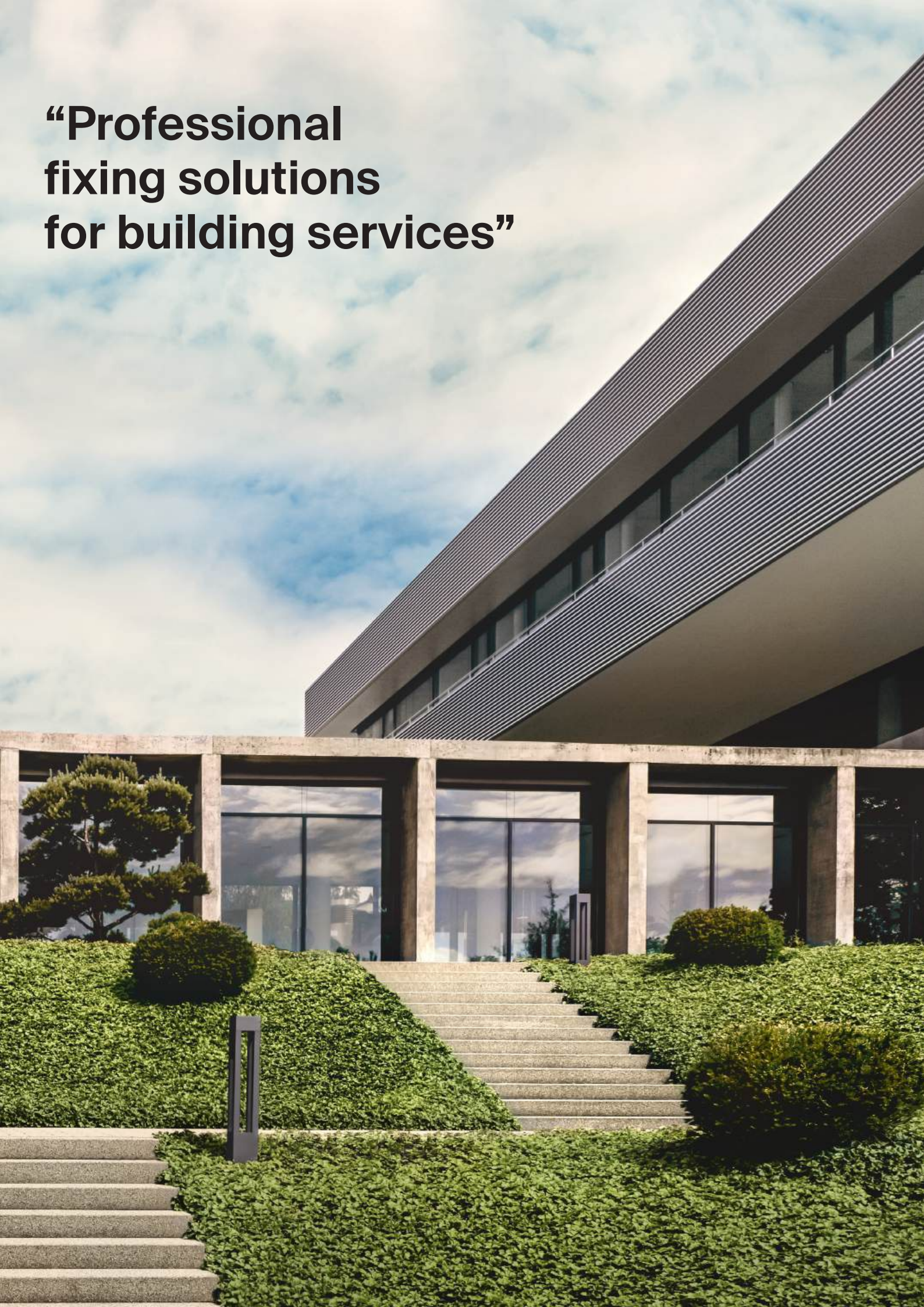
fischer

Catalogue
Installation Systems


“Professional
fixing solutions
for building services”

Foreword

Dear partners,

Technical Building Services (TBS) is evolving dynamically. Requirements for energy efficiency, sustainability, digitalisation and automated construction processes are increasing. At fischer, we are actively driving these developments forward. With more than 75 years of experience, innovative strength and fixing expertise, we stand for safe, efficient and economical installation solutions.

Your requirements, interests and projects are at the heart of our new developments and processes. We support you with tailor-made installation systems, fixing products and services along the entire TBS value chain. Our 360-degree services range from planning and execution to documentation and structural monitoring.

Our broad portfolio of installation systems for light to heavy loads accelerates and simplifies all TBS applications – in interior and exterior areas as well as in highly corrosive environments. Components can be modularly configured to suit each individual project. Fixed points and sliding elements to compensate for thermal pipe expansion, along with numerous fixing solutions, complete the portfolio.

During the planning phase, we support you with calculations, assessments, approval procedures, BIM services, CAD and fire protection services. With our INSTALL-FIX tool within the FiXperience design software, you quickly receive verifiable structural calculations and complete bills of materials. Throughout the construction phase, we assist you with installation planning, prefabrication services, training and on-site support. Automated construction with our Baubot and digital structural monitoring through our Construction Monitoring solution further complement our offering.

Our engineers, application technicians and field representatives provide personal and professional support. With 51 operating subsidiaries worldwide, we are always close to you. We look forward to exchanging ideas and continuing our successful cooperation.

We wish you every success in discovering and implementing our TBS installation solutions.

Alexander Bässler

CEO of the fischer Group of Companies

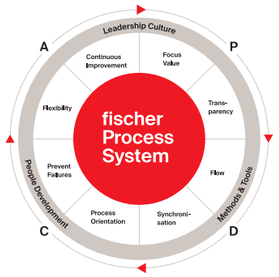
“Whoever chooses fischer receives more than a range of safe products. The aim is to always develop the best solutions for our customers across the globe.”

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.

Continuous improvement

With 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.

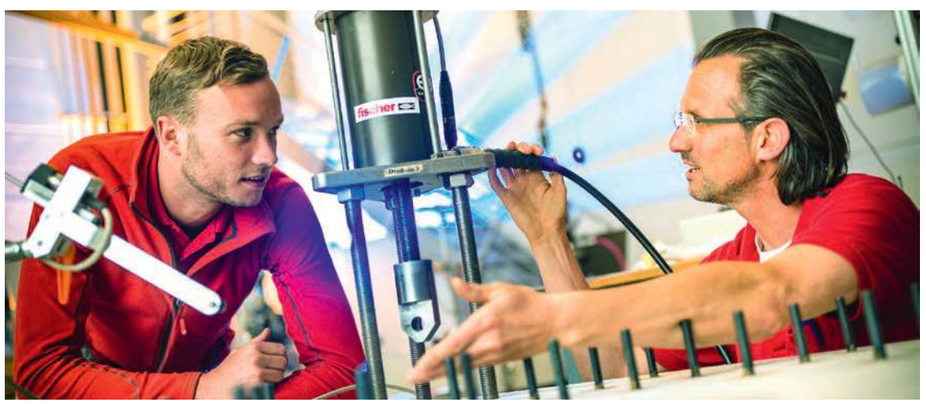


Safety that connects. Decisive quality

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. Our award-winning quality 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



Always on the pulse of time

At fischer, innovation is more than just the sum of our patent portfolio. We are open to new challenges and are prepared for change – always with the aim of offering our customers the greatest possible benefits. Over the years, our own development and production sites have been developing numerous fixing solutions for the most wide-ranging applications. Be it new production procedures or materials, such as renewable raw materials, we are carrying out the research for your safety and will continue to do so in the future. This gives us such great flexibility that we can even develop tailor-made customer solutions. This power to innovate has seen fischer become a 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.
- Training sessions, some with accreditation, at your premises, at the fischer academy or on the construction site as requested.
- 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 headquarters has been certified in line with DIN EN ISO 14001.
It fills us with particular pride that in 2020 we received the most important and largest award in Europe in the field of sustainability: the German Sustainability Award – in the 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%.

Deutscher Nachhaltigkeitspreis 2020 SIEGER Großunternehmen
German Sustainability Award

PLUS X AWARD 2022 | Ausgezeichnet für: Nachhaltigkeit
Plus X Award – Sustainability

Lean & Green Management Award 2022
Lean & Green Management Award

GREEN BRAND Germany 2025 | 2026 fischer fischerwerke Headquarters
German Green Brand Award

BIOBASED 50 - 85% DIN Geprüft 8C029 · 8C048
GreenLine assortment based on 50% regrowing raw materials

KLIMASCHUTZ UNTERNEHMEN DIE KLIMASCHUTZ- UND ENERGIE-EFFIZIENZGRUPPE DER DEUTSCHEN WIRTSCHAFT
Climate Protection Company

Innovation to inspire professionals

Content

Pipe clamps		Qualification					Type of pipes			Available in			Page
Type	Image	Fire tested	ETA	VdS-approved	FM-approved	UL	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Hinged pipe clamp FGRS Universal		–	–	–	–	–	●	○	–	●	–	–	24
Hinged pipe clamp FGRS		–	–	–	–	–	●	○	–	●	–	–	27
Hinged pipe clamp FKS for plastic pipes		–	–	–	–	–	●	○	–	●	–	–	30
Pipe clamp FRS-L Universal		●	–	–	–	–	○	●	–	●	–	–	32
Sliding clamp FKS2		–	–	–	–	–	○	●	–	●	–	–	34
Pipe clamp FRS Triple		–	–	–	–	–	○	●	–	●	–	–	36
Pipe clamp FRS inch		–	–	–	–	–	○	●	–	●	–	–	38
Pipe clamp FRS		●	●	–	–	–	○	●	–	●	●	●	40
Silicone pipe clamp FRSH		–	–	–	–	–	○	●	–	●	–	–	44
Pipe clamp FRSN Triple		–	–	–	–	–	○	●	–	●	–	–	46
Pipe clamp FRSN		–	–	–	–	–	○	●	–	●	–	–	48
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Refrigeration clamp KFS		–	–	–	–	–	○	●	●	●	–	–	61
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○ possible ● recommended – not recommendable

Pipe clamps		Qualification					Type of pipes			Available in			Page
Type	Image	Fire tested	ETA	VdS-approved	FM-approved	UL	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
U-Clamp FUBD		–	–	–	–	–	●	○	–	●	–	–	71
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U-bolt ETR		–	–	–	–	–	○	●	○	●	–	–	75
U-bolt connector FETR-C		–	–	–	–	–	○	●	○	●	–	–	77
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○ possible ● recommended – not recommendable

Light channel system FLS		Qualification	Type of pipes			Available in	Page
		Fire tested	light pipes	medium heavy pipes	heavy pipes	galvanised	
Type	Image						
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Cantilever arm ALK		●	●	○	–	●	89
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Angle brace WS 31– 45°		–	●	○	–	●	93
Channel connector SV 31		–	●	○	–	●	95
Sliding channel nut FSM Clix P		●	●	○	–	●	97
Sliding channel nut FSM Clix M		●	●	○	–	●	99
T-head bolt FHS Clix		●	●	○	–	●	101
Saddle flange SF Clix 31		–	●	○	–	●	104
Angle bracket MW Clix 90°		–	●	○	–	●	106
Angle bracket MW and MWU		–	●	○	–	●	108
Channel washer HK 31		●	●	○	–	●	110
Beam clamp TKR 31		–	●	○	–	●	111

○ possible ● recommended – not recommendable

Channel system universal FUS		Qualification		Type of pipes			Available in			Page
		Fire tested	ETA	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image									
Channel FUS		●	●	○	●	○	●	●	●	116
Channel connector FUF OC and PFUF OC		–	–	–	–	–	●	●	●	129
Socket wrench FSK		–	–	–	–	–	–	–	–	130
Channel connector FDCC		–	–	○	●	○	●	●	●	131
Cantilever arm FCA		●	●	–	●	○	●	●	●	133
Large cantilever arm FCAM		–	–	–	●	●	●	●	–	138
Cover cap FEC		–	–	–	–	–	–	–	–	140
Push-through connector PFCN		–	–	○	●	○	●	●	●	141
Saddle flange PSF		–	–	○	●	○	●	●	●	143
Universal angle PUWS		–	–	○	●	○	●	●	●	145
Angle bracket PWK		–	–	○	●	○	●	●	●	147
Angle bracket fire-tested PUWF		●	–	○	●	○	●	–	–	149
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Angle fitting PFAF		–	–	○	●	○	●	●	●	159
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○ possible ● recommended – not recommendable

Channel system universal FUS		Qualification		Type of pipes			Available in			Page
		Fire tested	ETA	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image									
Channel nut FCN Clix P		●	●	○	●	○	●	●	●	164
Channel nut FCN Clix M		●	●	●	●	○	●	●	●	167
Channel nut FCN		–	–	○	●	○	●	●	●	170
T-head bolt FCN Clix S		–	–	●	●	○	●	●	–	172
T-head bolt FCSN		–	–	○	●	○	●	–	–	174
Adjusting wheel FAW		●	●	○	●	○	●	–	–	176
Channel washer HK 41		●	●	○	●	○	●	●	●	178
Saddle flange SF		●	–	–	●	○	●	●	●	180
Universal angle UWS		●	–	–	●	○	●	●	–	182
Angle bracket WK		–	–	○	●	○	●	●	–	184
Flat fitting FFF		–	–	○	●	○	●	●	–	186
Angle fitting FAF		–	–	○	●	○	●	●	●	188
Z-Fitting FZF, U-Fitting FUF		–	–	–	●	○	●	●	–	190
Multidimensional angle FUF		–	–	–	–	–	●	●	–	192
Variable bracket VB		–	–	○	●	○	●	●	●	194
Bracing bracket FYJB		–	–	●	●	–	●	–	–	196

○ possible ● recommended – not recommendable

Channel system universal FUS		Qualification		Type of pipes			Available in			Page
		Fire tested	ETA	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image									
Universal hinge FUH		–	–	○	●	○	●	●	–	198
Bracing element FTRB 45		–	–	○	●	○	●	●	–	200
Beam clamp TKR		–	–	○	●	○	●	●	●	202
Beam clamp FHBC hdg		–	–	●	●	–	–	●	–	205
Cross connector FVS II		–	–	○	●	○	●	–	–	207

○ possible ● recommended – not recommendable

Fixed points and sliding elements		Qualification	Type of pipes			Available in			Page
		Fire tested	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image								
Fixed point saddle FFS-M / FFS-M2		–	○	●	○	●	–	–	212
Fixed point saddle FFS-H / FFS-H2		–	○	●	○	●	–	–	213
Fixed point compact FFP-C		–	●	○	–	●	–	–	214
Fixed point light FFP-L / FFP-L2		–	●	○	–	●	–	–	215
Fixed point light FFP-L22 / FFP-L42		–	●	○	–	●	–	–	216
Fixed point medium FFP-M / FFP-M2		–	○	●	○	●	–	–	217
Fixed point medium FFP-M22 / -M42		–	○	●	○	●	–	–	219
Fixed point medium FFP-MD2 / -MD4		–	○	●	○	●	–	–	220
Fixed point heavy FFP-HD22 / FFP-HD42		–	○	○	●	●	–	–	221
Fixed point solid clamp FFPC		–	○	●	●	●	–	–	223
Refrigeration fixed point clamp FFRC		–	○	●	●	●	–	–	225
Sound insulated fixed point FSFP		–	○	●	○	●	–	–	227

○ possible ● recommended – not recommendable

Fixed points and sliding elements		Qualification	Type of pipes			Available in			Page
		Fire tested	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image								
Axial slider compact FASC		–	●	○	–	●	–	–	229
Axial slider light FASL		–	●	○	–	●	–	–	231
Axial slider medium FASM		●	○	●	○	●	●	●	233
Axial roller slider heavy FASH		●	○	○	●	●	–	–	235
Cross slider FCSM		–	○	●	○	–	●	–	237
Sliding hanger SB		●	●	○	–	●	–	–	239
Pendulum hanger PDH / PDH K		●	●	●	○	●	–	–	240

○ possible ● recommended – not recommendable

Seismic bracing assortment		Qualification	Type of pipes			Available in			Page
		FM-approved	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Type	Image								
Shaped reinforcement strut SAE		–	○	●	–	●	–	–	244
Threaded rod brace connector S-VA		–	○	●	–	●	–	–	245
Channel brace connector S-VB		–	○	●	–	●	–	–	246
90° angle connector S-FAF		–	○	●	–	●	–	–	247
Seismic wire cable system FWI-S		–	●	●	○	–	●	–	248
Threaded rod connector S-ROD		–	○	●	–	●	–	–	251
Rod stiffener FTRC M12 gvz		–	○	●	–	●	–	–	252
Torque bolt SKS M12x30		–	○	●	–	●	–	–	253

○ possible ● recommended – not recommendable

Airduct and metal roof fixings		Qualification			Type of pipes			Available in	Page
		Fire tested	VdS-approved	FM-approved	light pipes	medium heavy pipes	heavy pipes	galvanised	
Type	Image								
Ventilation duct clamp LGS		–	–	–	●	○	–	●	256
Ventilation duct clamp LGSN		–	–	–	●	○	–	●	259
Air duct hanger L- and Z-type		–	–	–	●	○	–	●	261
Spiral duct hanger LRBN / LRB		–	–	–	●	○	–	●	263
Ventilation duct connector VDC		–	–	–	●	○	–	●	264
Flat roof base FFRB		–	–	–	●	●	○	–	265
Profile hanger TZ / TZA / TZH / TZB / TZR		–	●	●	○	●	–	●	268
Toggle plug KDS		–	●	●	○	●	–	●	270
Hole punch LZ, hole stamp LST		–	–	–	–	–	–	–	272
Rubber inlay EMS		–	–	–	●	○	–	–	273
Profile connecting screw FPS-FPB		–	–	–	●	○	–	●	274

○ possible ● recommended – not recommendable

Mounting accessories		Qualification					Type of pipes			Available in			Page
Type	Image	Fire tested	ETA	VdS-approved	FM-approved	UL-approved	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Beam clamp TKL		–	–	●	●	●	●	●	–	●	●	●	278
Beam clamp TKLS		–	–	●	●	–	●	●	–	●	–	●	280
Beam clamp TKLP		–	–	–	–	–	●	●	–	●	–	–	282
Swivel beam clamp TKLG		–	–	●	●	–	●	●	●	●	–	–	285
Threaded rod G		–	●	–	–	–	●	●	●	●	●	●	288
Threaded stud GS		–	–	–	–	–	●	●	●	●	–	●	291
Hexxagonal connector VM		–	–	–	–	–	–	–	–	●	–	●	294
Base plates GPL / GPS / GPSR / GPR		–	–	–	–	–	○	●	–	●	–	–	295
Stud screw STST with TX star recess		–	–	–	–	–	–	–	–	●	–	–	297
Stud screw STS A2/A4		–	–	–	–	–	–	–	–	–	–	●	299
Support hanger AHB		–	–	–	–	–	●	●	●	●	–	–	300
Multi connector MW		–	–	–	–	–	●	–	–	●	–	–	301
Parallel connector PV		–	–	–	–	–	●	○	–	●	–	–	302
Double connector plate DPP, DPF		–	–	–	–	–	●	○	–	●	–	–	304

○ possible ● recommended – not recommendable

Mounting accessories		Qualification					Type of pipes			Available in			Page
Type	Image	Fire tested	ETA	VdS-approved	FM-approved	UL-approved	light pipes	medium heavy pipes	heavy pipes	galvanised	hdg/zl	Stainless Steel	
Bolt connector SBB		–	–	–	–	–	●	○	–	●	–	–	305
Turnbuckle SPS, Bolt left-hand / right-hand BLR		–	–	–	–	–	–	●	○	●	–	–	306
Hexagonal screw SKS		–	–	–	–	–	●	●	–	●	●	●	307
Cylinder head screw ZKS		–	–	–	–	–	●	○	–	●	–	–	309
Washer U		–	–	–	–	–	●	●	–	●	●	●	310
Hexagonal nut MU		–	–	–	–	–	–	–	–	●	●	●	311
Eyebolt AG		–	–	–	–	–	●	●	–	●	–	–	312
Thread hanger RAH		–	–	–	–	–	●	○	–	●	–	–	313
Reduction piece RD		–	–	–	–	–	●	●	○	●	–	–	314
Reduction socket RDM and GRD		–	–	–	–	–	●	●	–	●	–	–	315
Flat eye screw LLS		–	–	–	–	–	●	○	–	●	–	–	316
Textile web strapping GWB		–	–	–	–	–	●	○	–	–	–	–	317
Perforated steel banding LBV/LBK/LBW		–	–	–	–	–	●	–	–	●	–	–	318
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○ possible ● recommended – not recommendable

Massive channel system FMS		Qualification	Type of pipes			Available in	Page
		Fire tested	light pipes	medium heavy pipes	heavy pipes	hdg/zl	
Type	Image						
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Cantilever FMC		–	–	–	●	●	3333
Endcap FMEC		–	–	–	●	●	336
Hammer-head push connector FMHB		–	–	–	●	●	337
Internal thread connector FMHI		–	–	–	●	●	339
Transportation connector FMTC 90		–	–	–	●	●	341
Connecting element FMCE		–	–	–	●	●	343
Connecting element FMCE-L		–	–	–	●	●	345
Saddle flange FMSF		–	–	–	●	●	347
Base plate FMSF BP		–	–	–	●	●	350
Angle bracket FMASF 90		–	–	–	●	●	351
Variable bracket FMVB		–	–	–	●	●	353
Beam clamp FMBC		–	–	–	●	●	355
Beam clamp FMBC M12 and M16		–	–	–	●	●	357
Flat fitting FMFF 90°		–	–	–	●	●	359
Mounting angle FMA 3 and FMA 4		–	–	–	●	●	361

○ possible ● recommended – not recommendable

Massive channel system FMS		Qualification	Type of pipes			Available in	Page
		Fire tested	light pipes	medium heavy pipes	heavy pipes	hdg/zl	
Type	Image						
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System connector FMA-FUS		–	–	–	●	●	365
Connecting element FMUF		–	–	–	●	●	367
Fix point U-bolt FMFS UB		–	–	–	●	●	369
Pipe shoe sliding element FMFS		–	–	–	●	●	371
Fix-point U-bolt FMFS S and M		–	–	–	●	●	373
Pipe shoes FMPS		–	–	–	●	●	375
Massive pipe clamp FMFSC		–	–	–	●	●	379
Massive U-bolt FMPSU		–	–	–	●	●	381
Self-adhesive inlay FESK-EPDM		–	–	–	–	–	383
Self-adhesive inlay FESK-Silicone		–	–	–	–	–	384
Self-adhesive inlay FESK-Glass fibre		–	–	–	–	–	385

○ possible ● recommended – not recommendable

Air conditioner fixings oduct		Available in			Page
		galvanised	hdg/zl	Coated	
Type	Image				
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Air conditioner fixing KSU		●	●	–	390

○ possible ● recommended – not recommendable

2
Pipe clamps

Hinged pipe clamp FGRS Universal

The hinged pipe clamp with the convenient and secure quick-release fastener.

Pipelines on cantilevers

Light, suspended pipelines

Applications

- Time-saving fixing of pipelines up to 4“ with threaded rods or hanger bolts
- For use in dry interior areas.

Certificates / Features

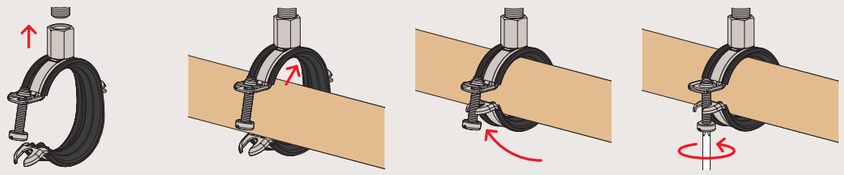
Advantages

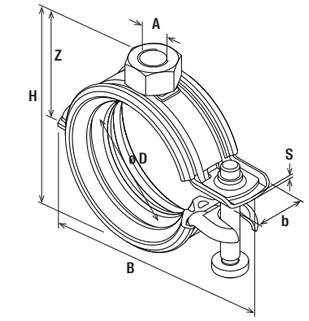
- The sound insulation test report guarantees objectively tested functional safety.
- The unique rapid-locking mechanism with all-round edge enables safe and convenient installation.
- The clamp band with crimped edges gives the sound insulation insert a tight fit and simplifies the pipe adjustment.
- The compact design of the pipe clamp allows simple, subsequent insulation.
- The combination drive PH3/TX25 of the screw increases flexibility during assembly.

Properties

- Material: steel DC01 (material no. 1.0330) in accordance with DIN EN 10130
- Zinc plating: electro zinc-plated
- Connecting nut: resistance welded, size 13
- Screw plug: pan-head screw with cross recess Phillips PH3 / TX recess TX25 drive combination
- Sound insulating insert material SBR/EPDM; chlorine-free, silicone-free
- Hardness: 55 ± 5° Shore A
- Temperature range: -40 °C to +100 °C
- Fire behavior: DIN 4102: Class B2

Installation FGRS Universal

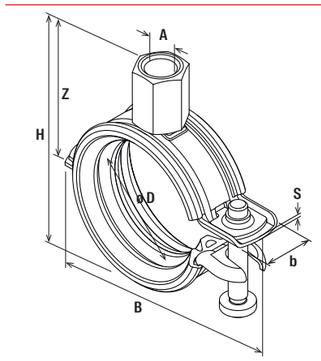




FGRS Universal

Hinged pipe clamp FGRS Universal M8

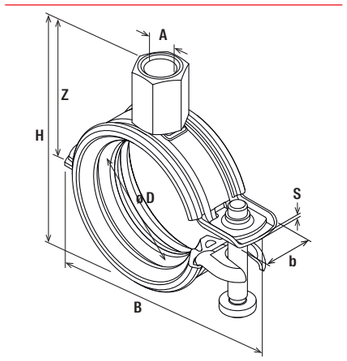
Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS Universal M8 12 - 15	**562340**	M8	1/4	12 – 15	43.6	43.6	19.5	18 x 1.0	M5	2	0.65	25
FGRS Universal M8 15 - 19	**562341**	M8	3/8	15 – 19	48	48	21.5	18 x 1.0	M5	2	0.65	25
FGRS Universal M8 20 - 24	**562342**	M8	1/2	20 – 24	52.3	52.3	23.5	18 x 1.0	M5	2	0.65	25
FGRS Universal M8 25 - 30	**562343**	M8	3/4	25 – 30	57.5	57.5	26	18 x 1.0	M5	2	0.65	25
FGRS Universal M8 31 - 37	**562344**	M8	1	31 – 37	65.5	65.5	29.9	18 x 1.0	M5	2	0.65	25
FGRS Universal M8 38 - 42	**562345**	M8	1 1/4	38 – 42	73	73	33.4	18 x 1.2	M5	2	0.90	25
FGRS Universal M8 46 - 50	**562346**	M8	1 1/2	46 – 50	80.1	80.1	36.9	18 x 1.2	M5	2	0.90	25
FGRS Universal M8 53 - 58	**562347**	M8	–	53 – 58	87.3	87.3	40.4	18 x 1.2	M5	2	0.90	25
FGRS Universal M8 60 - 63	**562348**	M8	2	60 – 63	93.8	93.8	43.9	18 x 1.2	M5	2	0.90	10



FGRS Universal M8/M10

Hinged pipe clamp FGRS Universal M8 / M10

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS Universal M8/10 12 - 15	**562349**	M8 / M10	1/4	12 – 15	43.6	43.3	30	18 x 1.0	M5	2	0.65	25
FGRS Universal M8/10 15 - 19	**562350**	M8 / M10	3/8	15 – 19	48	47.3	32	18 x 1.0	M5	2	0.65	25
FGRS Universal M8/10 20 - 24	**562351**	M8 / M10	1/2	20 – 24	52.3	51.3	34	18 x 1.0	M5	2	0.65	25
FGRS Universal M8/10 25 - 30	**562352**	M8 / M10	3/4	25 – 30	57.5	56.3	36.5	18 x 1.0	M5	2	0.65	25
FGRS Universal M8/10 31 - 37	**562353**	M8 / M10	1	31 – 37	65.5	64	40.4	18 x 1.0	M5	2	0.65	25



FGRS Universal M8/M10

Hinged pipe clamp FGRS Universal M8 / M10

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS Universal M8/10 38 - 42	**562354**	M8 / M10	1 1/4	38 – 42	73	71.2	43.9	18 x 1.2	M5	2	0.90	25
FGRS Universal M8/10 46 - 50	**562355**	M8 / M10	1 1/2	46 – 50	80.1	78.2	47.4	18 x 1.2	M5	2	0.90	25
FGRS Universal M8/10 53 - 58	**562356**	M8 / M10	–	53 – 58	87.3	85.2	50.9	18 x 1.2	M5	2	0.90	25
FGRS Universal M8/10 60 - 63	**562357**	M8 / M10	2	60 – 63	93.8	92.2	54.4	18 x 1.2	M5	2	0.90	10
FGRS Universal M8/10 73 - 80	**562456**	M8 / M10	–	73 – 80	111.9	107.8	62.4	20 x 1.8	M6	2	1.30	10
FGRS Universal M8/10 83 - 90	**562457**	M8 / M10	3	83 – 90	123.3	119.2	68.1	20 x 1.8	M6	2	1.30	10
FGRS Universal M8/10 95 - 103	**562458**	M8 / M10	–	95 – 103	134.2	130.2	73.6	20 x 1.8	M6	2	1.30	10
FGRS Universal M8/10 108 - 115	**562459**	M8 / M10	4	108 – 115	147.5	143.7	80.3	20 x 1.8	M6	2	1.30	10

Hinged pipe clamp FGRS

The one-piece hinged pipe clamp with floating single screw.

