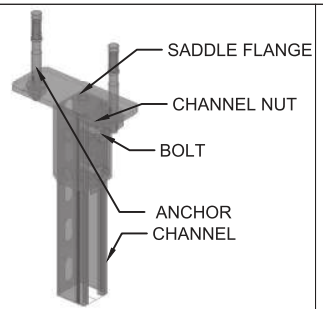
SEISMIC SUPPORT



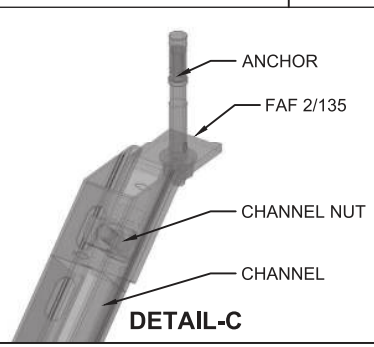
NORMAL SUPPORT



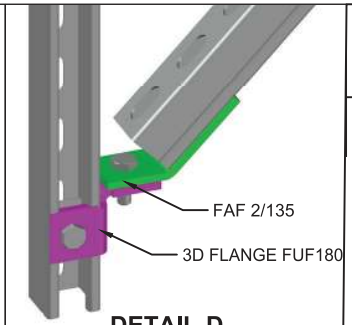
DETAIL-A



DETAIL-B



DETAIL-C



DETAIL-D

TYPICAL SUPPORT WITH SEISMIC



7 Services

Our Service to you	408

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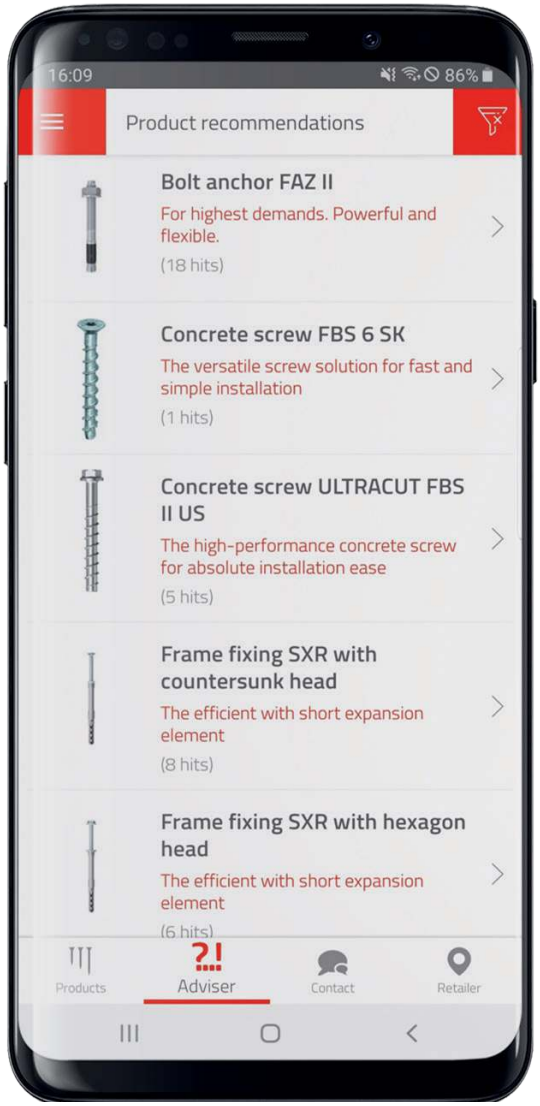


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FACADE-FIX
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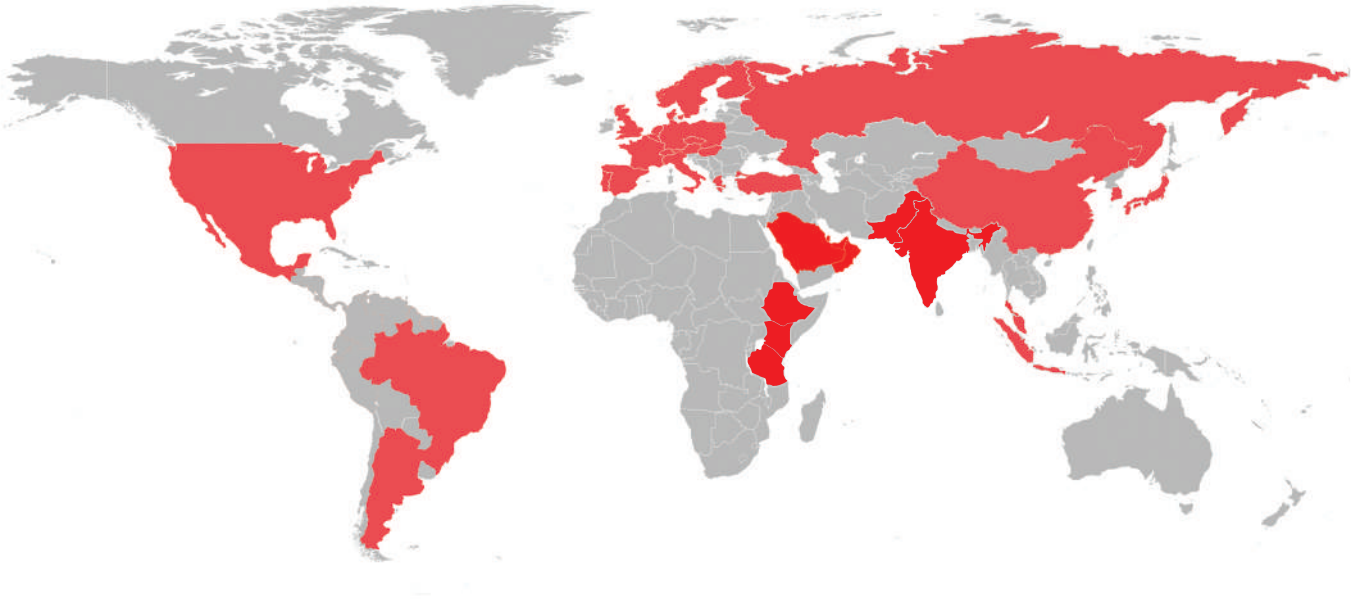
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Kingdom of Saudi Arabia

Tel: +966 13 8140866
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Kingdom of Bahrain

Tel: +973 17 408 090
Email: bahrain@fischer.ae

Sultanate of Oman

Tel: +968 2470 2091
Email: oman@fischer.ae

State of Kuwait

Tel: +965 249 29 556
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Tel: +923 01 8266216
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Africa

Kenya
E: kenya@fischer.ae

Ethiopia
E: enquiry@fischer.ae

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fischer FZE (Head Office)

R/A 07, BA 01 - 04
Jebel Ali Free Zone
Dubai, UAE
P. O. Box 261738
Toll Free (UAE) : 800 FISCHER
Tel: +971 4 883 7477
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