Light, suspended pipelines

Pipelines on cantilevers

Applications

- For economical fixing of pipes up to ø2“ with threaded rods or stud screws.
- For use in dry interior areas.

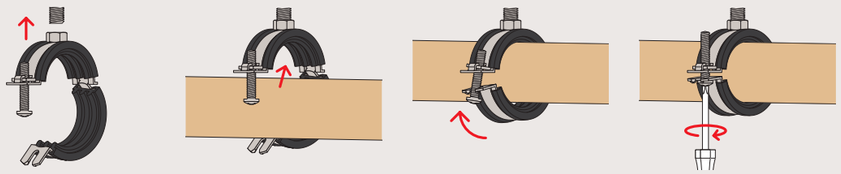
Advantages

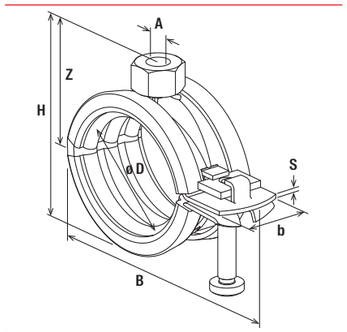
- The floating single screw allows a simple, one-handed installation.
- The compact construction of the pipe clamp enables a simple post-installation insulation.
- The screw‘s design stops it falling out during the installation.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111.
- Zinc plating: electro zinc-plated.
- Connecting nut: resistance welded, M8, SW 13.
- Locking screw: pan-head screw with cross recess Phillips PH slot.
- 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 FGRS

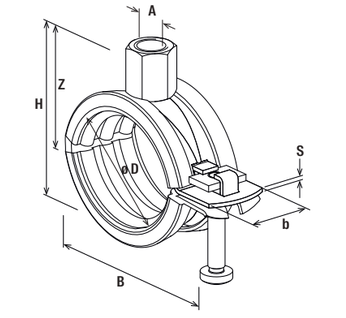




FGRS

Hinged pipe clamp FGRS M8

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS 8 - 11	**537212**	M8	–	8 – 11	45	29	17	20 x 1.25	M5	2	0.80	100
FGRS 12 - 14	**079420**	M8	1/4	12 – 14	48	31	21	20 x 1.25	M5	2	0.80	100
FGRS 15 - 19	**079421**	M8	3/8	15 – 19	52	36	24	20 x 1.25	M5	2	0.80	100
FGRS 20 - 24	**079422**	M8	1/2	20 – 24	58	41	26	20 x 1.25	M5	2	0.80	100
FGRS 25 - 30	**079423**	M8	3/4	25 – 30	63	47	28	20 x 1.25	M5	2	0.80	100
FGRS 32 - 37	**079424**	M8	1	32 – 37	72	54	32	20 x 1.25	M5	2	0.80	100
FGRS 40 - 44	**079425**	M8	1 1/4	40 – 44	79	61	37	20 x 1.5	M5	2	0.90	50
FGRS 45 - 50	**079426**	M8	1 1/2	45 – 50	88	67	42	20 x 1.5	M5	2	0.90	50
FGRS 50 - 55	**079427**	M8	–	50 – 55	94	72	45	20 x 1.5	M5	2	0.90	50
FGRS 56 - 63	**079428**	M8	2	56 – 63	99	80	46	20 x 1.5	M5	2	0.90	50



FGRS M8/M10

Hinged pipe clamp FGRS M8 / M10

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS 12 - 14 M8/M10	**512645**	M8 / M10	1/4	12 – 14	48	38	26	20 x 1.25	M5	2	0.80	100
FGRS 15 - 19 M8/M10	**512646**	M8 / M10	3/8	15 – 19	52	42	28	20 x 1.25	M5	2	0.80	100
FGRS 20 - 24 M8/M10	**512647**	M8 / M10	1/2	20 – 24	58	46	30	20 x 1.25	M5	2	0.80	100
FGRS 25 - 30 M8/M10	**512648**	M8 / M10	3/4	25 – 30	63	51	33	20 x 1.25	M5	2	0.80	100
FGRS 32 - 37 M8/M10	**512649**	M8 / M10	1	32 – 37	72	58	36	20 x 1.25	M5	2	0.80	100

Hinged pipe clamp FGRS M8 / M10

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FGRS 40 - 44 M8/M10	**512650**	M8 / M10	1 1/4	40 – 44	79	66	40	20 x 1.5	M5	2	0.90	50
FGRS 45 - 50 M8/M10	**512651**	M8 / M10	1 1/2	45 – 50	88	71	43	20 x 1.5	M5	2	0.90	50
FGRS 50 - 55 M8/M10	**568671**	M8 / M10	–	50 – 55	94	79	45	20 x 1.5	M5	2	0.90	50
FGRS 56 - 63 M8/M10	**512652**	M8 / M10	2	56 – 63	99	82	48	20 x 1.5	M5	2	0.90	50

Hinged pipe clamp FKS for plastic pipes

The one-screw hinged pipe clamp with quick-release fastener for plastic and metal composite pipes.

Pipelines

Applications

- Time-saving fixing for plastic and metal composite pipes using threaded rods or stud screws.
- Can be used as a slide bracket with spacers or as a fixed point clamp by removing the spacers.
- For use in dry interior areas.

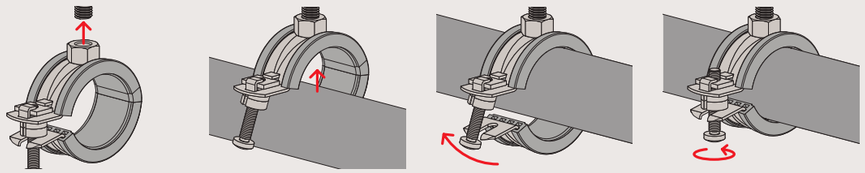
Advantages

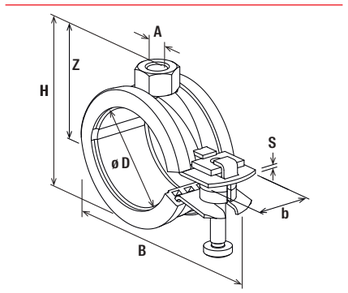
- The quick-release fastener allows a fast and time-saving installation.
- The spacing sleeves on the locking screw stops over tightening of the pipes.
- The tight fit of the sound insulation insert prevents it from falling out when inserting the pipe.
- The compact construction of the hinged pipe clamp enables a simple post-installation insulation.
- The screw‘s design stops it falling out during the installation.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111.
- Zinc plating: electro zinc-plated.
- Connecting nut: resistance welded, M8, SW 13.
- Locking screw: pan-head screw with cross recess Phillips PH slot.
- Material sound insulation insert:: NR/SBR/EPDM; chlorine-free; silicone-free.
- Sound insulation: for DIN 4109.
- Temperature range: -40 °C to +110 °C.
- Hardness: 60 ± 5° Shore A.
- Fire behaviour: DIN 4102: Class B2.

Installation FKS





FKS

Technical data

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FKS 15 - 19	**562609**	M8	3/8	15 – 19	51	35	21	M5	2	0.80	100
FKS 20 - 24	**562610**	M8	1/2	20 – 24	56	39	23	M5	2	0.80	100
FKS 25 - 30	**562611**	M8	3/4	25 – 30	63	44	26	M5	2	0.80	100
FKS 32 - 37	**562612**	M8	1	32 – 37	71	51	29	M5	2	0.80	100
FKS 40 - 44	**562613**	M8	1 1/4	40 – 44	78	59	33	M5	2	0.90	50
FKS 45 - 50	**562614**	M8	1 1/2	45 – 50	86	64	36	M5	2	0.90	50
FKS 50 - 55	**562615**	M8	–	50 – 55	91	67	37	M5	2	0.90	50
FKS 56 - 63	**562616**	M8	2	56 – 63	99	75	41	M5	2	0.90	50

Note on the clamping range: For the function as a sliding clamp, the lower clamping range specification is valid, e.g. for the FKS 50-55 this is 50mm!

Pipe clamp FRS-L Universal

The light two-screw pipe clamp with a rapid locking mechanism and combination connection nut.

Cantilever construction with channel

Vertical installation

Applications

- For simple and easy fixing for pipes using threaded rods or stud screws.
- For use in dry interior areas.

Certificates / Features

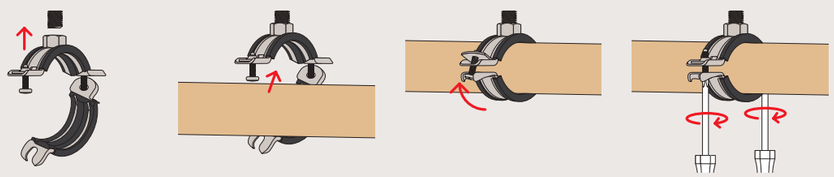
Advantages

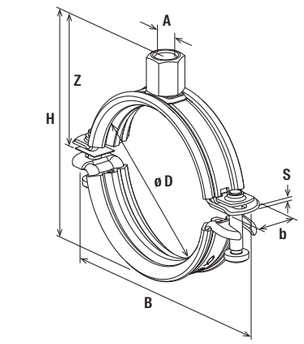
- The fire inspection report and the sound insulation report guarantee objectively tested functional safety.
- The unique rapid-locking mechanism with crimped edges allows a secure and time-saving installation.
- The clamp band with crimped edges gives a tight fit of the sound insulation insert and prevents it from slipping out when aligning the pipe.
- The two screws allow a perfect adaptation of the pipe clamp to suit every outer pipe diameter.
- The connecting nut with combination thread M8 / M10 enables an optimised warehousing.
- The screw‘s loss protection guarantees an easy installation.
- The combination drive PH3/TX25 of the screw increases flexibility during assembly.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Connecting nut: resistance welded, M8 / M10 SW13
- Locking screw: pan-head screw with cross recess Phillips PH3 / TX recess TX25 drive combination
- Material sound insulation insert: SBR/ 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-L Universal





FRS-L Universal

Technical data

Item	Item no.	Fire test report	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Instal-lation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRS-L 8 - 11 Universal	**539443**	Yes	M8 / M10	–	8 – 11	47	35	25	18 x 1.0	M5	2	0.70	25
FRS-L 12 - 15 Universal	**539444**	Yes	M8 / M10	1/4	12 – 15	52	39	27	18 x 1.0	M5	2	0.70	25
FRS-L 15 - 19 Universal	**539445**	Yes	M8 / M10	3/8	15 – 19	56	43	29	18 x 1.0	M5	2	0.70	25
FRS-L 20 - 24 Universal	**539446**	Yes	M8 / M10	1/2	20 – 24	61	48	31	18 x 1.0	M5	2	0.70	25
FRS-L 25 - 30 Universal	**539447**	Yes	M8 / M10	3/4	25 – 30	67	53	34	18 x 1.0	M5	2	0.70	25
FRS-L 31 - 37 Universal	**539448**	Yes	M8 / M10	1	31 – 37	74	61	38	18 x 1.0	M5	2	0.70	25
FRS-L 38 - 45 Universal	**539449**	Yes	M8 / M10	1 1/4	38 – 45	83	69	42	18 x 1.2	M5	2	0.90	25
FRS-L 46 - 52 Universal	**539450**	Yes	M8 / M10	1 1/2	46 – 52	90	76	45	18 x 1.2	M5	2	0.90	25
FRS-L 53 - 59 Universal	**539451**	Yes	M8 / M10	–	53 – 59	97	83	49	18 x 1.2	M5	2	0.90	25
FRS-L 60 - 66 Universal	**539452**	Yes	M8 / M10	2	60 – 66	104	90	52	18 x 1.2	M5	2	0.90	10
FRS-L 67 - 75 Universal	**539453**	Yes	M8 / M10	–	67 – 75	120	100	57	20 x 1.8	M6	2	1.30	10
FRS-L 76 - 84 Universal	**539454**	Yes	M8 / M10	2 1/2	76 – 84	130	109	62	20 x 1.8	M6	2	1.30	10
FRS-L 85 - 93 Universal	**539455**	Yes	M8 / M10	3	85 – 93	139	118	66	20 x 1.8	M6	2	1.30	10
FRS-L 94 - 100 Universal	**539456**	Yes	M8 / M10	–	94 – 100	146	125	70	20 x 1.8	M6	2	1.30	10
FRS-L 101 - 109 Universal	**539457**	Yes	M8 / M10	–	101 – 109	156	135	75	20 x 1.8	M6	2	1.30	10
FRS-L 110 - 119 Universal	**539459**	Yes	M8 / M10	4	110 – 119	165	144	79	20 x 1.8	M6	2	1.30	10
FRS-L 120 - 129 Universal	**544905**	Yes	M8 / M10	–	120 – 129	176	156	86	25 x 2.0	M6	2	1.80	5
FRS-L 130 - 137 Universal	**544906**	Yes	M8 / M10	–	130 – 137	184	164	90	25 x 2.0	M6	2	1.80	5
FRS-L 138 - 145 Universal	**544907**	Yes	M8 / M10	5	138 – 145	192	172	94	25 x 2.0	M6	2	1.80	5
FRS-L 146 - 155 Universal	**544908**	Yes	M8 / M10	–	146 – 155	202	182	99	25 x 2.0	M6	2	1.80	5
FRS-L 156 - 163 Universal	**544909**	Yes	M8 / M10	–	156 – 163	211	190	103	25 x 2.0	M6	2	1.80	5
FRS-L 164 - 172 Universal	**544910**	Yes	M8 / M10	6	164 – 172	219	199	106	25 x 2.0	M6	2	1.80	5
FRS-L 175 - 183 Universal	**569822**	–	M8 / M10	–	175 – 183	234	210	112	25 x 2.5	M6	2	2.20	15
FRS-L 193 - 201 Universal	**569823**	–	M8 / M10	–	193 – 201	251	228	123	25 x 2.5	M6	2	2.20	15
FRS-L 205 - 213 Universal	**569824**	–	M8 / M10	–	205 – 213	263	240	129	25 x 2.5	M6	2	2.20	15
FRS-L 219 - 225 Universal	**569825**	–	M8 / M10	8	219 – 225	278	253	134	25 x 2.5	M6	2	2.20	15

For load information under fire exposure, see chapter Basic knowledge.

Sliding clamp FKS2

The two-screw sliding clamp for plastic and metal composite pipes.

Height-adjustable ceiling installation

Wall mounting on cantilever arm

Applications

- Fixing of plastic and metal composite pipes up to 160 mm.
- Can be used as a sliding clamp with spacer rings or as a clamp after removing the spacer rings.
- For use in dry indoor areas.

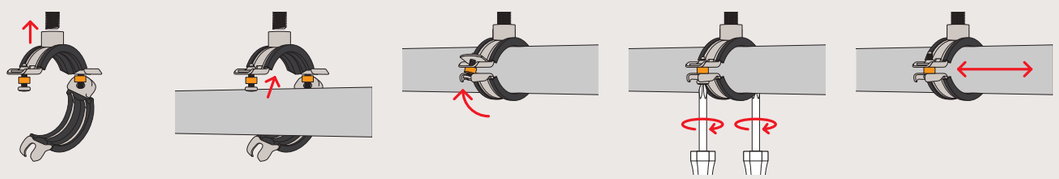
Advantages

- The spacer rings on the screw plug ensure that the pipes slide smoothly.
- The unique quick-release fastener with all-round edge enables secure and time-saving installation.
- The clamp band with pronounced beading on the edge gives the sound insulation insert a secure fit and prevents it from falling out during pipe adjustment.
- The connection nut with M8 / M10 / ½“ combination thread enables optimised fixing to the substrate.
- The loss protection of the screw ensures problem-free installation.
- The combination drive PH3/TX25 of the screw increases flexibility during assembly.

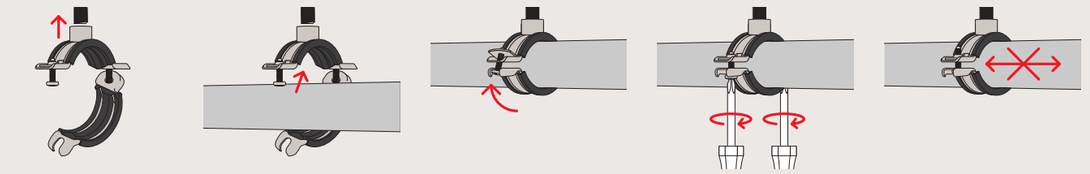
Properties

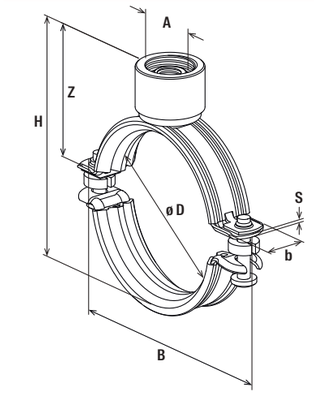
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Connection nut: resistance-welded, M8 / M10 / ½“
- Screw plug: pan-head screw with cross recess Phillips PH3 / TX recess TX25 drive combination
- Material sound insulation insert: SBR/EPDM with flocking; 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

FKS2 sliding function



FKS2 clamping function





FKS2

Technical data

Item	Item no.	Thread A	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FKS2 50	**572196**	M8 / M10 / 1/2“	46 – 52	90	81	50	18 x 1.2	M5	2	0.90	25
FKS2 56	**572197**	M8 / M10 / 1/2“	53 – 59	97	88	54	18 x 1.2	M5	2	0.90	25
FKS2 63	**572198**	M8 / M10 / 1/2“	60 – 66	104	95	57	18 x 1.2	M5	2	0.90	10
FKS2 75	**572199**	M8 / M10 / 1/2“	67 – 75	120	105	62	20 x 1.8	M6	2	1.30	10
FKS2 90	**572200**	M8 / M10 / 1/2“	85 – 93	139	123	71	20 x 1.8	M6	2	1.30	10
FKS2 110	**572201**	M8 / M10 / 1/2“	110 – 119	165	149	84	20 x 1.8	M6	2	1.30	10
FKS2 125	**572202**	M8 / M10 / 1/2“	120 – 129	176	161	91	25 x 2.0	M6	2	1.80	5
FKS2 135	**572203**	M8 / M10 / 1/2“	130 – 137	184	169	95	25 x 2.0	M6	2	1.80	5
FKS2 140	**572204**	M8 / M10 / 1/2“	138 – 145	192	177	99	25 x 2.0	M6	2	1.80	5
FKS2 160	**572205**	M8 / M10 / 1/2“	156 – 163	211	195	108	25 x 2.0	M6	2	1.80	5

Pipe clamp FRS Triple

The two-screw pipe clamp with rapid-locking mechanism and triple connecting nut.

Pipe assembly

Height adjustable pipe installation

Applications

- For simple and easy fixing of pipelines with threaded rods or hanger bolts.
- For use in dry interior areas.

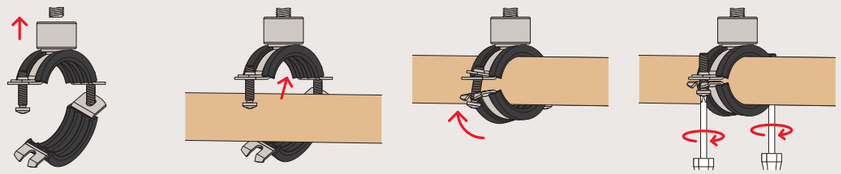
Advantages

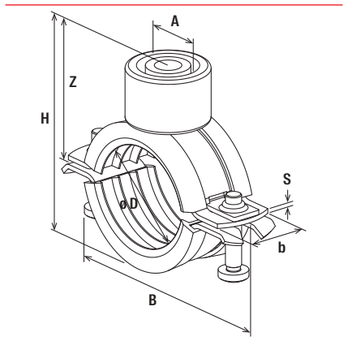
- The connecting nut with combination thread M8/M10/½" allows for optimised mounting positioning.
- The rapid-locking mechanism allows for fast and time-saving installation.
- The tight fit of the sound insulation insert prevents it from falling out when aligning the pipe.
- The two screws allow for ideal adaptation to suit the outer pipe diameter.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Connecting nut: resistance welded, M8/M10/½"
- Locking screw: pan-head screw with cross recess Phillips PH slot
- Material sound insulation insert: SBR/EPDM; chlorine-free; silicone-free
- Sound insulation: for DIN 4109
- Temperature range: -50 °C to +110 °C
- Hardness: 45 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2

Installation FRS Triple





FRS Triple

Technical data

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRS Triple 15 - 19	**500698**	M8 / M10 / 1/2"	3/8	15 – 19	61	53	36	20 x 1.5	M5	2	1.00	100
FRS Triple 21 - 23	**500699**	M8 / M10 / 1/2"	1/2	21 – 23	65	57	38	20 x 1.5	M5	2	1.00	100
FRS Triple 26 - 28	**500700**	M8 / M10 / 1/2"	3/4	26 – 28	70	62	40	20 x 1.5	M5	2	1.00	100
FRS Triple 32 - 35	**500701**	M8 / M10 / 1/2"	1	32 – 35	77	69	44	20 x 1.5	M5	2	1.00	100
FRS Triple 40 - 43	**500702**	M8 / M10 / 1/2"	1 1/4	40 – 43	85	77	48	20 x 1.5	M5	2	1.00	50
FRS Triple 48 - 56	**500703**	M8 / M10 / 1/2"	1 1/2	48 – 56	98	90	54	20 x 1.5	M5	2	1.00	50
FRS Triple 57 - 62	**500704**	M8 / M10 / 1/2"	2	57 – 63	104	96	57	20 x 1.5	M5	2	1.00	50
FRS Triple 63 - 70	**500705**	M8 / M10 / 1/2"	–	63 – 70	112	104	61	20 x 1.5	M5	2	1.00	25
FRS Triple 74 - 80	**500706**	M8 / M10 / 1/2"	2 1/2	74 – 80	122	114	66	20 x 1.5	M5	2	1.00	25
FRS Triple 83 - 91	**500707**	M8 / M10 / 1/2"	3	83 – 91	133	125	72	20 x 1.5	M5	2	1.00	25
FRS Triple 100 - 105	**500708**	M8 / M10 / 1/2"	–	100 – 105	155	139	79	23 x 2.0	M6	2	1.50	10
FRS Triple 108 - 114	**500709**	M8 / M10 / 1/2"	4	108 – 114	164	148	83	23 x 2.0	M6	2	1.50	10
FRS Triple 115 - 125	**500710**	M8 / M10 / 1/2"	–	115 – 125	175	159	89	23 x 2.0	M6	2	1.50	10
FRS Triple 127 - 135	**500711**	M8 / M10 / 1/2"	–	127 – 135	185	169	94	23 x 2.0	M6	2	1.50	10
FRS Triple 135 - 140	**500712**	M8 / M10 / 1/2"	5	135 – 140	190	174	96	23 x 2.0	M6	2	1.50	10
FRS Triple 159 - 169	**500713**	M8 / M10 / 1/2"	6	159 – 169	219	203	111	23 x 2.0	M6	2	1.50	10

Pipe clamp FRS inch

The two-screw pipe clamp with a inch connection nut.

Applications

- Fastening of medium-heavy pipelines with threaded pipes and base plates.
- In civil defense structures for securing MEP pipes.
- For use in dry indoor areas.

Certificates / Features

BZS S 25-315

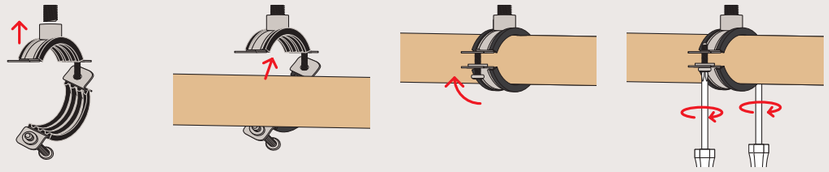
Advantages

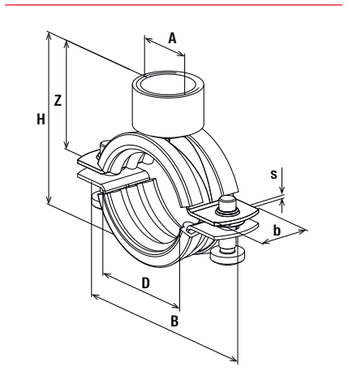
- The inch thread connection nut enables pipe fastening with higher bending strength.
- High tested loads guarantee the safe function of the FRS inch even in civil defense structures.
- The sound insulation insert ensures sound reduction and prevents contact corrosion.
- The two-screw design allows for optimal adaptation to the pipes outer diameter.
- The screw loss protection ensures problem-free installation.

Properties

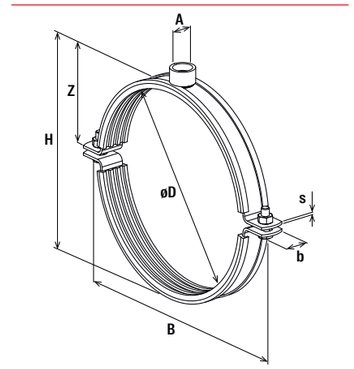
- Material: Steel DC01 (1.0330)
- Surface: Galvanised
- Connection nut: 1/2“ fillet weld on two sides
- Locking screw: Flat head screw with combination Phillips, >ø168 mm screw and nut M8
- Sound insulation insert material: EPDM; chlorine-free; silicone-free
- Sound insulation: for DIN 4109
- Temperature range: -40 °C to +100 °C
- Hardness: 55 ± 5° Shore A
- Reaction to fire: DIN 4102: Class B2

Installation pipe clamp FRS inch





FRS inch



FRS inch ≥200 mm

Technical data

Pipe clamp FRS inch

FRS inch

FRS inch ≥200 mm

	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
Item												
FRS inch 15-19	**577180**	1/2“	3/8	15 – 19	59	46	32	20 x 1.5	M6	2	1.50	50
FRS inch 20-23	**577181**	1/2“	1/2	20 – 23	65	54	40	20 x 1.5	M6	2	1.50	50
FRS inch 28-28	**577182**	1/2“	3/4	25-28	73	58	44	20 x 1.5	M6	2	1.50	50
FRS inch 32-35	**577183**	1/2“	1	32 – 35	77	35	51	20 x 1.5	M6	2	1.50	50
FRS inch 40-43	**577184**	1/2“	1 1/4	40 – 43	89	74	60	20 x 1.5	M6	2	1.50	50
FRS inch 44-49	**577185**	1/2“	–	44 – 49	92	77	63	20 x 1.5	M6	2	1.50	50
FRS inch 48-54	**577186**	1/2“	1 1/2	48 – 54	99	82	68	20 x 1.5	M6	2	1.50	50
FRS inch 56-61	**577188**	1/2“	2	56 – 61	106	89	75	20 x 2.0	M6	2	2.00	50
FRS inch 63-67	**577189**	1/2“	–	63 – 67	114	97	83	20 x 2.0	M6	2	2.00	25
FRS inch 72-80	**577190**	1/2“	2 1/2	72 – 80	125	109	95	20 x 2.0	M6	2	2.00	25
FRS inch 83-91	**577191**	1/2“	3	83 – 91	138	120	106	20 x 2.0	M6	2	2.00	20
FRS inch 108-116	**577192**	1/2“	4	108 – 116	165	142	128	25 x 2.0	M6	2	2.00	15
FRS inch 121-128	**577193**	1/2“	–	121 – 128	177	157	143	25 x 2.5	M6	2	2.50	10
FRS inch 133-141	**577194**	1/2“	5	133 – 141	188	170	156	25 x 2.5	M6	2	2.50	10
FRS inch 159-165	**577195**	1/2“	–	159 – 165	213	194	180	25 x 2.5	M6	2	2.50	8
FRS inch 165-168	**577196**	1/2“	6	165 – 168	220	198	184	25 x 2.5	M6	2	2.50	8
FRS inch 200-206	**577197**	1/2“	–	200 – 206	254	235	221	25 x 2.5	M8	3	2.75	15
FRS inch 210-219	**577198**	1/2“	8	210 – 219	261	247	233	25 x 2.5	M8	3	2.75	15

Pipe clamp FRS

The two-screw pipe clamp with combination connecting thread.

Pipe assembly

Height adjustable pipe installation

Applications

- Secure fixing for pipes with threaded rods or stud screws.
- FRS: for use in dry interior areas.
- FRS hdg: for indoor and outdoor application.
- FRS A2/A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion. (A2: not suitable for use in environments containing chlorine.)

Certificates / Features

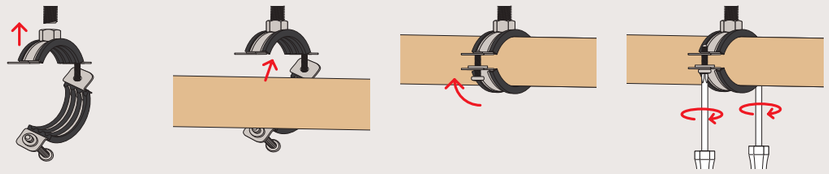
Advantages

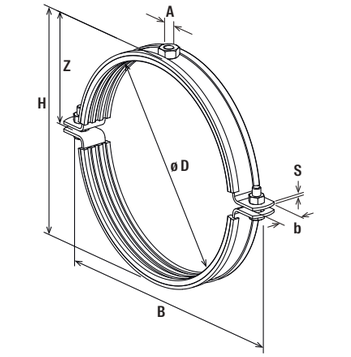
- The fire test report (for FRS and FRS zl) guarantees independently tested functional safety.
- The two screws allow an easy adjustment to suit the outer pipe diameter.
- The combination connecting nut with thread M8/M10 enables optimised mounting choices.
- The sound insulation insert offers noise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

Properties

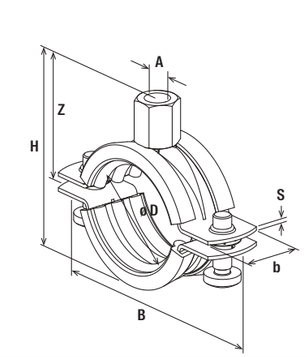
- Material FRS and FRS zl: steel DC01 (material no. 1.0330) acc. to DIN EN 10130
- Zinc plating: electro zinc-plated or zinclamella coating
- Material FRS A2: stainless steel A2 material no. 1.4301
- Material FRS A4: stainless steel A4 material no. 1.4401
- Connecting nut: resistance welded, M8 / M10, SW 13
- Locking screw: pan-head screw with cross recess Phillips PH slot
- 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





FRS (>6“ or 168 mm)

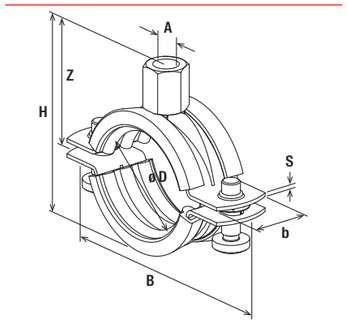


FRS

Pipe clamp FRS gvz / zl

Item	Galvanised steel Item no. gvz	Zinc flake coated steel Item no. zl	Approval ETA	Fire test report	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRS 12-15 M8/M10	**510969**	**537981**	●	Yes	M8 / M10	1/4	12 – 15	55	39	31	20 x 1.25	M6	2	1.00	100
FRS 15-19 M8/M10	**042535**	**537982**	●	Yes	M8 / M10	3/8	15 – 19	59	43	29	20 x 1.25	M6	2	1.00	100
FRS 20-24 M8/M10	**042536**	**537983**	●	Yes	M8 / M10	1/2	20 – 24	65	48	32	20 x 1.25	M6	2	1.00	100
FRS 25-30 M8/M10	**042537**	**537984**	●	Yes	M8 / M10	3/4	25 – 30	72	54	35	20 x 1.25	M6	2	1.00	100
FRS 32-37 M8/M10	**042538**	**537985**	●	Yes	M8 / M10	1	32 – 37	77	61	38	20 x 1.25	M6	2	1.00	100
FRS 40-45 M8/M10	**042554**	**537986**	●	Yes	M8 / M10	1 1/4	40 – 45	89	69	42	20 x 1.25	M6	2	1.00	50
FRS 48-54 M8/M10	**510970**	**537987**	●	Yes	M8 / M10	1 1/2	48 – 54	99	78	46	20 x 1.25	M6	2	1.00	50
FRS 55-61 M8/M10	**042555**	**537988**	●	Yes	M8 / M10	2	55 – 61	105	85	50	20 x 1.25	M6	2	1.00	50
FRS 63-67 M8/M10	**091488**	**537989**	●	Yes	M8 / M10	2	63 – 67	111	91	53	20 x 1.25	M6	2	1.00	50
FRS 72-80 M8/M10	**091489**	**537990**	●	Yes	M8 / M10	2 1/2	72 – 80	125	104	60	20 x 2.0	M6	2	1.50	25
FRS 87-92 M8/M10	**091505**	**537991**	●	Yes	M8 / M10	3	87 – 92	137	116	66	20 x 2.0	M6	2	1.50	25
FRS 95-103 M8/M10	**545649**	**557374**	●	Yes	M8 / M10	–	95 – 103	149	130	73	25 x 2.0	M6	2	2.00	25
FRS 108-116 M8/M10	**091506**	**537992**	●	Yes	M8 / M10	4	108 – 116	164	140	78	25 x 2.0	M6	2	2.00	20
FRS 121-128 M8/M10	**079456**	**537993**	●	Yes	M8 / M10	–	121 – 128	176	152	84	25 x 2.5	M6	2	2.50	10
FRS 133-141 M8/M10	**079457**	**537994**	●	Yes	M8 / M10	5	133 – 141	187	165	90	25 x 2.5	M6	2	2.50	10
FRS 159-165 M8/M10	**079458**	**537995**	●	Yes	M8 / M10	–	159 – 165	211	198	102	25 x 2.5	M6	2	2.50	8
FRS 165-168 M8/M10	**079459**	**537996**	●	Yes	M8 / M10	6	165 – 168	225	192	104	25 x 2.5	M6	2	2.50	8
FRS 200 - 206 M10	**539660**	**–**	–	–	M10	–	200 – 206	256	227	118	25 x 2.5	M8	3	2.75	15
FRS 210-219 M10	**558335**	**–**	–	–	M10	8	210 – 219	262	240	124	25 x 2.5	M8	3	2.75	15

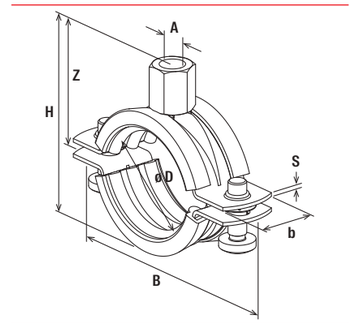
For load information under fire exposure, see chapter Basic knowledge.



FRS

Pipe clamp FRS A2 / A4

	A2	A4	Thread	Size	Clamping range	Width	Height	Height	Width x thickness clamp band	Locking screw	Installation torque	Max. recom. static load (centr. tension)	Sales unit
	Item no.	Item no.	A	[in]	D [mm]	B [mm]	H [mm]	Z [mm]	b x s [mm]		T_{inst} [Nm]	N_{rec} [kN]	[pcs]
Item	**A2**	**A4**											
FRS 3/8“	**560576**	**560593**	M8	3/8	15 – 19	62	40	23	20 x 1.2	M6	2	1.00	25
FRS 1/2“	**560577**	**560594**	M8	1/2	20 – 24	68	45	26	20 x 1.2	M6	2	1.00	25
FRS 3/4“	**560578**	**–**	M8	3/4	26 – 30	75	52	29	20 x 1.2	M6	2	1.00	25
FRS 3/4“	**–**	**560595**	M8	3/4	25 – 30	75	52	29	20 x 1.2	M6	2	1.00	25
FRS 1“	**560579**	**560596**	M8	1	31 – 38	80	60	32	20 x 1.2	M6	2	1.00	25
FRS 1 1/4“	**560580**	**560597**	M8	1 1/4	40 – 46	90	67	37	20 x 1.2	M6	2	1.00	25
FRS 1 1/2“	**560581**	**560598**	M8	1 1/2	48 – 54	97	75	41	20 x 1.2	M6	2	1.00	25
FRS 2“	**560583**	**560600**	M8	2	60 – 64	110	85	46	20 x 1.2	M6	2	1.00	10
FRS 2 1/2“	**560585**	**560602**	M10	2 1/2	72 – 78	130	99	53	25 x 1.5	M6	2	1.30	10
FRS 3“	**560587**	**560604**	M10	3	87 – 92	144	113	60	25 x 1.5	M6	2	1.30	10
FRS 4“	**560589**	**560606**	M10	4	102 – 116	172	138	73	25 x 2.0	M6	2	2.00	10
FRS 54-59	**560582**	**–**	M8	1 1/2	54 – 59	104	80	44	20 x 1.2	M6	2	1.00	25
FRS 54-58	**–**	**560599**	M8	1 1/2	54 – 59	104	80	44	20 x 1.2	M6	2	1.00	25
FRS 67-71	**560584**	**560601**	M8	–	67 – 71	119	92	49	20 x 1.2	M6	2	1.00	10
FRS 81-86	**560586**	**560603**	M10	–	81 – 86	132	107	58	25 x 1.5	M6	2	1.30	10
FRS 95-103	**560588**	**560605**	M10	–	95 – 103	156	124	66	25 x 1.5	M6	2	1.30	10
FRS 121-127	**560590**	**560607**	M10	–	121 – 127	192	149	79	25 x 2.0	M6	2	2.00	5
FRS 133-141	**560591**	**560608**	M10	5	133 – 141	198	163	86	25 x 2.0	M6	2	2.00	5
FRS 159-168	**560592**	**560609**	M10	6	159 – 168	218	191	100	25 x 2.0	M6	2	2.00	5



FRS

Pipe clamp FRS M8/M10 A2/A4

	A2	A4	Thread	Size	Clamping range	Width	Height	Height	Width x thickness clamp band	Locking screw	Installation torque	Max. recom. static load (centr. tension)	Sales unit
	Item no.	Item no.	A	[in]	D [mm]	B [mm]	H [mm]	Z [mm]	b x s [mm]		T_{inst} [Nm]	N_{rec} [kN]	[pcs]
Item	**A2**	**A4**											
FRS 3/8“ M8/M10	**512676**	**512684**	M8 / M10	3/8	15 – 19	59	47	32	20 x 1.25	M6	2	1.00	100
FRS 1/2“ M8/M10	**512677**	**512685**	M8 / M10	1/2	20 – 25	65	53	35	20 x 1.25	M6	2	1.00	100
FRS 3/4“ M8/M10	**512678**	**512686**	M8 / M10	3/4	26 – 30	71	58	38	20 x 1.25	M6	2	1.00	100
FRS 1“ M8/M10	**512679**	**512687**	M8 / M10	1	31 – 38	78	66	42	20 x 1.25	M6	2	1.00	100
FRS 1 1/4“ M8/M10	**512681**	**512688**	M8 / M10	1 1/4	40 – 46	86	74	46	20 x 1.25	M6	2	1.00	50
FRS 1 1/2“ M8/M10	**512682**	**512689**	M8 / M10	1 1/2	48 – 54	94	82	50	20 x 1.25	M6	2	1.00	50
FRS 54 - 59 M8/M10	**–**	**512690**	M8 / M10	2	54 – 59	100	87	52	20 x 1.25	M6	2	1.00	50
FRS 2“ M8/M10	**512683**	**512691**	M8 / M10	2	60 – 64	105	92	55	20 x 1.25	M6	2	1.00	50
FRS 67 - 71 M8/M10	**–**	**512692**	M8 / M10	–	67 – 71	112	99	58	20 x 1.25	M6	2	1.00	25
FRS 2 1/2“ M8/M10	**–**	**512693**	M8 / M10	2 1/2	72 – 78	126	107	62	25 x 1.5	M6	2	1.30	25
FRS 3“ M8/M10	**–**	**512694**	M8 / M10	3	87 – 92	141	121	69	25 x 1.5	M6	2	1.30	25
FRS 95 - 103 M8/M10	**–**	**512695**	M8 / M10	–	95 – 103	151	132	75	25 x 1.5	M6	2	1.30	25
FRS 4“ M8/M10	**–**	**512696**	M8 / M10	4	102 – 116	171	146	82	25 x 2.0	M6	2	2.00	20

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).
- For use in dry interior areas.

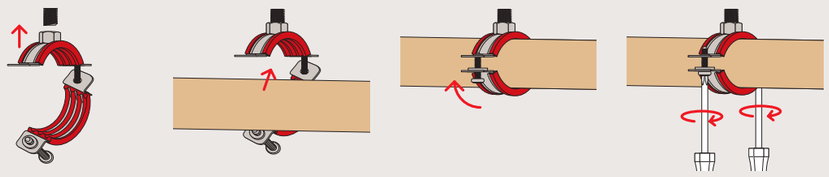
Advantages

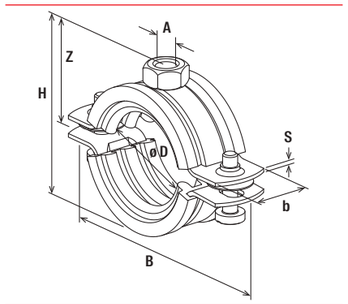
- The special silicone sound insulation insert allows a use with average temperatures of up to +220 °C.
- The two screws enable an easy adjustment to suit the outer pipe diameter.
- The screw‘s safety feature ensures trouble-free installation.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Connecting nut: (up to FRSH 59 - 63) resistance welded, M8 and M8/M10 SW 13, M10 SW 17
- Locking screw: pan-head screw with cross recess Phillips PH slot
- 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





FRSH

Technical data

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSH 15 - 19	**063490**	M8	3/8	15 – 19	62	41	24	20 x 1.25	M5	2	1.00	100
FRSH 20 - 24	**063492**	M8	1/2	20 – 24	68	46	26	20 x 1.25	M5	2	1.00	100
FRSH 25 - 30	**063494**	M8	3/4	25 – 30	75	52	29	20 x 1.25	M5	2	1.00	100
FRSH 32 - 37	**063495**	M8	1	32 – 37	80	59	33	20 x 1.25	M5	2	1.00	100
FRSH 40 - 45	**063498**	M8	1 1/4	40 – 45	90	67	37	20 x 1.25	M5	2	1.00	50
FRSH 48 - 53	**063499**	M8	1 1/2	48 – 53	97	75	41	20 x 1.25	M5	2	1.00	50
FRSH 54 - 59	**063500**	M8	–	54 – 59	104	81	44	20 x 1.25	M5	2	1.00	50
FRSH 60 - 64	**063502**	M8	2	60 – 64	110	86	46	20 x 1.25	M5	2	1.00	50
FRSH 68 - 73	**063504**	M10	–	68 – 73	122	95	51	25 x 1.5	M6	2	1.30	25
FRSH 74 - 78	**063505**	M10	2 1/2	74 – 78	130	100	55	25 x 1.5	M6	2	1.30	25
FRSH 80 - 86	**063511**	M10	–	80 – 86	130	108	58	25 x 1.5	M6	2	1.30	25
FRSH 87 - 92	**063513**	M10	3	87 – 92	141	114	61	25 x 1.5	M6	2	1.30	25
FRSH 95 - 103	**063518**	M10	–	95 – 103	156	125	67	25 x 1.5	M6	2	1.30	25
FRSH 102 - 116	**063520**	M10	4	102 – 116	172	140	74	25 x 2.0	M6	2	2.00	20
FRSH 133 - 141	**063537**	M8 / M10	5	133 – 141	198	174	95	25 x 2.5	M8	3	2.00	10
FRSH 159 - 168	**091507**	M8 / M10	–	159 – 168	226	201	109	25 x 2.5	M8	3	2.00	8

Pipe clamp FRSN Triple

The two-screw pipe clamp with rapid-locking mechanism and triple connecting nut.

Waste water pipe

Applications

- For simple and easy fixing of pipelines with threaded rods or hanger bolts.
- For use in dry interior areas.

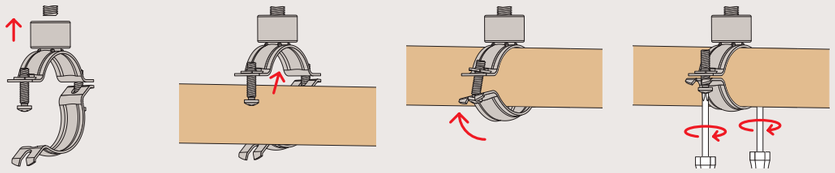
Advantages

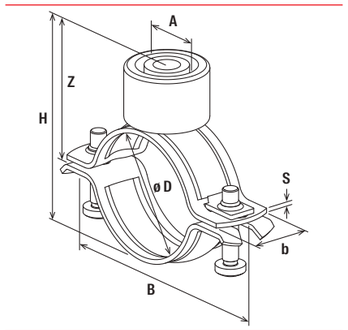
- The connecting nut with combination thread M8 / M10 / ½" allows for optimised mounting positioning.
- The rapid-locking mechanism allows for fast and time-saving installation.
- The two screws allow for ideal adaptation to suit the outer pipe diameter.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111.
- Zinc plating: electro zinc-plated.
- Connecting nut: resistance welded, M8 / M10 / ½".
- Locking screw: pan-head screw with cross recess Phillips PH slot.

Installation FRSN Triple





FRSN Triple

Technical data

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSN Triple 15 - 19	**500714**	M8 / M10 / 1/2"	3/8	15 – 19	54	44	32	20 x 1.5	M5	2	1.00	100
FRSN Triple 21 - 23	**500715**	M8 / M10 / 1/2"	1/2	21 – 23	58	48	34	20 x 1.5	M5	2	1.00	100
FRSN Triple 26 - 28	**500716**	M8 / M10 / 1/2"	3/4	26 – 28	63	53	36	20 x 1.5	M5	2	1.00	100
FRSN Triple 32 - 35	**500717**	M8 / M10 / 1/2"	1	32 – 35	70	60	40	20 x 1.5	M5	2	1.00	100
FRSN Triple 40 - 43	**500718**	M8 / M10 / 1/2"	1 1/4	40 – 43	78	68	44	20 x 1.5	M5	2	1.00	50
FRSN Triple 48 - 56	**500719**	M8 / M10 / 1/2"	1 1/2	48 – 56	91	81	50	20 x 1.5	M5	2	1.00	50
FRSN Triple 57 - 62	**500720**	M8 / M10 / 1/2"	2	57 – 63	97	87	53	20 x 1.5	M5	2	1.00	50
FRSN Triple 63 - 70	**500721**	M8 / M10 / 1/2"	–	63 – 70	105	95	57	20 x 1.5	M5	2	1.00	50
FRSN Triple 74 - 80	**500722**	M8 / M10 / 1/2"	2 1/2	74 – 80	115	105	62	20 x 1.5	M5	2	1.00	25
FRSN Triple 83 - 91	**500723**	M8 / M10 / 1/2"	3	83 – 91	126	116	68	20 x 1.5	M5	2	1.00	25
FRSN Triple 100 - 105	**500724**	M8 / M10 / 1/2"	–	100 – 105	148	130	74	23 x 2.0	M6	2	1.50	10
FRSN Triple 108 - 114	**500725**	M8 / M10 / 1/2"	4	108 – 114	157	139	78	23 x 2.0	M6	2	1.50	10

Pipe clamp FRSN

The two-screw pipe clamp without sound insulation insert.

Waste water pipe

Applications

- Fixing of metal or plastic pipes without sound insulation requirements with threaded rods or stud screws (e.g. in industrial constructions).
- For use in dry interior areas.

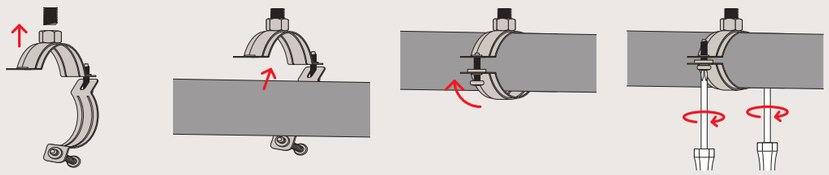
Advantages

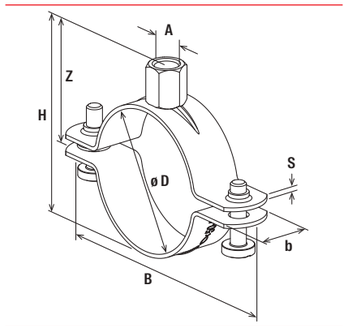
- The FRSN without the sound insulation insert is ideal for use in industrial applications and plastic pipes.
- The combination connecting nut with thread M8 / M10 allows for optimised mounting choices.
- The two screws enable ideal adaptation to suit the outer pipe diameter.
- The screw's safety feature ensures trouble-free installation.

Properties

- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111.
- Zinc plating: electro zinc-plated.
- Connecting nut: resistance welded M8 / M10 SW 13, M10 / M12 SW 17.
- Locking screw: pan-head screw with cross recess Phillips PH slot.

Installation FRSN





FRSN

Technical data

Item	Item no.	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSN 15 - 19 M8/M10	**049459**	M8 / M10	3/8	15 – 19	56	37	27	20 x 1.5	M6	2	1.50	100
FRSN 21 - 23 M8/M10	**049789**	M8 / M10	1/2	21 – 23	60	41	28	20 x 1.5	M6	2	1.50	100
FRSN 25 - 28 M8/M10	**049790**	M8 / M10	3/4	25-28	67	46	30	20 x 1.5	M6	2	1.50	100
FRSN 32 - 36 M8/M10	**049793**	M8 / M10	1	32 – 36	74	54	34	20 x 1.5	M6	2	1.50	100
FRSN 38 - 43 M8/M10	**049794**	M8 / M10	1 1/4	38 – 43	78	61	38	20 x 1.5	M6	2	1.50	50
FRSN 44 - 49 M8/M10	**049902**	M8 / M10	1 1/2	44 – 49	88	67	41	20 x 1.5	M6	2	1.50	50
FRSN 50 - 56 M8/M10	**049922**	M8 / M10	–	50 – 56	92	74	43	20 x 1.5	M6	2	1.50	50
FRSN 57 - 61 M8/M10	**049944**	M8 / M10	2	57 – 61	98	79	47	20 x 1.5	M6	2	1.50	50
FRSN 63 - 70 M8/M10	**049945**	M8 / M10	–	63 – 70	105	88	54	20 x 1.5	M6	2	1.50	50
FRSN 70 - 77 M8/M10	**049947**	M8 / M10	2 1/2	70 – 77	112	95	55	20 x 1.5	M6	2	1.50	25
FRSN 80 - 83 M8/M10	**049948**	M8 / M10	–	80 – 83	116	101	58	20 x 1.5	M6	2	1.50	25
FRSN 83 - 91 M8/M10	**049979**	M8 / M10	3	83 – 91	128	111	63	20 x 2.0	M6	2	2.50	25
FRSN 93 - 99 M8/M10	**050005**	M8 / M10	–	93 – 99	123	118	67	20 x 2.0	M6	2	2.50	25
FRSN 100 - 106 M8/M10	**050006**	M8 / M10	–	100 – 106	143	126	70	20 x 2.0	M6	2	2.50	25
FRSN 108 - 114 M8/M10	**050008**	M8 / M10	4	108 – 114	156	134	75	20 x 2.0	M6	2	2.50	25
FRSN 118 - 122 M8/M10	**500744**	M8 / M10	–	118 – 122	160	142	78	20 x 2.0	M6	2	2.50	25
FRSN 123 - 128 M8/M10	**050009**	M8 / M10	–	123 – 128	173	149	82	25 x 2.5	M6	2	2.50	25
FRSN 131 - 136 M8/M10	**050010**	M8 / M10	–	131 – 136	176	157	86	25 x 2.5	M6	2	2.50	25
FRSN 137 - 146 M8/M10	**050023**	M8 / M10	5	137 – 146	180	167	91	25 x 2.5	M6	2	2.50	25
FRSN 146 - 156 M8/M10	**500746**	M8 / M10	–	146 – 156	195	177	96	25 x 2.5	M6	2	2.50	25
FRSN 159 - 165 M10/M12	**500747**	M10 / M12	–	159 – 165	203	191	106	25 x 2.5	M6	2	2.50	25
FRSN 166 - 175 M10/M12	**500748**[1)]	M10 / M12	–	166 – 175	211	201	110	25 x 2.5	M8	3	2.50	20
FRSN 200 - 206 M10/M12	**500751**[1)]	M10 / M12	–	200 – 206	248	232	126	25 x 2.5	M8	3	2.50	10
FRSN 210 - 219 M10/M12	**500752**[1)]	M10 / M12	8	210 – 219	261	245	133	25 x 2.5	M8	3	2.50	10

[1)] From 166, the clamp band is perforated and connected with a screw and nut.

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 or hanger bolts.
- FRSM galvanised: for use in dry interior areas.
- FRSM hot-dip galvanised: for indoor and outdoor application.
- FRSM stainless steel A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

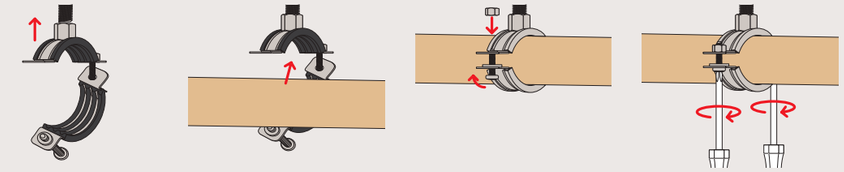
Advantages

- High tested loads guarantee safe functioning of the FRSM.
- The combination connecting nut with thread M10 / M12, M12 / M16 or M16 allows for optimised mounting choices.
- It is possible to install the FRSM 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.

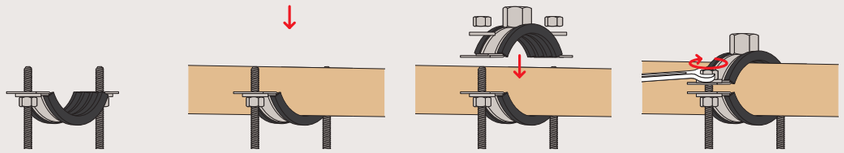
Properties

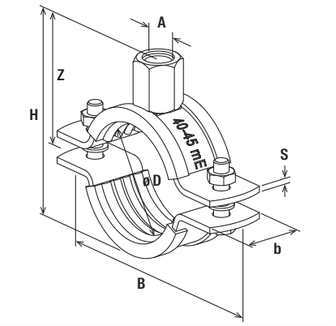
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material A4: stainless steel A4 (material no. 1.4401)
- Connecting nut: M10 / M12 SW 17, M12 / M16 SW 22, M16 SW 24
- Locking screw: hexagon screw with nut
- Material sound insulation 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



Installation of FRSM with two threaded rods

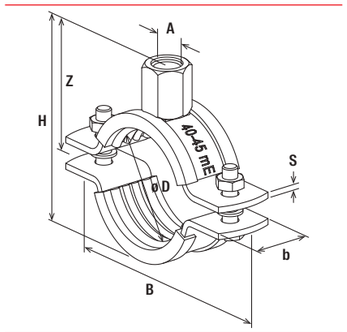




FRSM - metric

Heavy duty pipe clamp FRSM gvz / hdg

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSM 19-23 M10/M12	**554243**	**558524**	M10 / M12	1/2	19 – 23	76	56	38	25 x 2.5	M6	2	2.50	50
FRSM 24-29 M10/M12	**554244**	**558525**	M10 / M12	3/4	24 – 29	80	62	41	25 x 2.5	M6	2	2.50	50
FRSM 33-36 M10/M12	**554245**	**558526**	M10 / M12	1	33 – 36	87	69	45	25 x 2.5	M6	2	2.50	50
FRSM 40-45 M10/M12	**554246**	**558527**	M10 / M12	1 1/4	40 – 45	96	78	49	25 x 2.5	M6	2	2.50	20
FRSM 45-52 M10/M12	**–**	**558528**	M10 / M12	1 1/2	48 – 52	103	85	53	25 x 2.5	M6	2	2.50	20
FRSM 47-52 M10/M12	**554247**	**–**	M10 / M12	1 1/2	47 – 52	103	85	53	25 x 2.5	M6	2	2.50	20
FRSM 53-58 M10/M12	**554248**	**558529**	M10 / M12	–	53 – 58	109	91	56	25 x 2.5	M6	2	2.50	20
FRSM 60-65 M10/M12	**554249**	**558530**	M10 / M12	2	60 – 65	116	98	59	25 x 2.5	M6	2	2.50	20
FRSM 73-78 M10/M12	**554250**	**558531**	M10 / M12	2 1/2	73 – 78	143	115	68	30 x 3.0	M8	3	3.00	20
FRSM 79-85 M10/M12	**554251**	**558532**	M10 / M12	–	79 – 85	150	122	71	30 x 3.0	M8	3	3.00	20
FRSM 88-93 M10/M12	**554252**	**558533**	M10 / M12	3	88 – 93	158	130	75	30 x 3.0	M8	3	3.00	20
FRSM 100-106 M10/M12	**554253**	**558534**	M10 / M12	–	100 – 106	171	143	82	30 x 3.0	M8	3	3.00	20
FRSM 108-116 M10/M12	**554254**	**558606**	M10 / M12	4	108 – 116	181	153	87	30 x 3.0	M8	3	3.00	20
FRSM 124-129 M10/M12	**093709**	**558535**	M10 / M12	–	124 – 129	194	166	93	30 x 3.0	M8	3	3.00	20
FRSM 131-137 M10/M12	**093710**	**558536**	M10 / M12	–	131 – 137	202	174	97	30 x 3.0	M8	3	3.00	20
FRSM 138-145 M10/M12	**093711**	**558537**	M10 / M12	5	138 – 145	210	182	101	30 x 3.0	M8	3	3.00	20
FRSM 156-162 M10/M12	**093712**	**558538**	M10 / M12	–	156 – 162	227	199	110	30 x 3.0	M8	3	3.00	20
FRSM 165-171 M10/M12	**093713**	**558539**	M10 / M12	6	165 – 171	236	208	114	30 x 3.0	M8	3	3.00	20
FRSM 177-183 M10/M12	**558303**	**–**	M10 / M12	–	177 – 183	248	220	120	30 x 3.0	M8	3	3.00	20
FRSM 188-194 M10/M12	**093714**	**558540**	M10 / M12	7	188 – 194	259	231	126	30 x 3.0	M8	3	3.00	10
FRSM 196-203 M10/M12	**093715**	**558541**	M10 / M12	–	196 – 203	268	240	130	30 x 3.0	M8	3	3.00	10
FRSM 205-214 M12/M16	**505453**	**558542**	M12 / M16	–	205 – 214	301	264	147	40 x 4.0	M12	10	5.00	10



FRSM - metric

Heavy duty pipe clamp FRSM gvz / hdg

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSM 219-225 M12/M16	505454	558543	M12 / M16	8	219 – 225	313	275	153	40 x 4.0	M12	10	5.00	10
FRSM 244-250 M12/M16	505455	558544	M12 / M16	–	244 – 250	338	300	165	40 x 4.0	M12	10	5.00	10
FRSM 267-273 M12/M16	505456	558545	M12 / M16	10	267 – 273	361	323	177	40 x 4.0	M12	10	5.00	10
FRSM 277-283 M12/M16	558304	–	M12 / M16	–	277 – 283	371	333	182	40 x 4.0	M12	10	5.00	10
FRSM 297-304 M12/M16	505457	558546	M12 / M16	–	297 – 304	392	354	192	40 x 4.0	M12	10	5.00	10
FRSM 305-316 M12/M16	552858	558547	M12 / M16	–	305 – 316	403	366	198	40 x 4.0	M12	10	5.00	10
FRSM 320-328 M12/M16	505458	558548	M12 / M16	12	320 – 328	416	378	204	40 x 4.0	M12	10	5.00	10
FRSM 348-356 M16	504594	558549	M16	–	348 – 356	464	403	214	50 x 5.0	M16	20	8.00	1
FRSM 364-372 M16	504595	558596	M16	–	364 – 372	480	419	222	50 x 5.0	M16	20	8.00	1
FRSM 400-409 M16	504596	558597	M16	–	400 – 409	517	456	240	50 x 5.0	M16	20	8.00	1
FRSM 454-462 M16	504597	558598	M16	–	454 – 462	570	509	267	50 x 5.0	M16	20	8.00	1
FRSM 500-508 M16	504598	558599	M16	–	500 – 508	620	555	290	50 x 5.0	M16	20	8.00	1

Heavy duty pipe clamp FRSM metric A4

Item	Item no. A4	Thread A	Size [in]	Clamping range D [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSM 165-171 M12	562764	M12	6	165 – 171	236	205	111	30 x 3.0	M8	3	3.00	10
FRSM 188-194 M12	562765	M12	7	188 – 194	259	228	123	30 x 3.0	M8	3	3.00	10
FRSM 196-203 M12	562766	M12	–	196 – 203	268	237	127	30 x 3.0	M8	3	3.00	10
FRSM 212 M16	562767	M16	–	205 – 214	301	259	142	40 x 4.0	M12	10	5.00	10
FRSM 8“ M16	562768	M16	8	219 – 225	313	270	148	40 x 4.0	M12	10	5.00	10
FRSM 250 M16	562769	M16	–	244 – 250	338	295	160	40 x 4.0	M12	10	5.00	5
FRSM 10“ M16	562770	M16	10	267 – 273	361	318	172	40 x 4.0	M12	10	5.00	5
FRSM 300 M16	562771	M16	–	297 – 304	392	349	187	40 x 4.0	M12	10	5.00	5
FRSM 305-316 M16	562772	M16	–	305 – 316	403	361	193	40 x 4.0	M12	10	5.00	5
FRSM 12“ M16	562773	M16	12	320 – 328	416	373	199	40 x 4.0	M12	10	5.00	5

Heavy duty pipe clamp FRSMN

The two-screw pipe clamp without sound insulation insert with FM and VdS approval.

Fixing of pipes

Applications

- Fixing metal or plastic pipes without sound insulation requirements using threaded rods or stud screws, e.g. in industrial buildings.
- Fixing sprinkler pipes in accordance with FM and VdS guidelines.
- For use in dry interior areas.

Certificates / Features

FM APPROVED

VdS

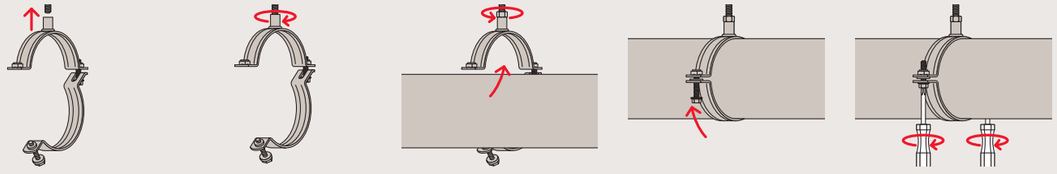
Advantages

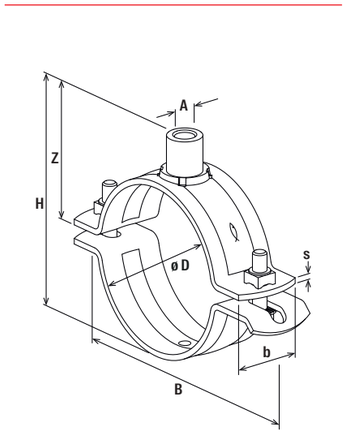
- FM and VdS approval guarantees objectively tested safety for the use of sprinkler systems.
- The FRSMN without sound insulation insert is ideal for industrial applications and plastic pipes.
- The connection nuts with combination thread ensure flexibility on the construction site.
- The two-screw design enables optimised adaptation to the outer pipe diameter.
- The loss protection of the screws ensures trouble-free installation.

Properties

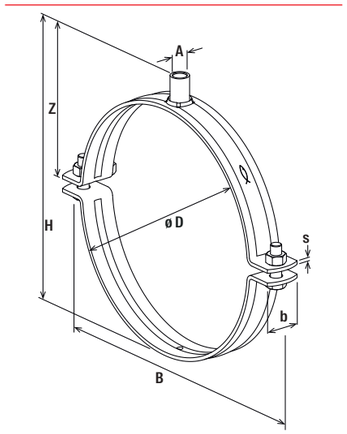
- Heavy duty pipe clamp:
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Connection nut:
- Push-through nut M8/M10, M10/M12, M12/M16 resistance spot-welded
- Hexagonal nuts M16 SW24 and M20 SW30 half-round welded
- Hexagonal nuts M16 SW30 from diameter 316-324 all-round welded
- Locking screw: hexagonal screw with flange M6 SW10/PH3, M8 SW13/PH3. From diameter 133-140 hexagonal screw 8.8 and nut M12 SW19, M16 SW24

Installation FRSMN





FRSMN M8-M10

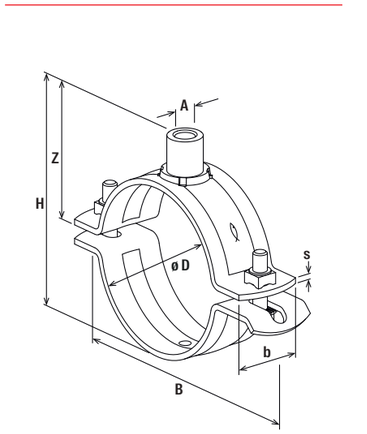


FRSMN M12-M16

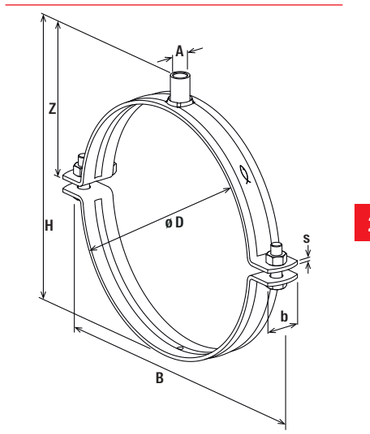
Technical data

Item	Item no.	FM approval	VdS approval	Thread A	Size [in]	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSMN 15 - 19 M8/M10	**570152**[1]	–	–	M8 / M10	3/8	15 – 19	30 x 2.5	62	45.5	33.5	M6	2	2.50	50
FRSMN 20 - 24 M8/M10	**570153**	–	Yes	M8 / M10	1/2	20 – 24	30 x 2.5	71	50.5	36	M6	2	2.50	50
FRSMN 25 - 30 M8/M10	**570154**	Yes	Yes	M8 / M10	3/4	25 – 30	30 x 2.5	78	56.5	39	M6	2	2.50	50
FRSMN 31 - 35 M8/M10	**570155**	Yes	Yes	M8 / M10	1	31 – 35	30 x 2.5	84	59	37.5	M6	2	4.00	50
FRSMN 36 - 41 M8/M10	**570156**	–	Yes	M8 / M10	–	36 – 41	30 x 2.5	89	65	40.5	M6	2	4.00	50
FRSMN 40 - 45 M8/M10	**570157**	Yes	Yes	M8 / M10	1 1/4	40 – 45	30 x 2.5	94	69	42.5	M6	2	4.00	50
FRSMN 48 - 53 M8/M10	**570158**	Yes	Yes	M8 / M10	1 1/2	48 – 53	30 x 2.5	103	77	46.5	M6	2	4.00	50
FRSMN 55 - 59 M8/M10	**570159**	–	Yes	M8 / M10	–	54 – 59	30 x 2.5	108	83	49.5	M6	2	4.00	50
FRSMN 60 - 65 M8/M10	**570160**	Yes	Yes	M8 / M10	2	60 – 65	30 x 2.5	116	89	52.5	M6	2	4.00	50
FRSMN 67 - 72 M8/M10	**570161**	–	Yes	M8 / M10	–	67 – 72	30 x 2.5	123	96	56	M6	2	4.00	50
FRSMN 76 - 81 M10/M12	**570162**	Yes	Yes	M10 / M12	2 1/2	76 – 81	30 x 3.0	145.5	110.5	65.5	M8	3	5.00	25
FRSMN 82 - 85 M10/M12	**570163**[1]	–	Yes	M10 / M12	–	82 – 85	30 x 3.0	153.5	114.5	67.5	M8	3	5.00	25
FRSMN 88 - 94 M10/M12	**570164**	Yes	Yes	M10 / M12	3	88 – 94	30 x 3.0	157	123.5	72	M8	3	5.00	25
FRSMN 95 - 102 M10/M12	**570165**	–	Yes	M10 / M12	–	95 – 102	30 x 3.0	168	131.5	76	M8	3	5.00	25
FRSMN 102 - 108 M10/M12	**570166**[1]	–	Yes	M10 / M12	–	102 – 108	30 x 3.0	179	137.5	79	M8	3	5.00	25
FRSMN 110 - 116 M10/M12	**570167**	Yes	Yes	M10 / M12	4	110 – 116	30 x 3.0	184	145.5	83	M8	3	5.00	25
FRSMN 124 - 129 M10/M12	**570168**[1]	–	Yes	M10 / M12	–	124 – 129	30 x 3.0	199.5	158.5	89.5	M8	3	5.00	25
FRSMN 133 - 140 M12/M16	**570169**	Yes	Yes	M12 / M16	–	133 – 140	40 x 4.0	216	175.5	100	M12	10	8.00	10
FRSMN 140 - 146 M12/M16	**570170**[1]	–	Yes	M12 / M16	5	140 – 146	40 x 4.0	222	181.5	103	M12	10	8.00	10
FRSMN 149 - 155 M12/M16	**570171**[1]	–	Yes	M12 / M16	–	149 – 155	40 x 4.0	232	190	107.5	M12	10	8.00	10
FRSMN 159 - 165 M12/M16	**570173**	–	Yes	M12 / M16	–	159 – 165	40 x 4.0	242	200.5	112.5	M12	10	8.00	10
FRSMN 167 - 173 M12/M16	**570174**	Yes	Yes	M12 / M16	6	167 – 173	40 x 4.0	249	208.5	116.5	M12	10	8.00	10
FRSMN 176 - 182 M12/M16	**570128**	–	–	M12 / M16	–	176 – 182	40 x 4.0	258	217.5	121	M12	10	8.00	10
FRSMN 188 - 194 M12/M16	**570129**[1]	–	–	M12 / M16	–	188 – 194	40 x 4.0	270	229.5	127	M12	10	8.00	10
FRSMN 199 - 205 M12/M16	**570131**	–	–	M12 / M16	–	199 – 205	40 x 4.0	281	240.5	135.5	M12	10	9.00	10
FRSMN 207 - 216 M12/M16	**570133**[1]	–	–	M12 / M16	–	207 – 216	40 x 4.0	292	251.5	138	M12	10	9.00	10
FRSMN 219 - 226 M12/M16	**570134**	–	–	M12 / M16	8	219 – 226	40 x 4.0	302	261.5	143	M12	10	9.00	10
FRSMN 219 - 226 M16 VdS	**570135**	–	Yes	M16	8	219 – 226	40 x 4.0	302	257.5	139	M12	10	9.00	10
FRSMN 227 - 236 M12/M16	**570136**[1]	–	–	M12 / M16	–	227 – 236	40 x 4.0	312	271.5	148	M12	10	9.00	10
FRSMN 244 - 250 M12/M16	**570137**	–	–	M12 / M16	–	244 – 250	40 x 4.0	326	285.5	155	M12	10	9.00	10
FRSMN 251 - 261 M12/M16	**570138**[1]	–	–	M12 / M16	–	251 – 261	40 x 4.0	337	296.5	160.5	M12	10	9.00	10
FRSMN 267 - 273 M12/M16	**570139**	–	–	M12 / M16	10	267 – 273	40 x 4.0	349	308.5	166.5	M12	10	9.00	10
FRSMN 267 - 273 M20 VdS	**570140**[1]	–	Yes	M20	10	267 – 273	40 x 4.0	349	311	169	M12	10	9.00	10
FRSMN 278 - 284 M12/M16	**570141**[1]	–	–	M12 / M16	–	278 – 284	40 x 4.0	360	319.5	172	M12	10	9.00	10

[1] Delivery time on request.



FRSMN M8-M10



FRSMN M12-M16

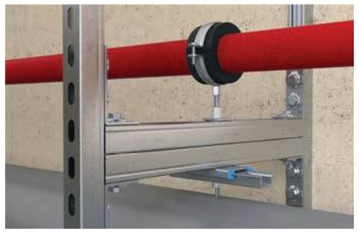
Technical data

Item	Item no.	FM approval	VdS approval	Thread A	Size [in]	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSMN 297 - 304 M12/M16	**570142**[1]	–	–	M12 / M16	–	297 – 304	40 x 4.0	380	339.5	182	M12	10	9.00	10
FRSMN 305 - 316 M12/M16	**570143**	–	–	M12 / M16	–	305 – 316	40 x 4.0	392	351.5	188	M12	10	9.00	10
FRSMN 316 - 324 M16	**570144**	–	–	M16	12	316 – 324	50 x 5.0	431	358	191	M16	20	15.00	1
FRSMN 348 - 356 M16	**570145**[1]	–	–	M16	13	348 – 356	50 x 5.0	463	390	207	M16	20	15.00	1
FRSMN 360 - 368 M16	**570147**[1]	–	–	M16	–	360 – 368	50 x 5.0	475.5	402	213	M16	20	15.00	1
FRSMN 399 - 407 M16	**570148**[1]	–	–	M16	16	399 – 407	50 x 5.0	514.5	441	232.5	M16	20	15.00	1
FRSMN 411 - 419 M16	**570149**[1]	–	–	M16	–	411 – 419	60 x 8,0	531.5	459	241.5	M16	20	15.00	1
FRSMN 500 - 508 M16	**570150**[1]	–	–	M16	20	500 – 508	60 x 8,0	620.5	548	286	M16	20	15.00	1
FRSMN 513 - 521 M16	**570151**[1]	–	–	M16	–	513 – 521	60 x 8,0	633.5	561	292.5	M16	20	15.00	1

[1] Delivery time on request.

Refrigeration pipe clamp FRSK

The variable refrigeration pipe clamp with flexible clamping range and rapid-locking-mechanism.



Refrigeration pipes

Refrigerant pipe clamps

Applications

- Installation of pipes in refrigeration and air-conditioning applications.
- For use in dry interior areas.

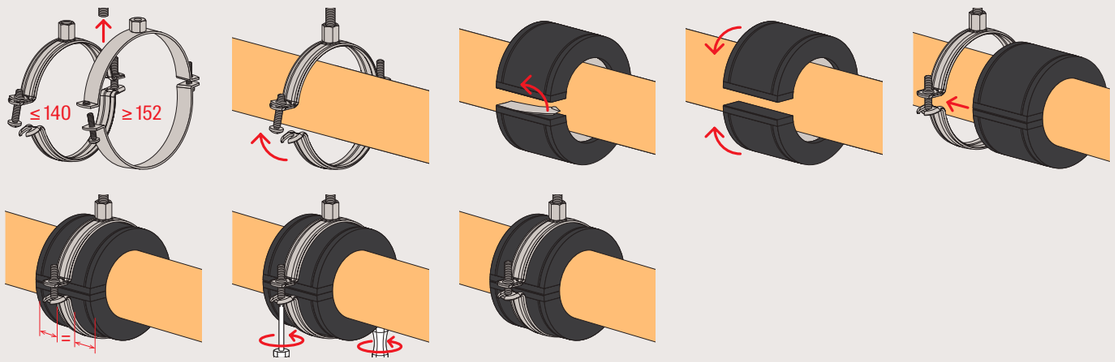
Advantages

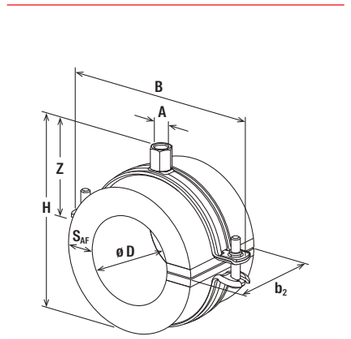
- The variable clamping range compensation and two screw design allow for simple adjustment to the exterior pipe diameter, reducing the number of items required.
- The self-adhesive fastening latch ensures the ideal functioning of the refrigeration pipe clamp.
- Materials resistant to ageing ensure the FRSK offers consistent performance.
- The double-threaded connecting nut offers flexibility on the construction site.
- The loss protection on the screws allows for easy installation.
- The integrated load distribution plate ensures load transfer and allows for higher loads.

Properties

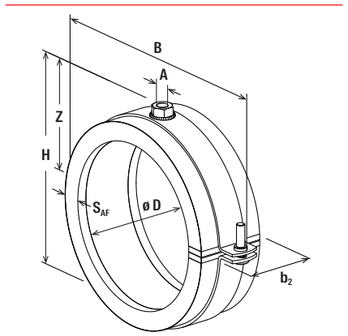
- Material: rigid polyurethane foam, silicone-free
- Density: 80 or 120 kg/m³
- Diffusion resistance: 7000 µ
- Compressive strength: 0.67-0.75 mPa
- Thermal conductivity (at 0 °C): 0.024-0.026 W/mK
- Temperature range: -45 °C to +105 °C
- Fire behaviour: DIN 4102: Class B2
- Steel clamp: material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated
- Locking screw: pan-head screw with slot / Phillips recess combination

Installation FRSK





FRSK 10 - 141



FRSK 152 - 221

Technical data

Item	Item no.	Thread A	Size [in]	Insulation thickness S_{AF} [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Locking screw	Length of insulation material b_2 [mm]	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSK 10 - 13 M8/M10	**560906**	M8 / M10	1/4	19	83	69	42	M5	72	2	0.05	25
FRSK 15 - 18 M8/M10	**560907**	M8 / M10	3/8	19	90	76	45	M5	72	2	0.05	25
FRSK 19 - 22 M8/M10	**560908**	M8 / M10	1/2	19	90	76	45	M5	72	2	0.05	25
FRSK 25 - 28 M8/M10	**560909**	M8 / M10	3/4	19	97	83	49	M5	72	2	0.08	25
FRSK 32 - 35 M8/M10	**560970**	M8 / M10	1	19	120	100	57	M6	72	2	0.10	20
FRSK 38 - 41 M8/M10	**560971**	M8 / M10	–	19	120	100	57	M6	72	2	0.12	20
FRSK 42 - 45 M8/M10	**560972**	M8 / M10	1 1/4	19	120	100	57	M6	72	2	0.20	20
FRSK 48 - 52 M8/M10	**560973**	M8 / M10	1 1/2	19	130	109	62	M6	42	2	0.24	20
FRSK 54 - 57 M8/M10	**560974**	M8 / M10	–	19	139	118	66	M6	42	2	0.27	20
FRSK 60 - 64 M8/M10	**560975**	M8 / M10	2	19	139	118	66	M6	52	2	0.37	20
FRSK 67 - 70 M8/M10	**560976**	M8 / M10	–	19	146	125	70	M6	52	2	0.51	20
FRSK 73 - 76 M8/M10	**560977**	M8 / M10	2 1/2	19	156	135	75	M6	52	2	0.61	10
FRSK 89 - 92 M8/M10	**560978**	M8 / M10	3	19	176	156	86	M6	52	2	0.79	10
FRSK 101 - 104 M8/M10	**560979**	M8 / M10	–	19	184	164	90	M6	62	2	0.98	10
FRSK 108 - 110 M8/M10	**560980**	M8 / M10	–	19	192	172	94	M6	62	2	1.15	10
FRSK 114 - 115 M8/M10	**560981**	M8 / M10	4	19	192	172	94	M6	62	2	1.17	10
FRSK 125 - 127 M8/M10	**560982**	M8 / M10	–	19	211	190	103	M6	62	2	1.39	10
FRSK 130 - 133 M8/M10	**560983**	M8 / M10	–	19	211	190	103	M6	62	2	1.48	5
FRSK 139 - 141 M8/M10	**560984**	M8 / M10	5	19	219	199	106	M6	62	2	1.56	5
FRSK 152 - 154 M12	**560985**	M12	–	19	246	208	109	M8	62	3	1.72	5
FRSK 159 - 160 M12	**560986**	M12	–	19	255	214	112	M8	62	3	1.77	5
FRSK 168 - 170 M12	**560987**	M12	6	19	262	224	117	M8	72	3	2.26	5
FRSK 190 - 194 M12	**560988**	M12	–	19	284	248	129	M8	82	3	3.04	4
FRSK 200 - 204 M12	**560989**	M12	–	19	292	258	134	M8	82	3	3.20	4
FRSK 219 - 221 M12	**560990**	M12	8	19	311	275	142.5	M8	82	3	3.44	4

Refrigeration pipe clamp KFT

The two-screw refrigeration pipe clamp made from closed PUR foam.

Refrigerant pipe clamps

Refrigerant pipe clamp on sliding element

Applications

- Installation of pipes in refrigeration and air-conditioning applications with high loads.
- For use in dry interior areas.

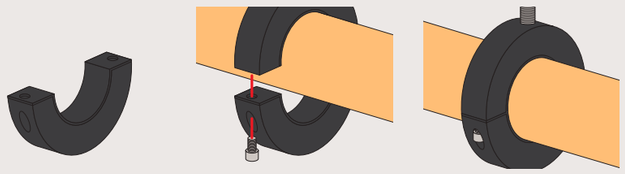
Advantages

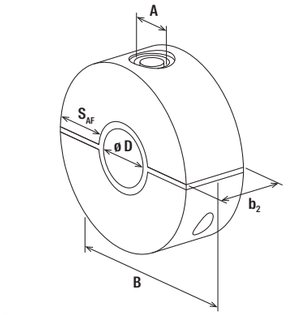
- The refrigeration pipe clamp KFT made from closed PUR foam can be used with all standard insulation materials.
- The glued rubber overlay makes the installation easier.
- The triple-threaded connection nut M8/M10/½“ allows for flexibility during the installation.
- Age-resistant material ensures the long-term functionality of the KFT.
- The two screws allow an easy adjustment to suit the outer pipe diameter.

Properties

- Material: closed-cell polyurethane foam, silicone-free
- Diffusion resistance: 1000 µ
- Density: 250 kg/m³
- Compression strength: 3,96 mPa at 23 °C
- Heat conductivity (at 0 °C): 0,049 W/(m*K)
- Temperature range: -160 °C to +130 °C
- Fire behaviour: DIN 4102: Class B2
- Locking screw: hexagon socket s5, s6, s8

Installation KFT

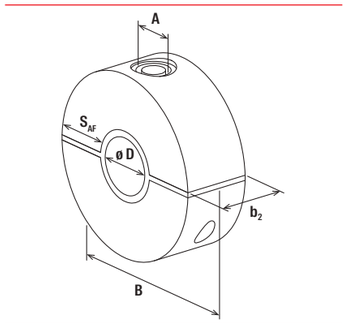




KFT

Technical data

Item	Item no.	Thread A	Internal diameter D [mm]	Width B [mm]	Locking screw	Insulation thickness S_{AF} [mm]	Length of insulation material b_2 [mm]	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
KFT 9.5	**505576**	M8 / M10 / 1/2“	9.5	88	M6	30	40	2	0.15	1
KFT 12.7	**505577**	M8 / M10 / 1/2“	12.7	88	M6	30	40	2	0.53	1
KFT 15.8	**505578**	M8 / M10 / 1/2“	15.8	88	M6	30	40	2	0.21	1
KFT 17.2	**505579**	M8 / M10 / 1/2“	17.2	88	M6	30	40	2	0.21	1
KFT 18.0	**505580**	M8 / M10 / 1/2“	18	88	M6	30	40	2	0.21	1
KFT 19.5	**505581**	M8 / M10 / 1/2“	19.5	88	M6	30	40	2	0.21	1
KFT 21.3	**505582**	M8 / M10 / 1/2“	21.3	88	M6	30	40	2	0.26	1
KFT 22.0	**505583**	M8 / M10 / 1/2“	22	88	M6	30	40	2	0.26	1
KFT 26.9	**505584**	M8 / M10 / 1/2“	26.9	88	M6	30	40	2	0.32	1
KFT 28.0	**505585**	M8 / M10 / 1/2“	28	88	M6	30	40	2	0.32	1
KFT 33.7	**505587**	M8 / M10 / 1/2“	33.7	96	M6	30	40	2	0.40	1
KFT 35.0	**505588**	M8 / M10 / 1/2“	35	96	M6	30	40	2	0.42	1
KFT 40.0	**505589**	M8 / M10 / 1/2“	40	100	M6	30	40	2	0.42	1
KFT 41.2	**505591**	M8 / M10 / 1/2“	41.2	100	M6	30	40	2	0.51	1
KFT 42.4	**505592**	M8 / M10 / 1/2“	42.4	103	M6	30	40	2	0.51	1
KFT 44.5	**505593**	M8 / M10 / 1/2“	44.5	103	M6	30	40	2	0.51	1
KFT 48.3	**505594**	M8 / M10 / 1/2“	48.3	102	M6	30	40	2	0.58	1
KFT 50.0	**505595**	M8 / M10 / 1/2“	50	112	M6	30	40	2	0.60	1
KFT 54.0	**505596**	M8 / M10 / 1/2“	54	116	M6	30	40	2	0.62	1
KFT 57.0	**505597**	M8 / M10 / 1/2“	57	116	M6	30	40	2	0.65	1
KFT 60.3	**505598**	M8 / M10 / 1/2“	60.3	123	M6	30	50	2	0.72	1
KFT 64.0	**505599**	M8 / M10 / 1/2“	64	123	M6	30	50	2	0.77	1
KFT 70.0	**505901**	M8 / M10 / 1/2“	70	132	M8	30	50	3	3.50	1
KFT 74.0	**505902**	M8 / M10 / 1/2“	74	132	M8	30	50	3	3.50	1
KFT 76.1	**505903**	M8 / M10 / 1/2“	76.1	132	M8	30	50	3	1.37	1
KFT 80.0	**505904**	M8 / M10 / 1/2“	80	132	M8	30	50	3	1.37	1
KFT 84.0	**505905**	M8 / M10 / 1/2“	84	150	M8	30	50	3	1.60	1
KFT 88.9	**505906**	M8 / M10 / 1/2“	88.9	150	M8	30	50	3	1.60	1
KFT 92.1	**505907**	M8 / M10 / 1/2“	92.1	150	M8	30	50	3	1.60	1
KFT 101.0	**505908**	M8 / M10 / 1/2“	101	188	M8	40	60	3	2.59	1
KFT 104.0	**505909**	M8 / M10 / 1/2“	104	188	M8	40	60	3	2.59	1
KFT 108.0	**505910**	M8 / M10 / 1/2“	108	188	M8	40	60	3	2.59	1
KFT 114.3	**505911**	M8 / M10 / 1/2“	114.3	195	M8	40	60	3	2.74	1
KFT 129.0	**505914**	M8 / M10 / 1/2“	129	220	M8	40	60	3	3.19	1
KFT 133.0	**505915**	M8 / M10 / 1/2“	133	220	M8	40	60	3	3.19	1
KFT 139.7	**505916**	M8 / M10 / 1/2“	139.7	220	M8	40	60	3	3.35	1
KFT 154.0	**505917**	M12 / 1/2“	154	239	M10	40	60	5	3.83	1
KFT 159.0	**505918**	M12 / 1/2“	159	239	M10	40	60	5	3.83	1
KFT 168.3	**505919**	M12 / 1/2“	168.3	250	M10	40	60	5	4.04	1
KFT 193.7	**505920**	M16 / 3/4“	193.7	340	M10	60	100	5	5.26	1
KFT 204.0	**505921**	M16 / 3/4“	204	340	M10	60	100	5	5.20	1



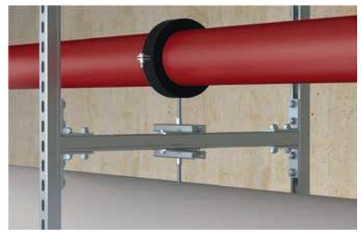
KFT

Technical data

	Item no.	Thread A	Internal diameter D [mm]	Width B [mm]	Locking screw	Insulation thickness S_{AF} [mm]	Length of insulation material b_2 [mm]	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
Item										
KFT 219.1	**505922**	M16 / 3/4“	219.1	340	M10	60	100	5	5.26	1

Refrigeration clamp KFS

The refrigeration pipe clamp made from closed PUR foam for big pipelines.



Cold running media lines

Applications

- Cooling lines
- Refrigeration lines
- Cold running media lines
- For use in dry interior areas.

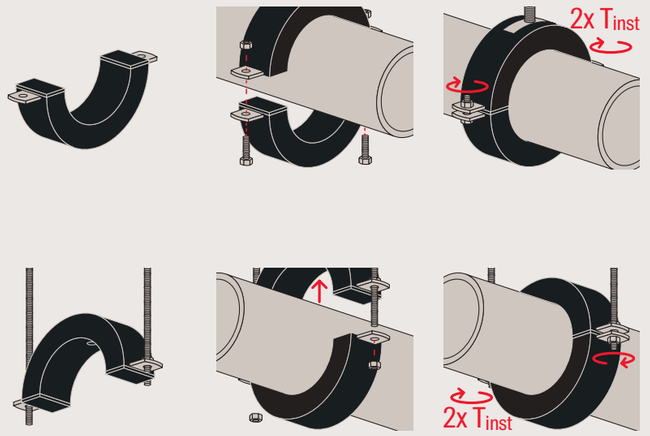
Advantages

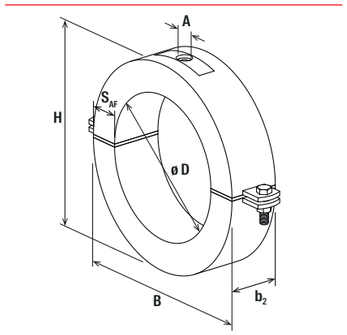
- The KFS Refrigeration clamp made of closed PUR foam can be used with all common insulation materials.
- The design of the KFS Refrigeration clamp with external screw holes enables it to support high loads.
- Age-resistant material ensures consistent function of the KFT.
- The glued-in rubber pad reduces the assembly effort due to optimal adjustment.

Properties

- Material: closed-cell polyurethane foam, silicone-free, halogen-free
- Density: 250 kg/m³
- Heat conductivity: 0.045 W/(m*K)
- Fire behaviour: DIN 4102: Class B2
- Diffusion resistance: >1000 µ
- Compressive strength: 3,96 mPa at 23 °C
- Temperature range: -50 °C to +105 °C
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated

Installation KFS





KFS

Technical data

Item	Item no.	Thread A	Size [in]	Insulation thickness S_{AF} [mm]	Width B [mm]	Height H [mm]	Locking screw	Length of insulation material b_2 [mm]	Clamping range D [mm]	Installation torque T_{inst} [Nm]	Max. re-com. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
KFS 273	**567798**	M16	10	60	493	393	M16	100	273	45	7.00	2
KFS 323	**567799**	M20	12	60	544	444	M16	100	324	45	11.00	2
KFS 355	**567800**[1)]	M20	14	60	576	476	M16	100	356	45	12.00	1
KFS 368	**567801**[1)]	M20	–	60	588	488	M16	120	368	45	13.00	1
KFS 406	**567802**[1)]	M24	16	60	646	526	M16	120	406	45	16.50	1
KFS 457	**567803**[1)]	M24	18	60	697	577	M16	120	457	45	19.00	1
KFS 508	**567804**[1)]	M24	20	60	748	628	M16	120	508	45	21.00	1
KFS 609	**567805**[1)]	M24	24	60	848	729	M16	140	609	45	28.50	1

[1)] delivery on request

Sprinkler loop hanger FRSP

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.
- For use in dry interior areas.

Certificates / Features

FM APPROVED

UL

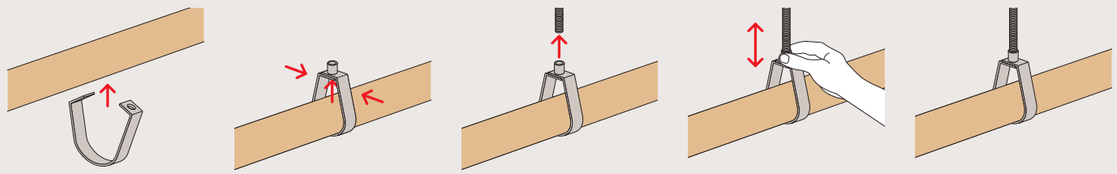
Advantages

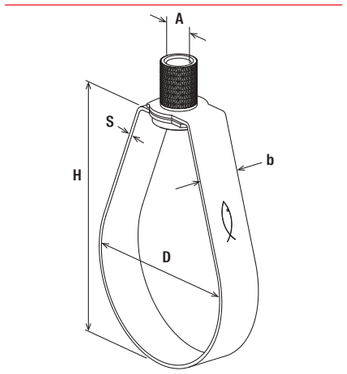
- For easy installation of sprinkler pipes from ½“ to 8“ for a wide range of applications.
- Simple assembly by inserting, hanging and adjusting the pipes. Saves time during installation.
- Simple height adjustment by means of a height-adjustable connecting nut.
- The sprinkler loop hanger has FM and UL approval ensuring safe application.

Properties

- Material: steel Q235B
- Zinc plating: electro zinc-plated

Installation FRSP





FRSP

Technical data

Item	Item no.	FM approval	UL approval	Thread A	Size [in]	Height H [mm]	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSP 1/2“	**516662**	–	Yes	M10	1/2	55	29.5	16 x 1.2	2.00	100
FRSP 3/4“	**516663**	Yes	Yes	M10	3/4	62	30.5	16 x 1.2	2.00	100
FRSP 1“	**516664**	Yes	Yes	M10	1	70	37	16 x 1.2	2.00	100
FRSP 1 1/4“	**516665**	Yes	Yes	M10	1 1/4	78	45.7	16 x 1.2	2.00	100
FRSP 1 1/2“	**516666**	Yes	Yes	M10	1 1/2	83	52	16 x 1.2	2.40	100
FRSP 2“	**516667**	Yes	Yes	M10	2	93	64	16 x 1.2	2.90	100
FRSP 2 1/2“	**516668**	Yes	Yes	M10	2 1/2	126	77	19 x 2.2	3.90	60
FRSP 3“	**516669**	Yes	Yes	M10	3	147	92.8	19 x 2.2	4.90	60
FRSP 4“	**516670**	Yes	Yes	M10	4	180	118.5	19 x 2.2	6.80	24
FRSP 5“	**532356**	Yes	Yes	M12	5	210	145.8	19 x 2.5	9.20	24
FRSP 6“	**516671**	Yes	Yes	M12	6	251	173	19 x 3.0	12.00	24
FRSP 8“	**516672**	Yes	Yes	M12	8	301	224.3	19 x 3.0	17.40	12

Sprinkler loop hanger FRLH

The premium sprinkler loop with divisible strap and height adjustment, VdS and FM approved.

Sprinkler pipe installation to trapezoidal metal sheet

Applications

- Installation of sprinkler pipes according to VdS and FM guidelines.
- For use in dry interior areas.

Advantages

- The VdS and FM approval guarantees objectively tested safety for use in sprinkler systems.
- The regulating nut as a connection nut enables easy subsequent height adjustment of the cables.

Properties

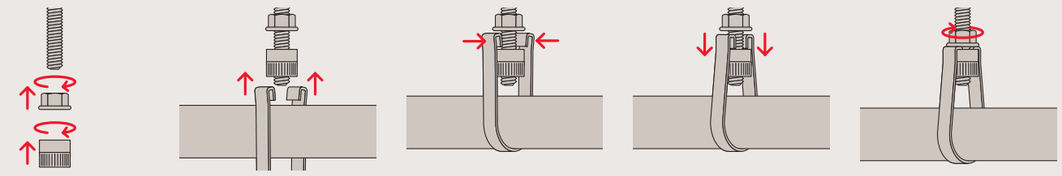
- Material sprinkler loop: steel DX51D+Z140MA acc. to DIN EN 10364/10143
- Zinc plating: sendzimir galvanised
- Material regulating nut: steel 11SMnPb37 (material no. 1.0737), acc. to DIN EN 10087
- Zinc plating: electro zinc-plated

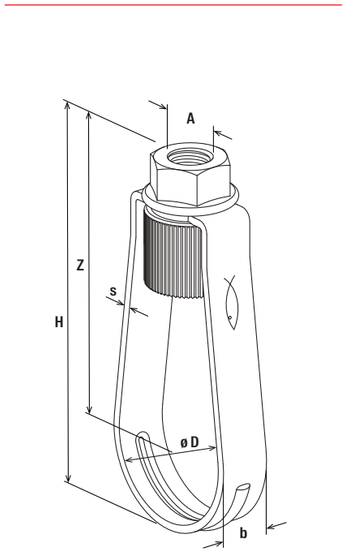
Certificates / Features

FM APPROVED

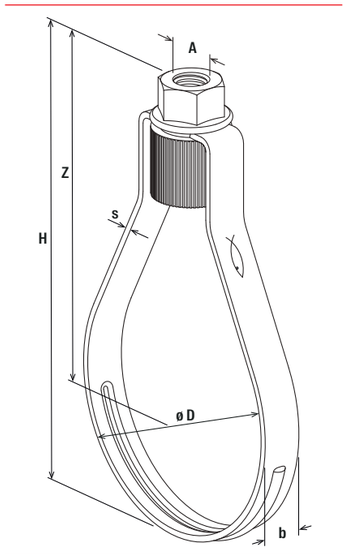
VdS

Installation FRLH





FRLH to 1“



FRLH from 1 1/4“

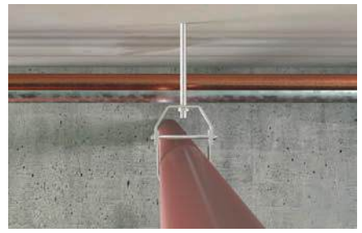
Technical data

Item	Item no.	FM approval	VdS approval	Size [in]	Thread A	Clamping range D [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRLH 1/2“ M8	**570175**	–	Yes	1/2	M8	21.3	76	64	12 x 1.5	4.00	50
FRLH 3/4“ M8	**570176**	–	Yes	3/4	M8	26.9	80	65	12 x 1.5	4.00	50
FRLH 3/4“ M10	**570177**[1]	Yes	Yes	3/4	M10	26.9	82	67	12 x 1.5	4.00	50
FRLH 1“ M8	**570178**	–	Yes	1	M8	33.7	83	65	12 x 1.5	4.00	50
FRLH 1“ M10	**570179**	Yes	Yes	1	M10	33.7	85	67	12 x 1.5	4.00	50
FRLH 1 1/4“ M8	**570180**	–	Yes	1 1/4	M8	42.4	88	65	12 x 1.5	4.00	50
FRLH 1 1/4“ M10	**570181**	Yes	Yes	1 1/4	M10	42.4	90	67	12 x 1.5	4.00	50
FRLH 1 1/2“ M8	**570182**	–	Yes	1 1/2	M8	48.3	96	70	12 x 1.5	4.00	50
FRLH 1 1/2“ M10	**570183**	Yes	Yes	1 1/2	M10	48.3	98	72	12 x 1.5	4.00	50
FRLH 2“ M8	**570184**	–	Yes	2	M8	60.3	112	80	12 x 1.5	4.00	50
FRLH 2“ M10	**570186**	Yes	Yes	2	M10	60.3	114	82	12 x 1.5	4.00	50
FRLH 2 1/2“ M10	**570187**	Yes	Yes	2 1/2	M10	76.1	140	99	15 x 2,5	6.00	25
FRLH 3“ M10	**570188**	Yes	Yes	3	M10	88.9	161	114	15 x 2,5	6.00	25
FRLH 4“ M10	**570189**	Yes	Yes	4	M10	114.3	205	145	15 x 2,5	6.00	25
FRLH 5“ M12	**570240**	Yes	Yes	5	M12	139.7	235	163	15 x 2,5	8.00	25
FRLH 6“ M12	**570241**	Yes	Yes	6	M12	168.3	287	200	15 x 2,5	8.00	25
FRLH 8“ M16	**570242**	Yes	Yes	8	M16	219.1	364	252	20 x 2.5	10.00	10
FRLH 10“ M20	**570243**[1]	–	Yes	10	M20	273	470	330	20 x 3,0	11.00	1

[1] Delivery time on request.

Sprinkler loop hanger FCHS

The universal sprinkler loop with FM and UL approval.



Sprinkler pipe installation

Applications

- Installation of sprinkler pipes.
- Used for the suspension of stationary, non-insulated pipelines.
- For use in dry interior areas.

Advantages

- For easy installation of sprinkler lines from ½“ to 12“ for a wide range of applications.
- Swivel clamp band to absorb movements in the sprinkler system.
- The sprinkler loop hanger has FM and UL approval ensuring safe application.

Properties

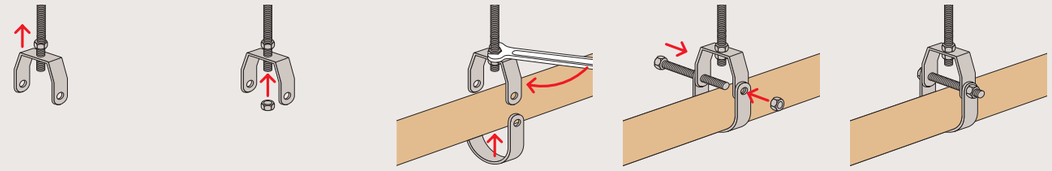
- Material: steel Q235B
- Zinc plating: electro zinc-plated

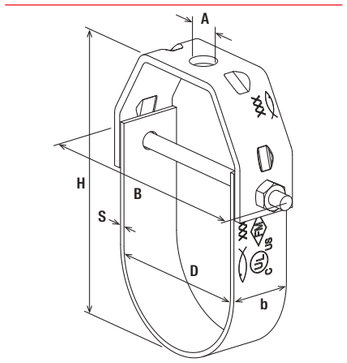
Certificates / Features

FM APPROVED

UL

Installation FCHS





FCHS

Technical data

Item	Item no.	FM approval	UL approval	Size [in]	Hole-ø A [mm]	Clamping range D [mm]	Height H [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FCHS 1/2“	**532187**	Yes	Yes	1/2“	10.5	19 – 23	51	49	19 x 2.0	3.00	150
FCHS 3/4“	**532190**	Yes	Yes	3/4“	10.5	24 – 29	58	55	19 x 2.0	3.00	120
FCHS 1“	**532195**	Yes	Yes	1“	10.5	33 – 37	70	61	19 x 2.0	3.00	120
FCHS 1 1/4“	**532197**	Yes	Yes	1 1/4“	10.5	40 – 45	84	74	25 x 2.0	3.00	56
FCHS 1 1/2“	**532198**	Yes	Yes	1 1/2	10.5	47 – 52	100	80	25 x 2.0	3.00	56
FCHS 2“	**516695**	Yes	Yes	2“	10.5	60 – 65	114	93	25 x 2.0	3.00	56
FCHS 2 1/2“	**516696**	Yes	Yes	2 1/2“	13.5	73 – 78	133	107	22 x 1.5	5.00	60
FCHS 3“	**516697**	Yes	Yes	3“	13.5	88 – 93	153	126	22 x 1.5	5.00	48
FCHS 4“	**516699**	Yes	Yes	4“	16.8	108 – 116	192	158	30 x 3.0	5.00	24
FCHS 5“	**516700**	Yes	Yes	5“	16.8	138 – 145	238	213	30 x 4.0	6.00	24
FCHS 6“	**516701**	Yes	Yes	6“	20.5	165 – 172	272	248	38 x 5.0	9.00	12
FCHS 8“	**516702**	Yes	Yes	8“	20.5	219 – 225	333	305	38 x 5.0	9.00	6
FCHS 10“	**516703**	–	–	10“	24	267 – 273	400	372	50 x 6.0	16.00	2
FCHS 12“	**516704**	–	–	12“	24	320 – 328	479	426	50 x 6.0	16.00	2

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 / Features

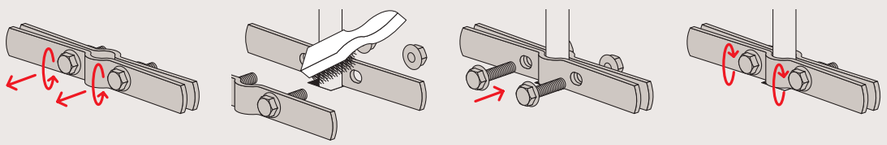
Advantages

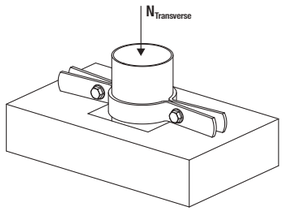
- Usable for all kinds of pipes.
- Suitable sizes for pipe diameters of ½“ to 8“.
- Easy installation using hexagonal screws and nuts.
- Safe for use thanks to UL certification.

Properties

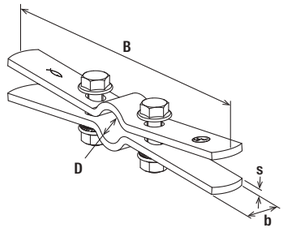
- Material: steel Q235B
- Zinc plating: electro zinc-plated

Installation RCWR





RCWR



RCWR

Technical data

Item	Item no.	UL approval	Clamping range D [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Max. recommended transverse tensile load $N_{transverse}$ [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
RCWR 1/2“	**516673**	Yes	22	215	25 x 5.0	3.3	25	35
RCWR 3/4“	**516674**	Yes	28	229	25 x 5.0	3.3	25	30
RCWR 1“	**516675**	Yes	34	230	25 x 5.0	3.3	25	25
RCWR 1 1/4“	**516676**	Yes	43	241	25 x 5.0	3.3	25	25
RCWR 1 1/2“	**516677**	Yes	49	251	25 x 3.0	3.3	25	25
RCWR 2“	**516678**	Yes	62	262	30 x 5.0	3.3	25	25
RCWR 2 1/2“	**532380**	Yes	75	281	30 x 5.0	3.7	25	25
RCWR 3“	**516679**	Yes	91	299	30 x 5.0	4.6	25	20
RCWR 4“	**516680**	Yes	116	329	38 x 6.0	6.6	60	12
RCWR 5“	**516681**	Yes	144	362	38 x 6.0	8.9	60	12
RCWR 6“	**516682**	Yes	171	394	50 x 6.0	11.5	60	8
RCWR 8“	**516683**	Yes	223	464	50 x 9.5	18.0	100	4

U-Clamp FUBD

The easy handling pipe and cable clamp for direct attachment of lines to FUS mounting channels.

Supply lines fixed to FUS channel

Applications

- Fast installation of metal and plastic pipes, flexible plastic pipes or cables without sound insulation requirements directly to FUS installation channels.
- Fits to FUS channels FUS 21, FUS 41, FUS 62, FUS 21D, FUS 41D, FUS 62D.
- For use in dry interior areas.
- Quick adaptation to the desired outside pipe diameter by fastening the pressure pan.
- No loss of parts due to preassembled parts.
- Time- and cost-saving installation without the need of accessories like threaded rods or sliding nuts.

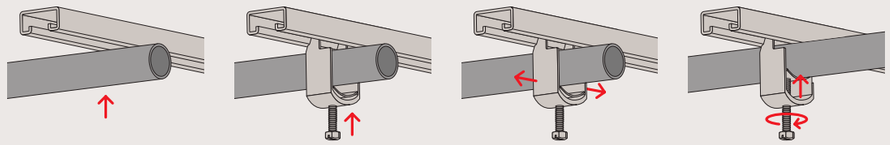
Advantages

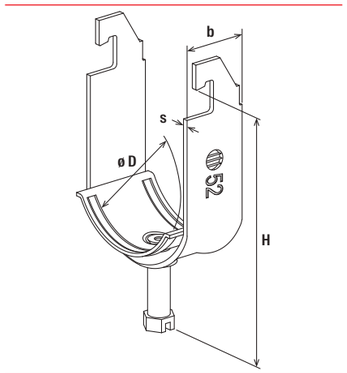
- The FUBD without soundproofing is ideal for use in industrial applications, for example, for fixing lightweight flexible supply lines in the immediate area of production machines.
- Locking screw with hexagonal and slot drive.

Properties

- Material U-Strap: steel S235JRC (material no. 1.0122) acc. to EN 10025
- Zinc plating U-Strap: hot-dip galvanised
- Material pressure pan: steel DX51D acc. to DIN EN 10346
- Zinc plating pressure pan: electro zinc-plated
- Material locking screw: steel 4.6 acc. to EN 20898-1
- Locking screw: with hexagonal SW10 and slot head

Installation FUBD





FUBD

Technical data

Item	Item no.	Clamping range D [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Sales unit [pcs]
FUBD 40	**539564**[1)]	36 – 40	71	25 x 1.75	M6	100
FUBD 48	**558148**	44 – 48	85	25 x 2.0	M8	50
FUBD 52	**539566**	48 – 52	90	25 x 2.0	M8	50
FUBD 60	**539567**[1)]	56 – 60	98	30 x 2.25	M8	50
FUBD 76	**539568**[1)]	70 – 76	113	30 x 2.75	M8	25
FUBD 94	**539569**[1)]	88 – 94	141	30 x 2.75	M8	20
FUBD 100	**539570**[1)]	94 – 100	147	30 x 2.75	M8	10

[1)] Delivery time on request.

U-Bolt ETR

The U-Bolt with metric thread.

Applications

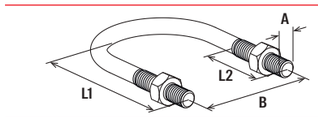
- Installation of standing or hanging pipes.
- Pipe routing on profiles and consoles.
- For use in dry interior areas.

Advantages

- The U-Bolt‘s two screws allow an ideal adaptation to suit the outer pipe diameter.

Properties

- Material: steel with min. tensile strength of 360 N/mm²
- Zinc plating: electro zinc-plated



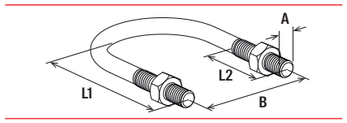
ETR

Technical data

Item	Item no.	Thread A	Length L1 [mm]	Length L2 [mm]	Size [in]	Width B [mm]	Sales unit [pcs]
ETR 8 - 13	**024415**	M6	30	20	1/4	20	10
ETR 12 - 17	**024416**	M6	35	20	3/8	24	10
ETR 15 - 21	**024417**	M6	40	25	1/2	28	10
ETR 20 - 27	**024418**	M8	50	32	3/4	36	10
ETR 26 - 34	**024419**	M8	55	32	1	43	10
ETR 33 - 42	**024420**	M8	68	38	1 1/4	51	10
ETR 40 - 49	**024421**	M8	70	38	1 1/2	58	10
ETR 50 - 60	**024422**	M8	–	40	2	69	10
ETR 60 - 70	**024423**	M10	100	43	–	82	10
ETR 66 - 76	**024424**	M10	110	50	2 1/2	88	10
ETR 70 - 82	**024425**	M10	115	50	–	94	10

See also:

Product family U-Bolt connector FETR-C Page 83



ETR

Technical data

Item	Item no.	Thread A	Length L1 [mm]	Length L2 [mm]	Size [in]	Width B [mm]	Sales unit [pcs]
ETR 80 - 90	**024426**	M10	115	50	3	102	10
ETR 90 - 102	**024427**	M12	145	55	3 1/2	116	5
ETR 100 - 108	**024428**	M12	150	50	–	122	5
ETR 102 - 114	**024429**	M12	156	60	4	128	5
ETR 121 - 127	**024430**	M12	170	60	–	141	5
ETR 126 - 133	**024431**	M12	180	70	–	147	5
ETR 131 - 140	**024432**	M14	185	70	5	156	5
ETR 143 - 153	**024433**	M14	193	70	–	169	5
ETR 150 - 159	**024434**	M14	200	70	–	175	5
ETR 168	**024435**	M14	210	70	6	184	5
ETR 193.7	**024436**	M14	232	70	–	209	5
ETR 219	**024437**	M14	270	70	8	236	5

U-bolt ETR-L

The U-Bolt with extra long threads for direct pipe fastening to FUS channels.

ETR-L U-Bolt on FUS pipe support

ETR-L U-Bolt on FCA cantilever arm pipe support

Applications

- For fastening pipes in MEP installations (mechanical, electrical, plumbing)
- Suitable for use with FUS 41 channel profiles or FCA cantilever arms
- ETR-L 108, 114, 152 and 159 can only be connected to FUS channels using the U-Bolt connector FETR-C
- For use in dry indoor areas

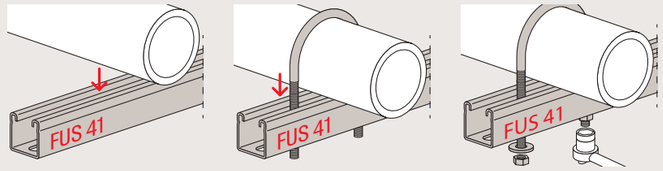
Advantages

- Nuts and washers included
- Optimized thread length for use of the ETR-L with FUS 41 channel profiles
- Direct fastening of pipes to FUS 41 channels or FCA cantilever arms

Properties

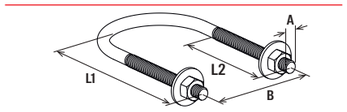
- Material: steel grade 4.8
- Zinc plating: electro zinc-plated

Installation U-bolt ETR-L



See also:

Product family U-Bolt connector FETR-C Page 83



ETR-L

Technical data

2

Item	Item no.	Thread A	Length L1 [mm]	Length L2 [mm]	Size [in]	Width B [mm]	Sales unit [pcs]
ETR-L 21	574872	M8	75	60	1/2“	22	10
ETR-L 27	574873	M8	80	60	3/4“	28	10
ETR-L 34	574874	M8	85	60	1“	35	10
ETR-L 42	574875	M8	95	65	1 1/4“	43	10
ETR-L 48	574876	M8	100	65	1 1/2“	50	10
ETR-L 60	574877	M8	115	70	2“	61	10
ETR-L 70	574878	M10	125	70	–	72	10
ETR-L 76	574879	M10	130	70	2 1/2“	78	10
ETR-L 83	574880	M10	135	70	–	84	10
ETR-L 89	574881	M10	145	70	3“	92	10
ETR-L 102	574882	M12	160	70	–	104	5
ETR-L 108	574883	M12	165	70	–	110	5
ETR-L 114	574884	M12	170	70	4“	116	5
ETR-L 127	574885	M12	185	70	–	129	5
ETR-L 133	574886	M12	190	70	–	135	5
ETR-L 140	574887	M12	200	70	5“	142	5
ETR-L 152	574888	M12	210	70	–	155	5
ETR-L 159	574889	M12	215	70	–	161	5
ETR-L 168	574890	M12	225	70	6“	170	5
ETR-L 194	574891	M12	250	70	–	195	5
ETR-L 219	574892	M12	275	70	8“	222	5
ETR-L 273	574893	M12	330	70	10“	277	2
ETR-L 324	574894	M12	380	70	12“	328	2

U-Bolt connector FETR-C

U-Bolt connector FETR-C for connecting ETR U-Bolts to FUS channels.

Pipe on cantilever arm with U-bolt ETR and channel connector FETR-C

Pipe on cantilever arm with U-bolt ETR and channel connector FETR-C

2

Applications

- U-Bolt connector for use with mounting channels FUS in combination with U-Bolt ETR.
- For indoor and outdoor application.

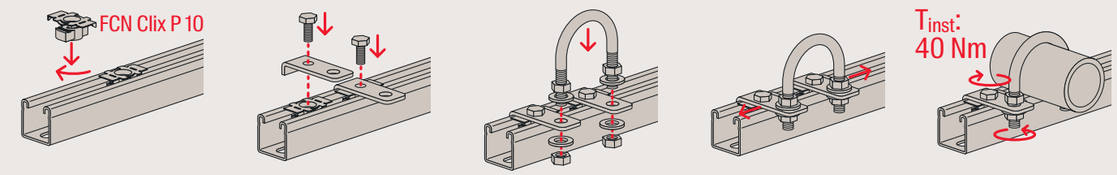
Advantages

- The FETR-C enables the connection of U-Bolts ETR to mounting channels FUS and allows free positioning of the ETR on the FUS channel profiles.
- Independent positioning of ETR without taking into account the hole pattern of the FUS channel profiles.

Properties

- Material: steel S235JR (material no. 1.0038)
- Zinc plating: hot-dip galvanised

Installation FETR-C

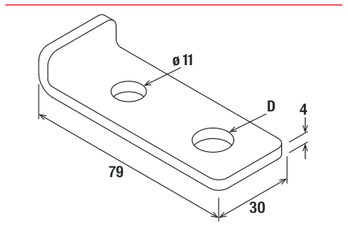


See also:

Product family Washer U Page 33

See also:

Product family hexagonal nut MU Page 34



FETR-C

Technical data

Item	Item no.	Hole-ø D [mm]	Sales unit [pcs]
FETR-C 9 hdg	**569182**	9	20
FETR-C 13 hdg	**569183**	13	20
FETR-C 16.5 hdg	**569184**	16.5	20

Hose clamp SGS

The hose clamp for large hoses, pipe or ducting.

Outlet valve with hose

Applications

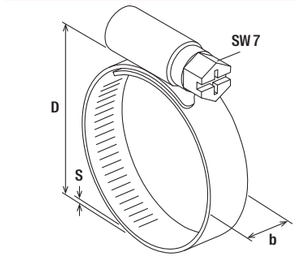
- Sealing of hoses.
- Fixing hoses to adapters.

Advantages

- The crimped band edges offer protection against damage to the hose.
- The short base of the hosing allows an ideal adjustment and high, radial forces on the hose diameter.
- The screw‘s combination cross-drive thread enables installation flexibility.

Properties

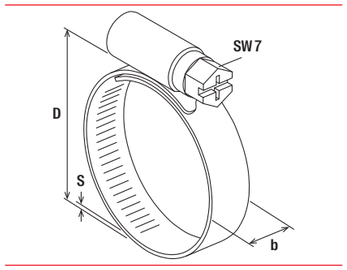
- Material class: W2
- Worm: CQ 15 (material no. 1.1132) acc. to DIN EN 10263
- Housing and band: chromium steel (material no. 1.4016) acc. to DIN EN 10088 or equivalent corrosion-resistant steel



SGS

Technical data

Item	Item no.	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Sales unit [pcs]
SGS 9 W2 8 - 12	**045517**	8 – 12	9.0 x 0.6	100
SGS 9 W2 10 - 16	**045518**	10 – 16	9.0 x 0.6	100
SGS 9 W2 12 - 20	**045519**	12 – 20	9.0 x 0.6	100
SGS 9 W2 16 - 27	**045520**	16 – 27	9.0 x 0.6	100
SGS 9 W2 20 - 32	**045521**	20 – 32	9.0 x 0.6	100
SGS 9 W2 25 - 40	**045522**	25 – 40	9.0 x 0.6	100
SGS 9 W2 32 - 50	**045523**	32 – 50	9.0 x 0.6	100
SGS 9 W2 40 - 60	**045524**	40 – 60	9.0 x 0.6	25
SGS 9 W2 50 - 70	**045525**	50 – 70	9.0 x 0.6	25
SGS 9 W2 60 - 80	**045526**	60 – 80	9.0 x 0.6	25
SGS 9 W2 70 - 90	**045527**	70 – 90	9.0 x 0.6	25
SGS 9 W2 80 - 100	**045528**	80 – 100	9.0 x 0.6	25



SGS

Technical data

Item	Item no.	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Sales unit [pcs]
SGS 9 W2 90 - 110	**045529**	90 – 110	9.0 x 0.6	25
SGS 9 W2 100 - 120	**045530**	100 – 120	9.0 x 0.6	25
SGS 9 W2 110 - 130	**045531**	110 – 130	9.0 x 0.6	25
SGS 9 W2 120 - 140	**045532**	120 – 140	9.0 x 0.6	25

Hose clamp SGS · Pipe clamps

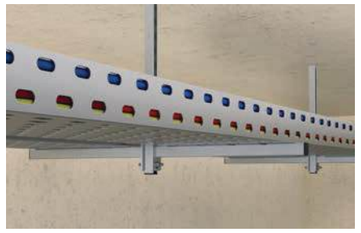
2

3
Light channel system FLS

Channel FLS

The flexible channel system for light applications.

Air duct fixing with channel



Cable duct

Applications

- The U-profile channels enable the creation of secure, horizontal and vertical installations.
- The channel system is suitable for fast and efficient fixings of pipelines and supporting structures.
- For use in dry interior areas.

Advantages

- The fire inspection report in line with MLAR/EN1363-1 of the FLS 37 guarantees independently tested functional safety.
- The channel shape with edge seams gives a perfect fit for the connector elements and leads to a safe and easy installation.
- The serration with stamped teeth in the mounting channel gives the sliding nuts a secure hold to bear high shear loads.
- The scale on the channels simplifies the cutting of the channels and the positioning of the connector elements during installation.
- The alternating long slots in the channel enable the optimised fixing to the substrate with the perfect fixtures.

Properties

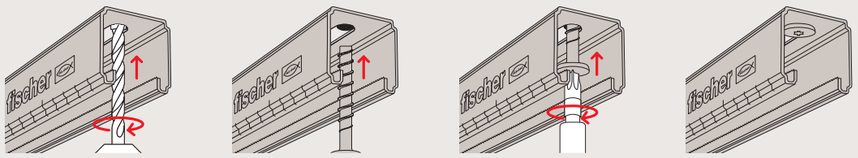
- Material: pre-galvanised steel S250GD+Z275 (material no. 1.0242) acc. to DIN EN 10346

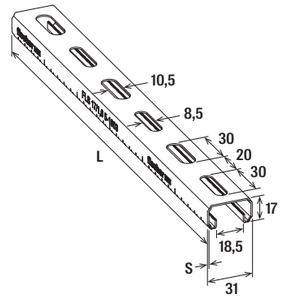
Certificates / Features

R 120

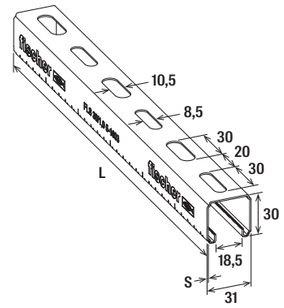
R 30 MLAR

Installation FLS

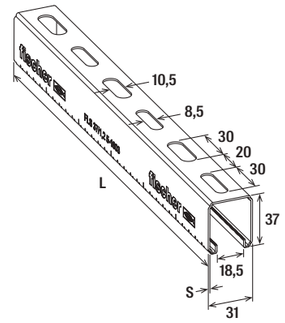




FLS 17/1.0



FLS 30/1.0

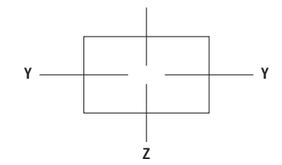


FLS 37/1.2

Technical data

Item	Item no.	Fire test report	Thickness S [mm]	Length L [mm]	Sales unit [pcs]
FLS 17/1.0 - 2 m	**572539**	–	1.0	2,000	8
FLS 17/1.0 - 3 m	**572540**	–	1.0	3,000	8
FLS 30/1.0 - 2 m	**572541**	–	1.0	2,000	8
FLS 30/1.0 - 3 m	**572542**	–	1.0	3,000	8
FLS 37/1.2 - 2 m	**572543**	Yes	1.2	2,000	8
FLS 37/1.2 - 3 m	**572544**	Yes	1.2	3,000	8
FLS 37/1.2 - 6 m	**572545**	Yes	1.2	6,000	1

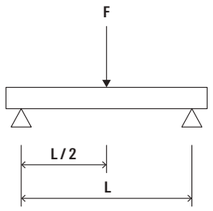
For load information under fire exposure, see chapter Basic knowledge.



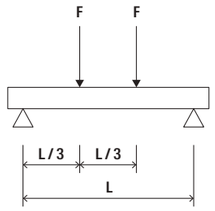
Loads

Item	Item no.	Profile weight [kg/m]	Channel cross section [cm^2]	Moment of inertia I_y [cm^4]	Moment of inertia I_z [cm^4]	Section modulus W_y [cm^3]	Section modulus W_z [cm^3]	Max. recommended static load for 1m length F_{rec} [kN]	Sales unit [pcs]
FLS 17/1.0 - 2 m	**572539**	0.58	0.72	0.25	0.91	0.26	0.59	0.13	8
FLS 17/1.0 - 3 m	**572540**	0.58	0.72	0.25	0.91	0.26	0.59	0.41	8
FLS 30/1.0 - 2 m	**572541**	0.78	0.98	1.02	1.46	0.64	0.94	0.48	8
FLS 30/1.0 - 3 m	**572542**	0.78	0.98	1.02	1.46	0.64	0.94	0.48	8
FLS 37/1.2 - 2 m	**572543**	1.06	1.33	2.03	2.01	1.04	1.29	0.78	8
FLS 37/1.2 - 3 m	**572544**	1.06	1.33	2.03	2.01	1.04	1.29	0.78	8
FLS 37/1.2 - 6 m	**572545**	1.06	1.33	2.03	2.01	1.04	1.29	0.78	1

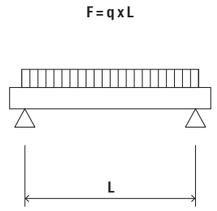
Load case 1



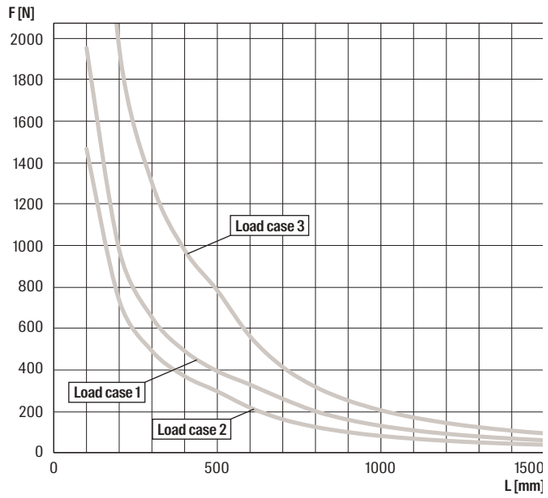
Load case 2



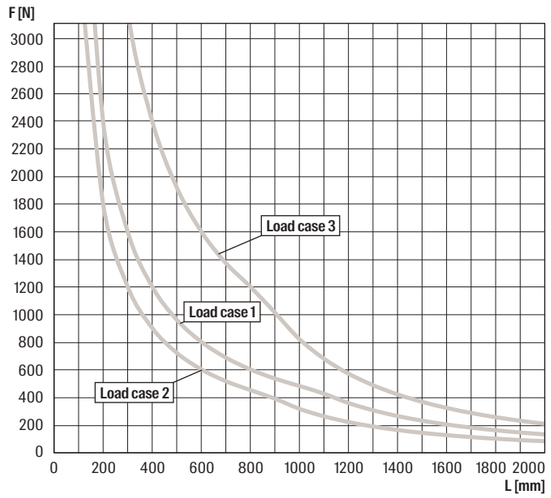
Load case 3



FLS 17/1,0

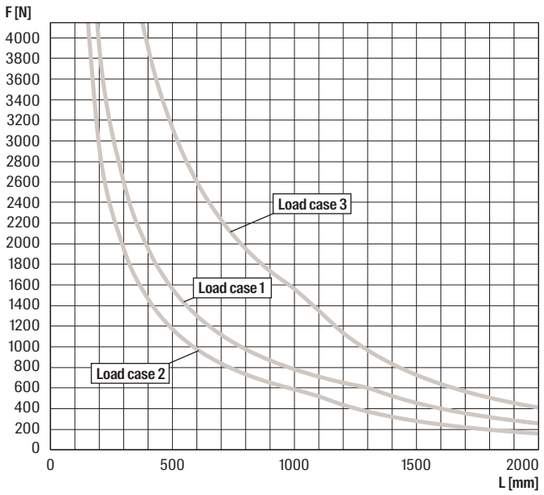


FLS 30/1,0



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

FLS 37/1,2



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

FLS Cutting Tool

The Cutting Tool for FLS channels.

Air duct fixing with channel

Pipe fixing on frame construction

Applications

- Efficient cutting of the FLS channels to the required length for processing in the installation.

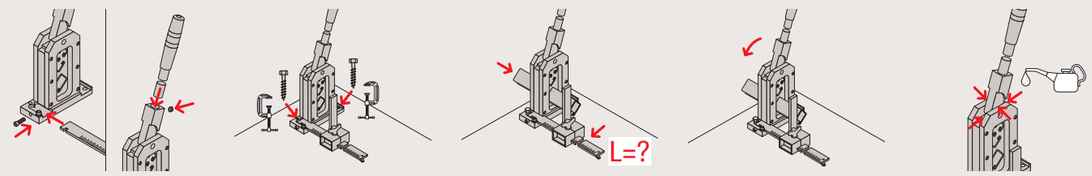
Advantages

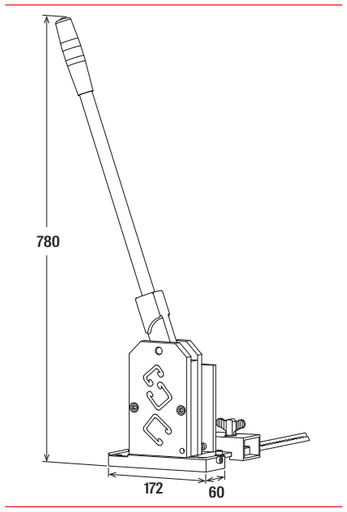
- The FLS cutting tool for the three FLS channel sizes guarantees the most economical type of channel cutting, including length measurement by the integrated 1m-measuring unit.
- Simple burr-free cutting instead of sawing the channel profile to avoid the complex and time consuming reworking of the edges.
- The cutting process avoids falling metal chips as during the sawing process for a dirt free workplace.
- The manual cutting tool, which is always ready for use, allows an almost noiseless use.
- Due to the profile-shaped openings in the cutting tool, incorrect use is permanently avoided.

Properties

- Material: tempered tooling steel

Installation FLS cutting tool





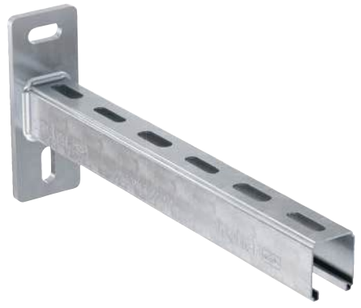
FLS

Technical data

	Item no.	Performance data	Sales unit [pcs]
Item			
FLS cutting tool	**543965**	Incl. Operating lever and 1m measuring unit for length adjustment	1

Cantilever arm ALK

Cantilever arm made from FLS channel profile.



Light pipe fixing

Cable tray on cantilever arm

Applications

- Economic installation of single pipes or pipelines along the wall.
- For use in dry interior areas.

Certificates / Features

R 120

R 30 MLAR

Advantages

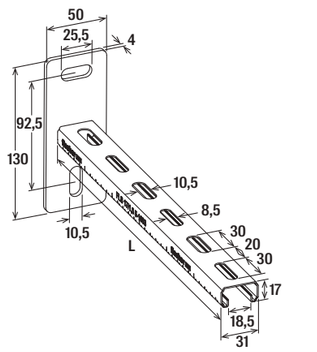
- The fire inspection report in line with MLAR/EN1363-1 of the ALK 37 guarantees independently tested functional safety.
- The graduated range of lengths allows an ideal adaptation to the application.
- The console's stable base plate offers a secure hold for a load-bearing construction.
- The base plate's long slots, which are at 90° to one another, allow the console to be easily aligned.

Properties

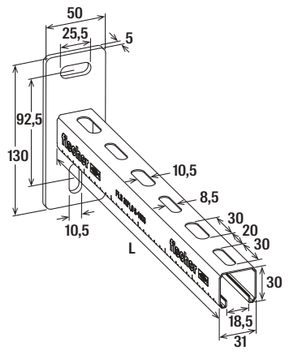
- Material base plate: steel E295 (material no. 1.0050) acc. to DIN EN 10025-2
- Material channel: steel S215G (material no. 1.0116G) acc. to DIN 1623
- Zinc plating: electro zinc-plated

See also:

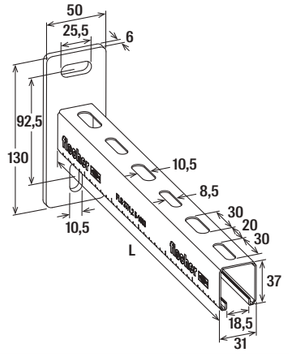
Product family Rubber inlay EMS Page 255



ALK 17



ALK 30



ALK 37

Technical data

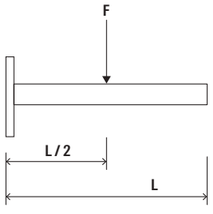
Item	Item no.	Fire test report	Profile	Length L [mm]	Sales unit [pcs]
ALK 17 - 200	**538738**	–	17 / 1.0	200	10
ALK 17 - 300	**538739**	–	17 / 1.0	300	10
ALK 30 - 200	**538740**	–	30 / 1.0	200	10
ALK 30 - 300	**538741**	–	30 / 1.0	300	10
ALK 30 - 450	**538742**	–	30 / 1.0	450	10
ALK 37 - 300	**538743**	Yes	37 / 1.2	300	10
ALK 37 - 450	**538744**	Yes	37 / 1.2	450	10
ALK 37 - 600	**538745**	Yes	37 / 1.2	600	5

For load information under fire exposure, see chapter Basic knowledge.

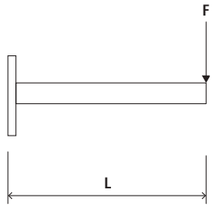
Loads

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]	Sales unit [pcs]
ALK 17 - 200	**538738**	0.49	0.24	0.49	10
ALK 17 - 300	**538739**	0.92	0.12	0.31	10
ALK 30 - 200	**538740**	1.18	0.59	1.18	10
ALK 30 - 300	**538741**	0.79	0.39	0.79	10
ALK 30 - 450	**538742**	0.53	0.22	0.53	10
ALK 37 - 300	**538743**	1.27	0.93	1.27	10
ALK 37 - 450	**538744**	0.86	0.41	0.86	10
ALK 37 - 600	**538745**	0.63	0.24	0.63	5

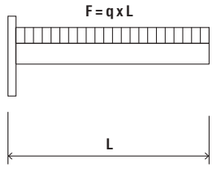
Load case 1



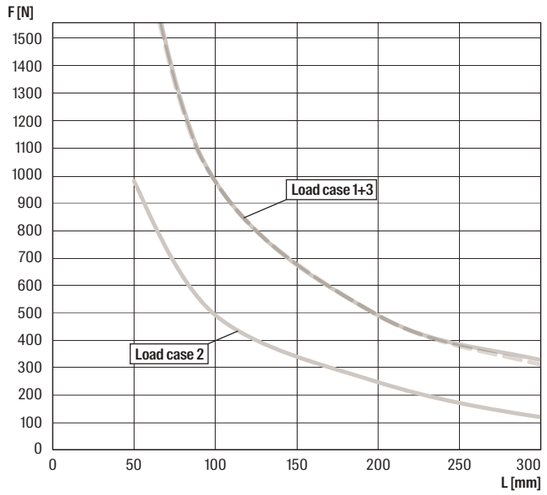
Load case 2



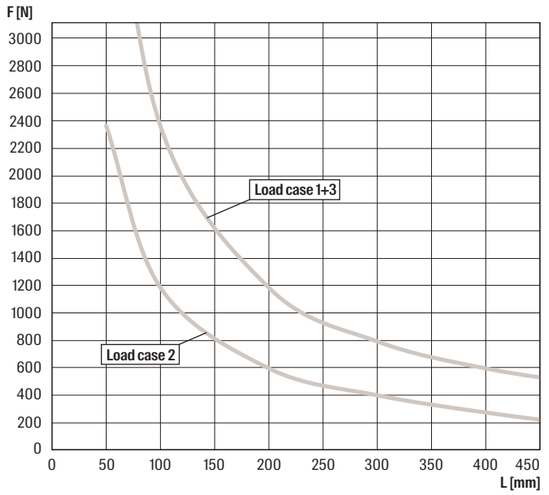
Load case 3



ALK 17/1,0

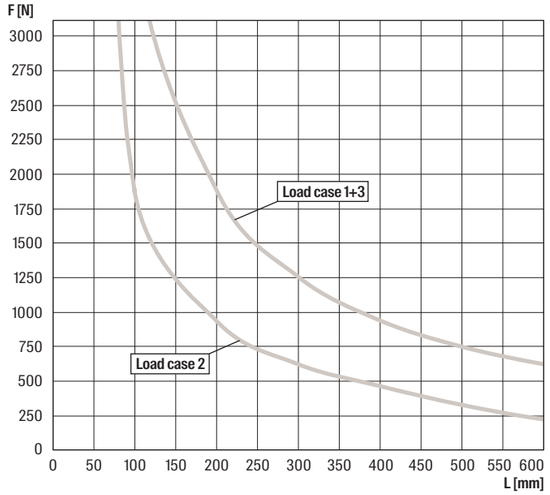


ALK 30/1,0



For the load curves, the permissible steel strain ðadm. = 188 N/mm² (increased steel strain due to bending) and the maximum deflection under load L/150 are not exceeded. Fixings and screw fastenings must be calculated accordingly.

FLS 37/1,2



For the load curves, the permissible steel strain ðadm. = 188 N/mm² (increased steel strain due to bending) and the maximum deflection under load L/150 are not exceeded. Fixings and screw fastenings must be calculated accordingly.

Cover cap AK

The cover cap for form-flush protection, tailored to the FLS profile sizes.

Applications

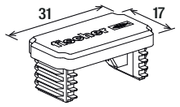
- Closing for channel FLS and cantilever arms ALK.

Advantages

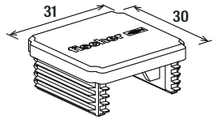
- Suitable for channel FLS 17, FLS 30 and FLS 37 and cantilever arms ALK

Properties

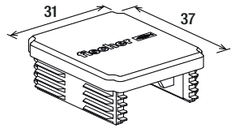
- Material: PP polypropylene, colour black



AK 17



AK 30



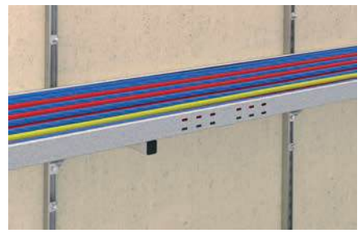
AK 37

Technical data

Item	Item no.	For profile	Material	Sales unit [pcs]
AK 17	**538746**	17/1.0	polypropylene	100
AK 30	**538747**	30/1.0	polypropylene	100
AK 37	**538748**	37/1.2	polypropylene	50

Angle brace WS 31-45°

Angle brace for stable constructions.



Cable tray on cantilever construction

Ventilating pipe fixing at the wall

Applications

- Angle brace to construct self- supporting channel constructions with FLS channels or ALK cantilever arms.
- For use in dry interior areas.

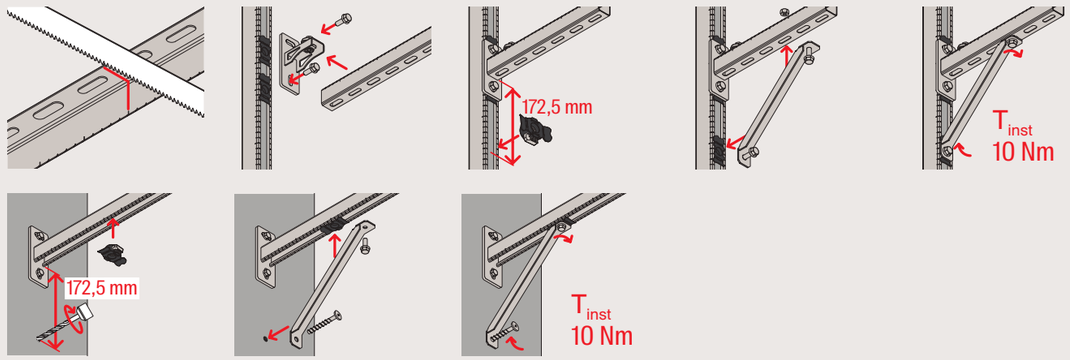
Advantages

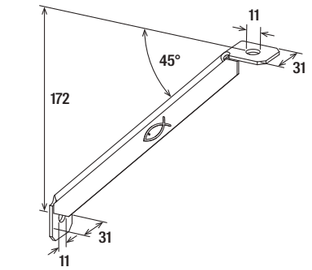
- The stable angle brace element WS 31-45° lends the supporting structure a great stability and safety.
- The size of the angle brace element guarantees a secure connection with ALK cantilever arms and FLS channels by it's fitting accuracy.
- The standardised long slots in the angle brace enable an exact connection to ALK cantilever arms or FLS channels by using FSM Clix P and a screw.

Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated

Installation WS 31-45°





WS 31-45°

Technical data

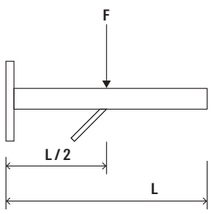
Item	Item no.	Hole-ø D [mm]	Sales unit [pcs]
WS 31-45°	538749	11	10

Loads

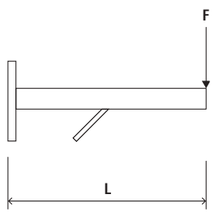
Item	Item no.	Max. recommended static load load case 1a [kN]	Max. recommended static load load case 2a [kN]	Max. recommended static load load case 3a [kN]	Sales unit [pcs]
ALK 17 - 200	538738	1.03	1.03	1.03	10
ALK 17 - 300	538739	1.52	0.45	1.52	10
ALK 30 - 200	538740	2.52	1.40	2.52	10
ALK 30 - 300	538741	1.78	0.89	1.78	10
ALK 30 - 450	538742	1.16	0.47	1.16	10
ALK 37 - 300	538743	1.78	0.89	1.78	10
ALK 37 - 450	538744	1.16	0.59	1.16	10
ALK 37 - 600	538745	0.89	0.45	0.89	5

Note: Loads are valid for fixing to wall with adequate carrying capacity. Fixing of the cantilever arm and the angle brace to the wall by anchor (e.g. FAZ II Plus, UltraCut FBS II 8).
Fixing of the angle brace to the cantilever profile by FSM Clix P 10, tightening torque 12 Nm. Fixing of the angle brace to the long slot of the cantilever profile by screw and nut M10, tightening torque 20 Nm.

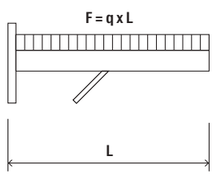
Load case 1



Load case 2

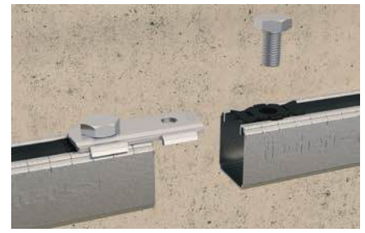


Load case 3



Channel connector SV 31

Construction element - Channel connector SV 31.



Channel extension with channel connector

Vertical installation

Applications

- With the channel connector SV 31 FLS channels can be connected in different directions.
- For use in dry interior areas.

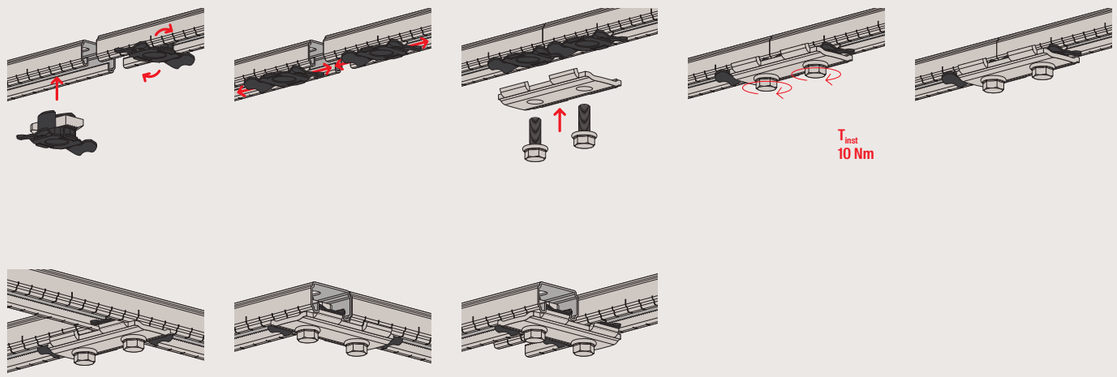
Advantages

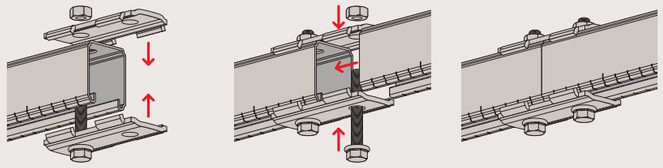
- The special retaining brackets at the SV construction elements enable a form-locking installation longitudinal and transverse to the channel direction to adapt the channel connection effectively
- The standardised long slots of the channel connector enable an exact connection to ALK cantilever arms or FLS channels by using FSM Clix P and a screw

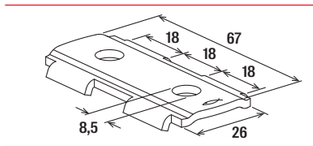
Properties

- Material: steel S235JR+CR (material no. 1.0037) acc. to DIN EN 1652
- Zinc plating: electro zinc-plated

Installation SV 31







SV 31

Technical data

Item	Item no.	Hole-ø D [mm]	Sales unit [pcs]
SV 31	538641	8.5	25

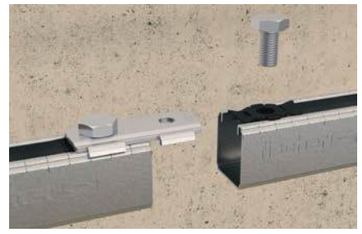
Loads

Item	Item no.	Max. recommended shear load V_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
SV 31	538641	1.00	10	25

Sliding channel nut FSM Clix P

Channel nut for quick and easy connection of FLS channels.

Floor penetration



Channel extension with channel connector

Applications

- FSM Clix P is suitable for interconnecting FLS channels by using connecting elements.
- For use in dry interior areas.

Advantages

- The special and disappearing thrust block of the sliding nut Clix P plastic holder enables a connection of connecting elements and channels without plastic interlayer to establish a safe longitudinal metallic connection.
- The especially developed spring leg on the FSM Clix P guarantees the necessary contact pressure of the connector to the channel to help for a secure adjustment during installation.
- The teeth on the sliding nut enable an exact and secure positioning in the FLS channel and ease the installation of connector elements.
- The unique stop element on the FSM Clix P connector guarantees the accurate 90°-turn of the connectors in the channel to ensure a save and precise installation.

Properties

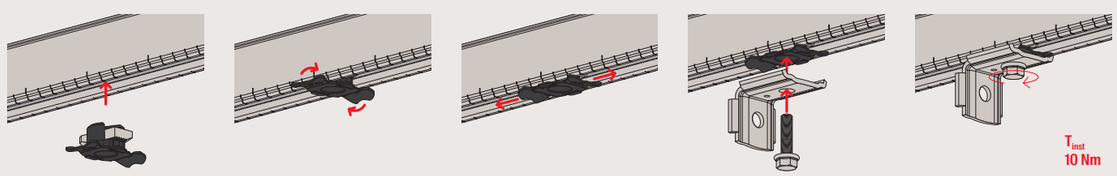
- Material channel nut: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material plastic cage: polypropylene PP, colour black
- Zinc plating: electro zinc-plated

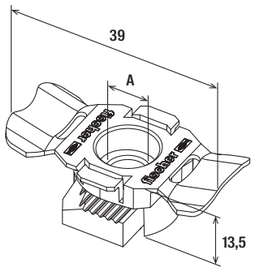
Certificates / Features

R 120

R 30 MLAR

Installation FSM Clix P

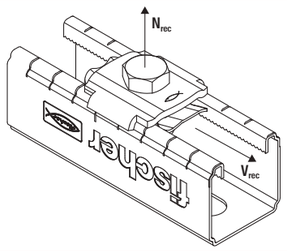




FSM Clix P

Technical data

Item	Item no.	Thread A	Sales unit [pcs]
FSM Clix P 6	538643	M6	50
FSM Clix P 8	538647	M8	50
FSM Clix P 10	538649	M10	50



FSM Clix P

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Max. recommended shear load V_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FSM Clix P 6	538643	1.5	2.0	1.00	10	50
FSM Clix P 8	538647	1.5	2.0	1.00	10	50
FSM Clix P 10	538649	1.5	2.0	1.00	10	50

Sliding channel nut FSM Clix M

Channel nut for quick and easy fixing in FLS channels.

Pipe fixing at mounting channel

Pipe fixing on frame construction

Applications

- FSM Clix M is suitable for connecting pipe clamps with a threaded rod to FLS channels.
- For use in dry interior areas.

Certificates / Features

R 120

R 30 MLAR

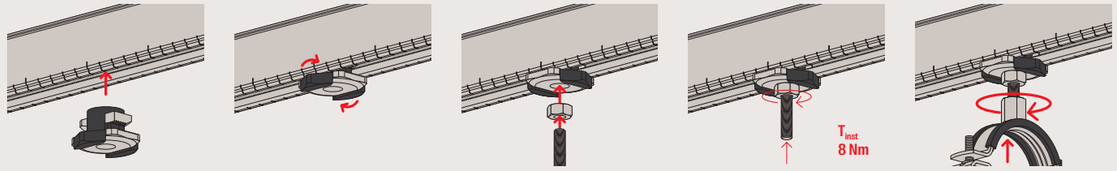
Advantages

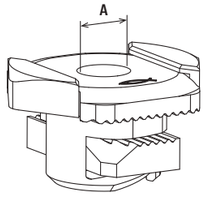
- The unique spring leg at the FSM Clix M guarantees the necessary contact pressure of the connector to the channel to help for a secure adjustment during installation.
- The teeth on the sliding nut enable an exact and secure positioning in the FLS channel and ease the installation of connector elements.
- The clix-connector element with 90°-turn for connecting enables an easy post-installation in set channels to save time and money.
- The especially developed stop element on the FSM Clix M connector guarantees the accurate 90°-turn of the connectors in the channel to ensure a safe and precise installation.

Properties

- Material channel nut: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material cover plate: steel S235JR+CR (material no. 1.0037) acc. to DIN 1652
- Material plastic cage: polypropylene PP, colour black
- Zinc plating: electro zinc-plated

Installation FSM Clix M



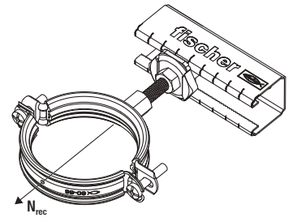


FSM Clix M

3

Technical data

Item	Item no.	Thread A [mm]	Width across nut SW [mm]	Sales unit [pcs]
FSM Clix M 6	538650	M6	10	50
FSM Clix M 8	538651	M8	13	50
FSM Clix M 10	538652	M10	17	50



FSM Clix M

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FSM Clix M 6	538650	1.5	2.0	8	50
FSM Clix M 8	538651	1.5	2.0	8	50
FSM Clix M 10	538652	1.5	2.0	8	50

T-head bolt FHS Clix

Hammer-head bolt for quick and easy fixing in FLS channels.

Light pipe fixing

Pipe fixing at mounting channel

3

Applications

- FHS Clix is suitable for connecting pipe clamps with the channel.
- For use in dry interior areas.

Certificates / Features

R 120

R 30 MLAR

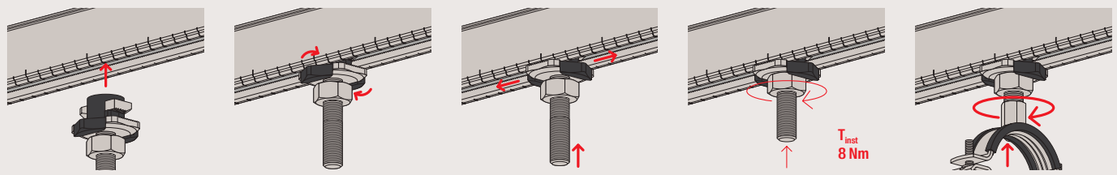
Advantages

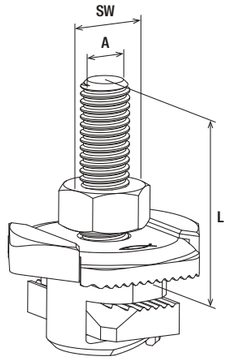
- The special spring leg at the FHS Clix guarantees the necessary contact pressure of the connector to the channel to help for a secure adjustment during installation.
- The teeth on the sliding nut enable an exact and secure positioning in the FLS channel and ease the installation of connector elements.
- The clix-connector element with 90°-turn for connecting enables an easy post-installation in set channels to save time and money.
- The especially developed stop element on the FHS Clix connector guarantees the accurate 90°-turn of the connectors in the channel to ensure a safe and precise installation.

Properties

- Material channel nut: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material cover plate: steel S235JR+CR (material no. 1.0037) acc. to DIN 1652
- Material threaded rod: steel acc. to DIN 976-2, min. 4.6 (DIN EN ISO 898-1)
- Material hexagonal nut: steel acc. to DIN 934-4, min. 4.8 (DIN EN ISO 898-2 table 4 stability)
- Material plastic cage: polypropylene PP, colour black
- Zinc plating: electro zinc-plated

Installation FHS Clix

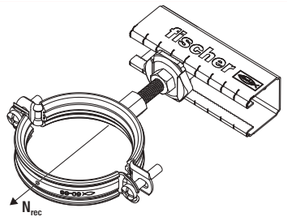




FHS Clix

Technical data

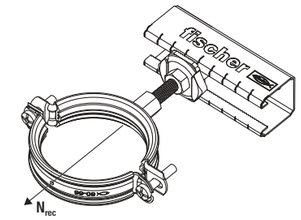
Item	Item no.	Thread A	Length L [mm]	Width across nut SW [mm]	Sales unit [pcs]
FHS Clix 8 x 30	**538653**	M8	30	13	100
FHS Clix 8 x 40	**538654**	M8	40	13	100
FHS Clix 8 x 60	**538655**	M8	60	13	100
FHS Clix 8 x 80	**538656**	M8	80	13	50
FHS Clix 8 x 100	**538657**	M8	100	13	50
FHS Clix 8 x 140	**545834**	M8	140	13	50
FHS Clix 8 x 190	**545835**	M8	190	13	50
FHS Clix 10 x 30	**538658**	M10	30	17	100
FHS Clix 10 x 40	**538659**	M10	40	17	100
FHS Clix 10 x 60	**538660**	M10	60	17	50
FHS Clix 10 x 80	**545836**	M10	80	17	50
FHS Clix 10 x 100	**538661**	M10	100	17	50



FHS Clix

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FHS Clix 8 x 30	**538653**	1.5	2.0	8	100
FHS Clix 8 x 40	**538654**	1.5	2.0	8	100
FHS Clix 8 x 60	**538655**	1.5	2.0	8	100
FHS Clix 8 x 80	**538656**	1.5	2.0	8	50
FHS Clix 8 x 100	**538657**	1.5	2.0	8	50
FHS Clix 8 x 140	**545834**	1.5	2.0	8	50
FHS Clix 8 x 190	**545835**	1.5	2.0	8	50
FHS Clix 10 x 30	**538658**	1.5	2.0	8	100
FHS Clix 10 x 40	**538659**	1.5	2.0	8	100
FHS Clix 10 x 60	**538660**	1.5	2.0	8	50



FHS Clix

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FHS Clix 10 x 80	**545836**	1.5	2.0	8	50
FHS Clix 10 x 100	**538661**	1.5	2.0	8	50

Saddle flange SF Clix 31

The pre-assembled saddle flange SF Clix 31.

Channel installation at the wall

Cantilever construction with channel

Applications

- Connection element between channel and building-structures.
- For use in dry interior areas.

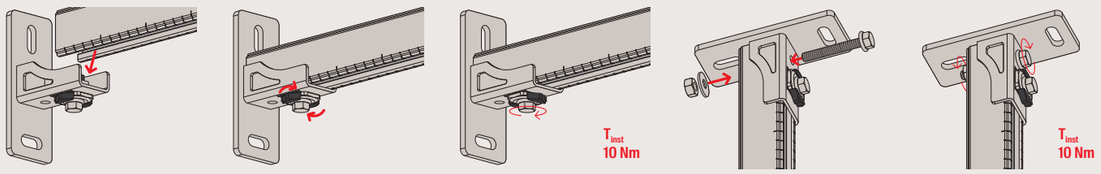
Advantages

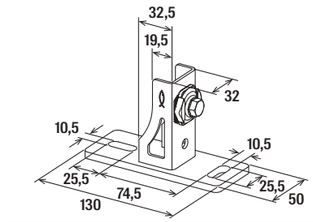
- Pre-assembled accessories like SF Clix bring the number of articles for a connection down and guarantee a time-saving installation.
- The pre-assembled connector of the SF Clix secures the installation position due to the unique thrust block and guarantees a safe and fast installation.
- The special spring leg at pre-assembled connector guarantees the necessary contact pressure of the connector to the channel to help for a secure adjustment during installation.
- The perfect-fit saddle of the SF allows an simple installation by inserting the channel.
- The saddle flange's stable design offers a secure hold for a load-bearing construction.

Properties

- Material saddle: steel E295 (material no. 1.0050) acc. to DIN EN 10025-2
- Material channel nut: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material cover plate: steel S235JR+CR (material no. 1.0037) acc. to DIN 1652
- Material hexagonal screw: steel min. 4.6 (DIN EN ISO 898-1)
- Material plastic cage: polypropylene PP, colour black
- Zinc plating: electro zinc-plated

Installation SF Clix 31

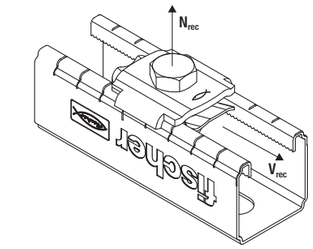




SF Clix 31

Technical data

Item	Item no.	Thread A	Width across nut SW [mm]	Sales unit [pcs]
SF Clix 31	538665	M8	13	10



SF Clix 31

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Max. recommended shear load V_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
SF Clix 31	538665	1.5	2.0	1.00	10	10

Angle bracket MW Clix 90°

The pre-assembled angle bracket MW Clix 90°.

Cantilever construction with channel

Pipe fixing on frame construction

Applications

- Element for the stable construction of angle connections with FLS channels.
- For use in dry interior areas.

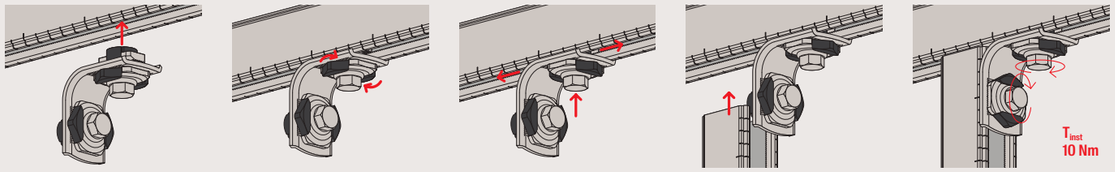
Advantages

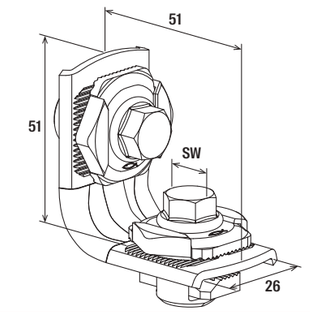
- Pre-assembled accessories like SF Clix bring the number of articles for a connection down and guarantee a time-saving installation.
- The pre-assembled connector of the MW Clix secures the installation position due to the unique thrust block and guarantees a safe and fast installation.
- The especially developed spring leg at the pre-assembled connector guarantees the necessary contact pressure of the connector to the channel to help for a secure adjustment during installation.
- The form-locking and accurately fitting angle bracket of the MW clix allows a simple installation of the FLS channel and saves valuable installation time.

Properties

- Material angle bracket: steel S235JR+CR (material no. 1.0037) acc. to DIN 1652
- Material channel nut: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material cover plate: steel S235JR+CR (material no. 1.0037) acc. to DIN 1652
- Material hexagonal screw: steel min. 4.6 (DIN EN ISO 898-1)
- Material plastic cage: polypropylene PP, colour black
- Zinc plating: electro zinc-plated

Installation MW Clix 90°

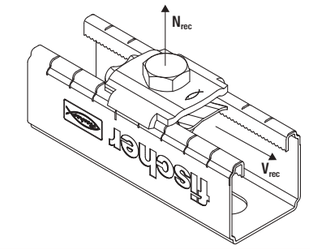




MW Clix 90°

Technical data

	Item no.	Thread A	Width across nut SW [mm]	Sales unit [pcs]
Item				
MW Clix 90°	**538666**	M8	13	10



MW Clix 90°

Loads

	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Max. recommended shear load V_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item						
MW Clix 90°	**538666**	1.5	2.0	1.00	10	10

Angle bracket MW and MWU

Construction element – Angle bracket MW 90° and MWU 90°.

Floor penetration

Pipe fixing in a corridor

Applications

- Connecting elements for the arrangement of simple channel constructions with the sliding channel nut FSM Clix P.
- For use in dry interior areas.

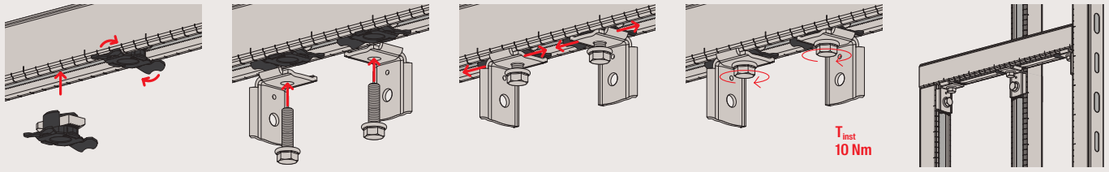
Advantages

- The individual developed retaining brackets at the MW 90° angle bracket enable a form-locking installation longitudinal and transverse to the channel direction to adapt the channel connection effectively.
- The long slot on flat wing of the MWU 90° angle bracket enables a direct connection to the substrate for space-saving fixation.
- The standardised holes in the angle brackets enable an exact connection to the FLS channels by using FSM Clix P and a screw.

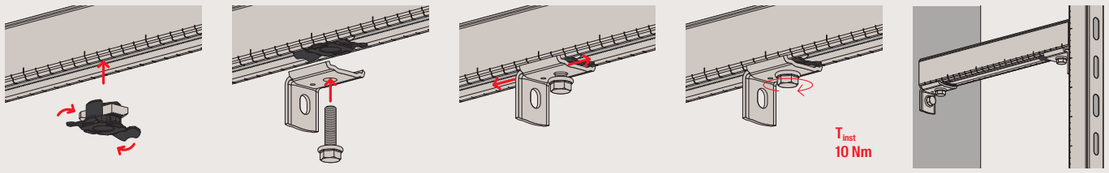
Properties

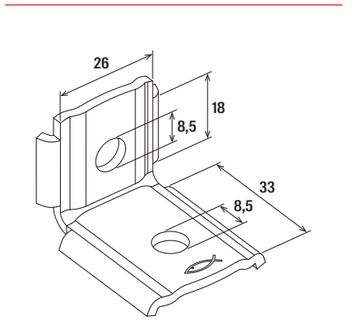
- Material: steel S235JR+CR (material no. 1.0037) acc. to DIN EN 1652
- Zinc plating: electro zinc-plated

Installation MW

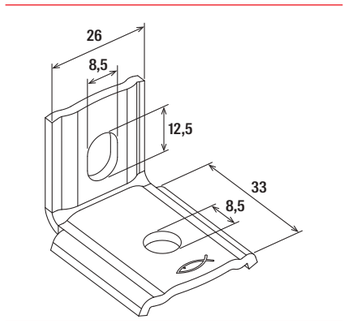


Installation MWU





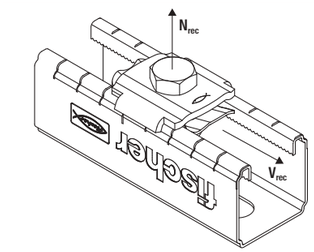
MW 90°



MWU 90°

Technical data

Item	Item no.		Sales unit [pcs]
MW 90°	538668		50
MWU 90°	538667		25



MW 90° and MWU 90°

Loads

Item	Item no.	Max. recommended tension load for FLS 17/1.0 and FLS 30/1.0 N_{rec} [kN]	Max. recommended tension load for FLS 37/1.2 N_{rec} [kN]	Max. recommended shear load V_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
MW 90°	538668	1.5	2.0	1.00	10	50
MWU 90°	538667	1.5	2.0	1.00	10	25

Channel washer HK 31

Connector - Channel washer HK 31.

Pipe fixing at mounting channel

Horizontal pipe fixing

Applications

- The Channel washer HK 31 is used for stable connections and to strengthen the FLS profile for a fixing to the substrate.
- For use in dry interior areas.

Certificates / Features

R 120

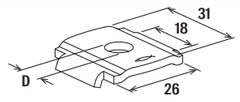
R 30 MLAR

Advantages

- The special retaining brackets at the SV connecting elements enable a form-locking installation longitudinal and transverse to the channel direction to adapt the channel connection effectively.
- The standardised slots of the Channel washer enable an exact push-through connection of FLS mounting channels easy and fast.

Properties

- Material: steel S235JR+CR (material no. 1.0037) acc. to DIN EN 1652
- Zinc plating: electro zinc-plated



HK 31

Technical data

Item	Item no.	Hole-ø D [mm]	Sales unit [pcs]
HK 31 8.5	**538663**	8.5	50
HK 31 10.5	**538664**	10.5	50

Beam clamp TKR 31

Clamping bracket for the fixing of channels to steel girders.

Channel fixing to steel beam

Applications

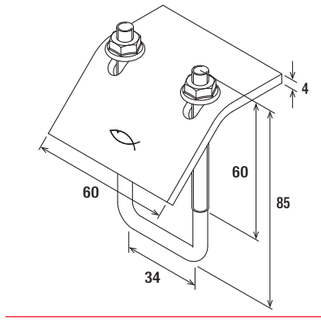
- Fixing of FLS channels to steel girders, required are two beam clamps per fixing.
- For use in dry interior areas.

Advantages

- The design of the bean clamp allows for fixing without drilling or welding.
- The various lengths of the bean clamp sides allows for fixing on all standard steel beams.
- The shape of the bean clamp guarantees the simple adjustment of the channel connection.

Properties

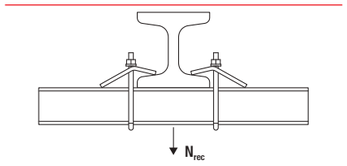
- Material U-bolt pipe hanger: steel S235JR (material no. 1.0037) acc. to DIN EN 10025-2
- Material plate: steel E295 (material no. 1.0050) acc. to DIN EN 10025-2
- Material hexagon nut: steel resistance class 8
- Zinc plating: electro zinc-plated



TKR 31

Technical data

Item	Item no.	Thread A	Width across nut SW [mm]	Sales unit [pcs]
TKR 31	**538751**	M6	10	25



TKR

Loads

	Item no.	Max. recom. static load (centr. tension) N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item				
TKR 31	**538751**	2.80	5	25

Beam clamp TKR 31 · Light channel system FLS

3

4

Channel system Universal FUS

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.
- For use in dry interior areas.

Advantages

- 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 serration in the channel gives 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 S250GD+Z275 (material no. 1.0242) acc. to DIN EN 10346

Certificates / Features

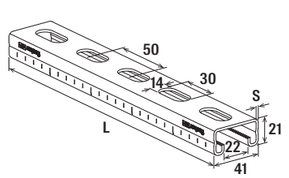
BZS S 25-315

See also:

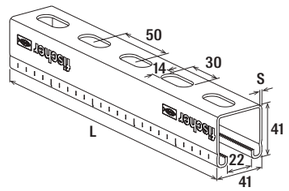
Product family Channel nut FCN Clix P Page 171

See also:

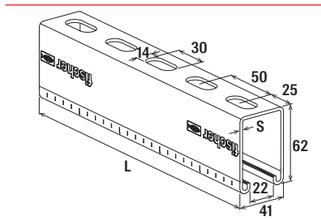
Product family Rubber inlay EMS Page 255



FUS 21



FUS 41



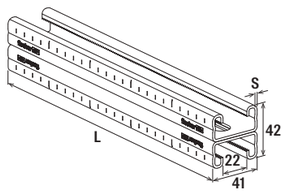
FUS 62

Channel FUS

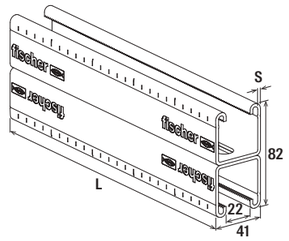
Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A2 Item no. A2	A4 Item no. A4	Approval ETA	Fire test report	Length L [mm]	Thickness S [mm]	Sales unit [pcs]
FUS 21/1.5 - 2 m	**545117**	**–**	**–**	**–**	●	–	2,000	1.5	1
FUS 21/1,5 - 3 m	**545118**	**–**	**–**	**–**	●	–	3,000	1.5	1
FUS 21/1,5 - 6 m	**545119**	**–**	**–**	**–**	●	–	6,000	1.5	1
FUS 21/2,0 - 2 m	**040391**	**–**	**504466**	**504472**	●	–	2,000	2.0	1
FUS 21/2,0 - 3 m	**097660**	**537653**	**–**	**–**	●	–	3,000	2.0	1
FUS 21/2,0 - 6 m	**097661**	**–**	**542735**[1)]	**542738**[1)]	●	–	6,000	2.0	1
FUS 21/2,5 - 2 m	**092867**	**–**	**–**	**–**	●	–	2,000	2.5	1
FUS 21/2,5 - 3 m	**077349**	**–**	**–**	**–**	●	–	3,000	2.5	1
FUS 21/2,5 - 6 m	**077541**	**–**	**–**	**–**	●	–	6,000	2.5	1
FUS 41/1,5 - 2 m	**545120**	**–**	**–**	**–**	●	–	2,000	1.5	1
FUS 41/1,5 - 3 m	**545126**	**–**	**–**	**–**	●	–	3,000	1.5	1
FUS 41/1,5 - 6 m	**545127**	**–**	**–**	**–**	●	–	6,000	1.5	1
FUS 41/2,0 - 2 m	**040390**	**–**	**504468**	**504474**	●	–	2,000	2.0	1
FUS 41/2,0 - 3 m	**097658**	**517426**	**–**	**–**	●	–	3,000	2.0	1
FUS 41/2,0 - 6 m	**097659**	**537656**	**542736**[1)]	**542739**[1)]	●	–	6,000	2.0	1
FUS 41/2,5 - 2 m	**092295**	**–**	**504470**	**504475**	●	Yes	2,000	2.5	1
FUS 41/2,5 - 3 m	**077347**	**–**	**–**	**–**	●	Yes	3,000	2.5	1
FUS 41/2,5 - 6 m	**077537**	**537658**	**542737**[1)]	**542740**[1)]	●	Yes	6,000	2.5	1
FUS 62/2,5 - 3 m	**–**	**517427**	**–**	**–**	–	Yes	3,000	2.5	1
FUS 62/2,5 - 6 m	**504457**	**517428**	**–**	**557765**	●	Yes	6,000	2.5	1

[1)] Delivery time on request.

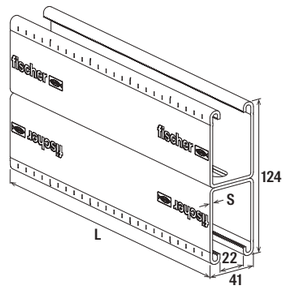
For load information under fire exposure, see chapter Basic knowledge. ETA approval only for galvanized steel variants.



FUS 21D



FUS 41D



FUS 62D

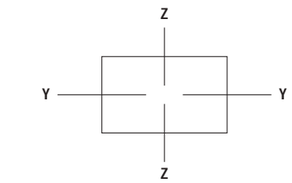
Channel FUS D

Item	Item no.	Galvanised steel gvz	Hot-dip galvanised / Zinc flake coated hdg / zl	A4 Item no. A4	Approval ETA	Length L [mm]	Thickness S [mm]	Sales unit [pcs]
FUS 21D/2.0 - 3 m	504458	537659	–	●	3,000	2.0	1
FUS 21D/2.0 - 6 m	535531	537661	–	●	6,000	2.0	1
FUS 41D/2.0 - 6 m	542734	–	–	–	6,000	2.0	1
FUS 41D/2.5 - 6 m	504459	537662	562655	●	6,000	2.5	1
FUS 62D/2.5 - 6 m	504460	537663	–	●	6,000	2.5	1

For load information under fire exposure, see chapter Basic knowledge. ETA approval only for galvanized steel variants.

Loads Channel FUS zp

Item	Item no.	Approval ETA	Profile weight [kg/m]	Channel cross section [cm²]	Permissible tensile stress σ_{per}* [kN/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]	Sales unit [pcs]
FUS 21/1.5 - 2 m	545117	●	1.20	1.42	18.83	0.88	3.68	0.77	1.79	0.44	0.10	0.03	1
FUS 21/1,5 - 3 m	545118	●	1.20	1.42	18.83	0.88	3.68	0.77	1.79	0.44	0.10	0.03	1
FUS 21/1,5 - 6 m	545119	●	1.20	1.42	18.83	0.88	3.68	0.77	1.79	0.44	0.10	0.03	1
FUS 21/2,0 - 2 m	040391	●	1.44	1.82	18.75	1.06	4.63	0.92	2.26	0.53	0.12	0.03	1
FUS 21/2,0 - 3 m	097660	●	1.44	1.82	18.83	1.06	4.63	0.92	2.26	0.53	0.12	0.03	1
FUS 21/2,0 - 6 m	097661	●	1.44	1.82	18.83	1.06	4.63	0.92	2.26	0.53	0.12	0.03	1
FUS 21/2,5 - 2 m	092867	●	1.67	2.11	18.83	1.14	5.24	0.96	2.56	0.56	0.12	0.03	1
FUS 21/2,5 - 3 m	077349	●	1.67	2.11	18.83	1.14	5.24	0.96	2.56	0.56	0.12	0.03	1
FUS 21/2,5 - 6 m	077541	●	1.67	2.11	18.83	1.14	5.24	0.96	2.56	0.56	0.12	0.03	1
FUS 41/1,5 - 2 m	545120	●	1.80	2.02	18.83	4.58	6.01	2.12	2.93	1.59	0.57	0.25	1
FUS 41/1,5 - 3 m	545126	●	1.80	2.02	18.83	4.58	6.01	2.12	2.93	1.59	0.57	0.25	1
FUS 41/1,5 - 6 m	545127	●	1.80	2.02	18.83	4.58	6.01	2.12	2.93	1.59	0.57	0.25	1
FUS 41/2,0 - 2 m	040390	●	2.06	2.62	18.83	5.72	7.67	2.63	3.74	1.97	0.70	0.28	1
FUS 41/2,0 - 3 m	097658	●	2.06	2.62	18.83	5.72	7.67	2.63	3.74	1.97	0.70	0.28	1

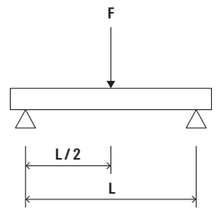


Loads Channel FUS zp

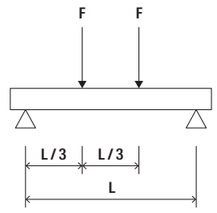
Item	Item no.	Approval ETA	Profile weight [kg/m]	Channel cross section [cm²]	Permissible tensile stress σ_{per}* [kN/cm²]	Moment of inertia I_y [cm⁴]	Moment of inertia I_z [cm⁴]	Section modulus W_y [cm³]	Section modulus W_z [cm³]	Max. recommended static load for 1m length F_{rec} [kN]	Max. recommended static load for 2m length F_{rec} [kN]	Max. recommended static load for 3m length F_{rec} [kN]	Sales unit [pcs]
FUS 41/2,0 - 6 m	097659	●	2.06	2.62	18.83	5.72	7.67	2.63	3.74	1.97	0.70	0.28	1
FUS 41/2,5 - 2 m	092295	●	2.45	3.11	18.83	6.44	8.95	2.90	4.37	2.17	0.78	0.32	1
FUS 41/2,5 - 3 m	077347	●	2.45	3.11	18.83	6.44	8.95	2.90	4.37	2.17	0.78	0.32	1
FUS 41/2,5 - 6 m	077537	●	2.45	3.11	18.83	6.44	8.95	2.90	4.37	2.17	0.78	0.32	1
FUS 62/2,5 - 6 m	504457	●	3.27	4.17	18.83	18.74	12.85	5.70	6.27	4.28	2.12	0.99	1
FUS 21D/2.0 - 3 m	504458	●	2.87	3.63	18.83	5.37	9.25	2.56	4.51	1.91	0.64	0.25	1
FUS 21D/2.0 - 6 m	535531	●	2.87	3.63	18.83	5.37	9.25	2.56	4.51	1.91	0.64	0.25	1
FUS 41D/2.0 - 6 m	542734	–	4.12	5.04	18.83	30.70	15.29	7.49	7.46	5.58	2.79	1.72	1
FUS 41D/2.5 - 6 m	504459	●	4.89	6.23	18.83	34.88	17.91	8.51	8.73	6.38	3.16	1.86	1
FUS 62D/2.5 - 6 m	504460	●	6.55	8.33	18.83	108.14	25.70	17.44	12.53	13.11	6.50	4.28	1

[1] For load case 1.
[2] The permissible stress is derived from the increased yield strength due to cold forming in accordance with EN 1993-1-3:2010-12, considering a partial safety factor of 1.54

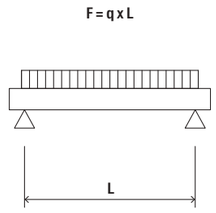
Load case 1



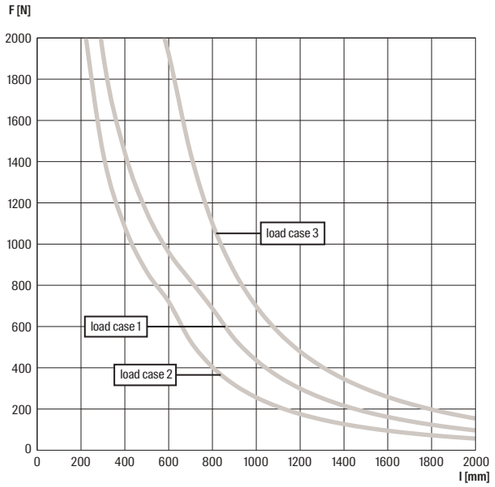
Load case 2



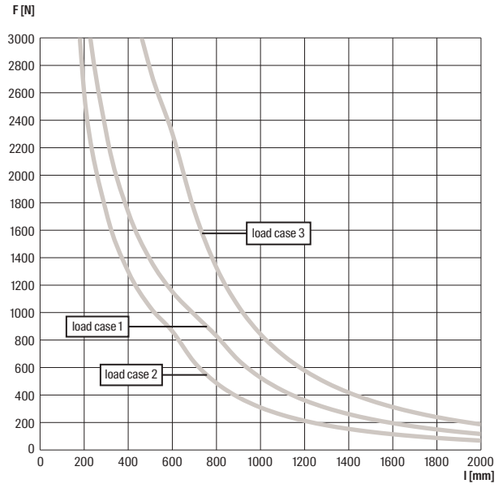
Load case 3



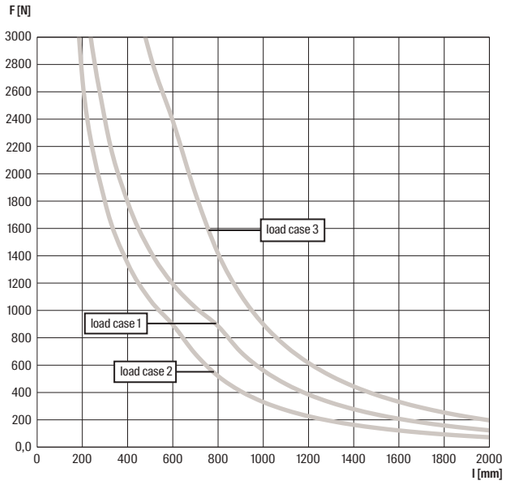
FUS 21/1.5 gvz



FUS 21/2.0 gvz



FUS 21/2.5 gvz



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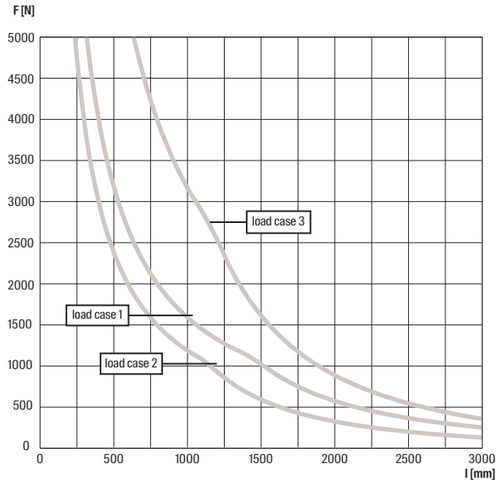

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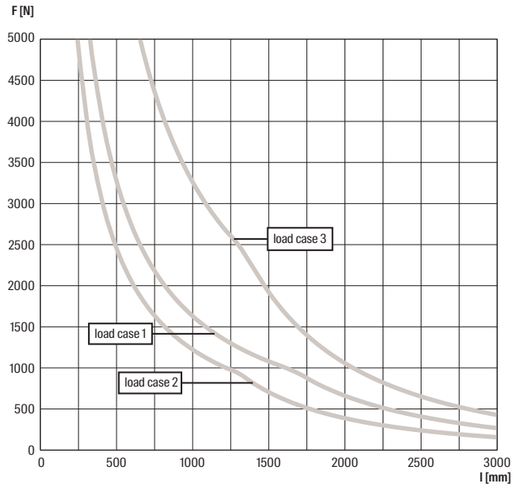

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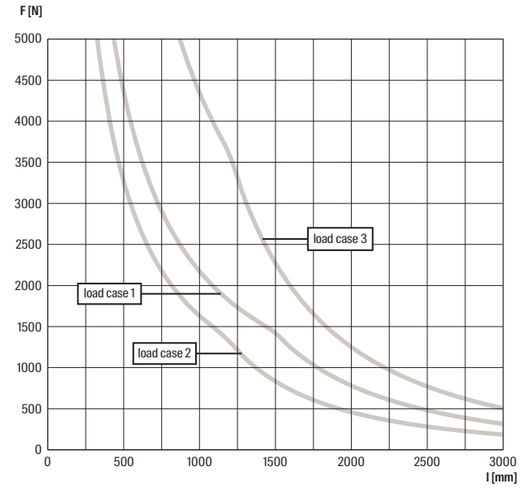
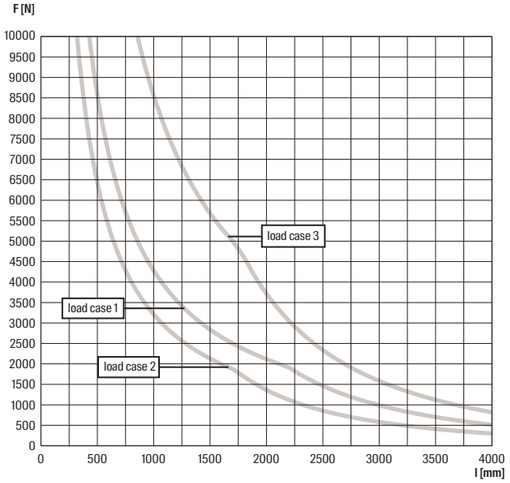
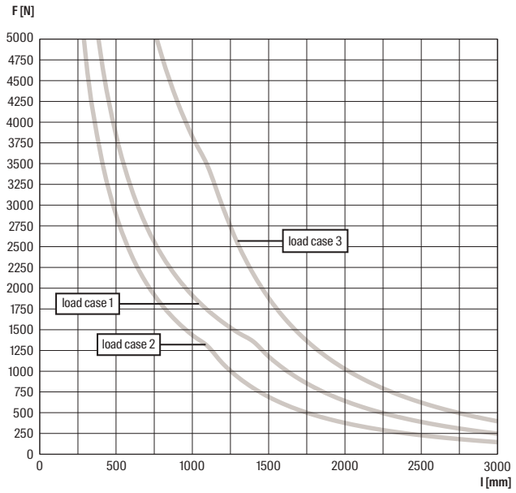


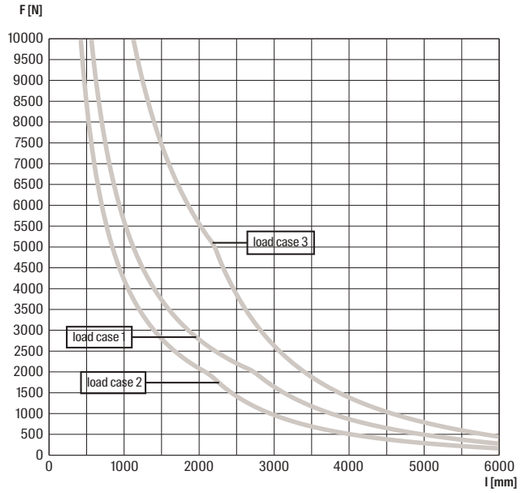
FUS 62/2.5 gvz



FUS 21D/2.0 gvz

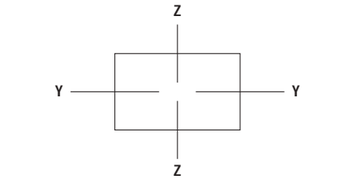


FUS 41D/2.0 gvz



FUS 41D/2.5 gvz

FUS 62D/2.5 gvz

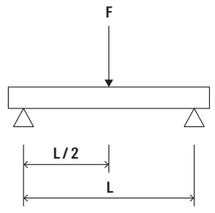


Loads Channel FUS hdg

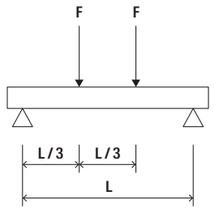
Item	Item no.	Profile weight [kg/m]	Channel cross section [cm²]	Permissible tensile stress σ_{per}* [kN/cm²]	Moment of inertia I_y [cm⁴]	Moment of inertia I_z [cm⁴]	Section modulus W_y [cm³]	Section modulus W_z [cm³]	Max. recommended static load for 1m length F_{rec} [kN]	Max. recommended static load for 2m length F_{rec} [kN]	Max. recommended static load for 3m length F_{rec} [kN]	Sales unit [pcs]
FUS 21/2,0 - 3 m	**537653**	1.44	1.82	19.3	1.06	4.63	0.92	2.26	0.53	0.12	0.03	1
FUS 41/2,0 - 3 m	**517426**	2.06	2.62	19.3	5.72	7.67	2.63	3.74	2.02	0.70	0.28	1
FUS 41/2,0 - 6 m	**537656**	2.06	2.62	19.3	5.72	7.67	2.63	3.74	2.02	0.70	0.28	1
FUS 41/2,5 - 6 m	**537658**	2.45	3.11	19.3	6.44	8.95	2.90	4.37	2.23	0.78	0.32	1
FUS 62/2,5 - 3 m	**517427**	3.27	4.17	19.3	18.74	12.85	5.70	6.27	4.39	2.17	0.99	1
FUS 62/2,5 - 6 m	**517428**	3.27	4.17	19.3	18.74	12.85	5.70	6.27	4.39	2.17	0.99	1
FUS 21D/2.0 - 3 m	**537659**	2.87	3.63	19.3	5.37	9.25	2.56	4.51	1.96	0.64	0.25	1
FUS 21D/2.0 - 6 m	**537661**	2.87	3.63	19.3	5.37	9.25	2.56	4.51	1.96	0.64	0.25	1
FUS 41D/2.5 - 6 m	**537662**	4.89	6.23	19.3	34.88	17.91	8.51	8.73	6.55	3.24	1.86	1
FUS 62D/2.5 - 6 m	**537663**	6.55	8.33	19.3	108.14	25.70	17.44	12.53	13.45	6.67	4.40	1

[1] For load case 1.
[2] The permissible stress is derived from the increased yield strength due to cold forming in accordance with EN 1993-1-3:2010-12, considering a partial safety factor of 1.54

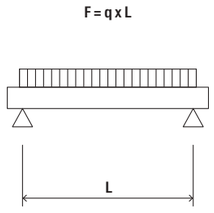
Load case 1



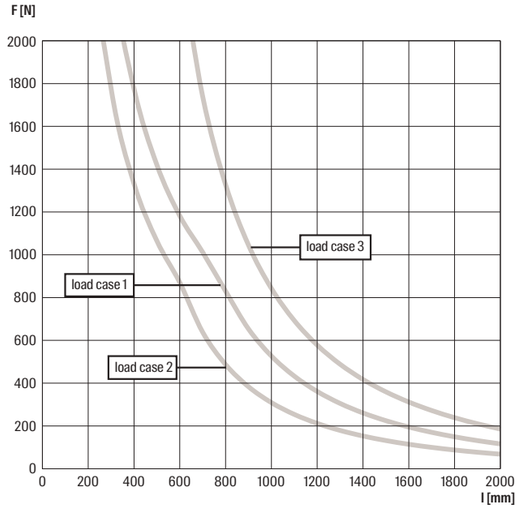
Load case 2



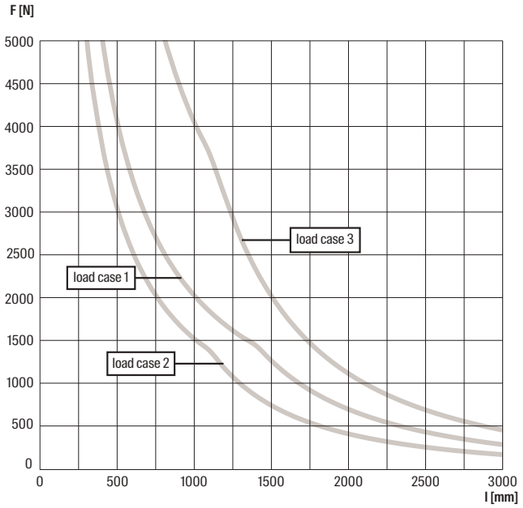
Load case 3



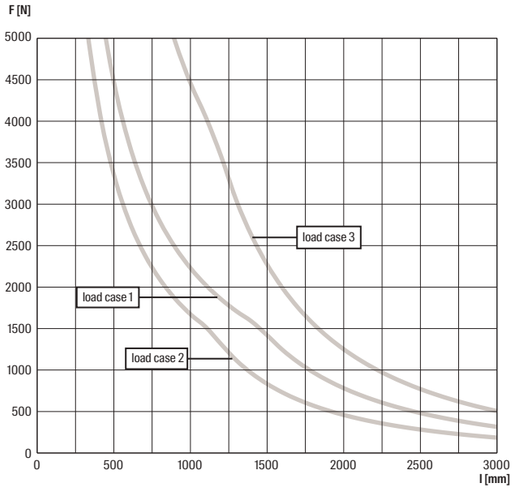
FUS 21/2.0 hdg



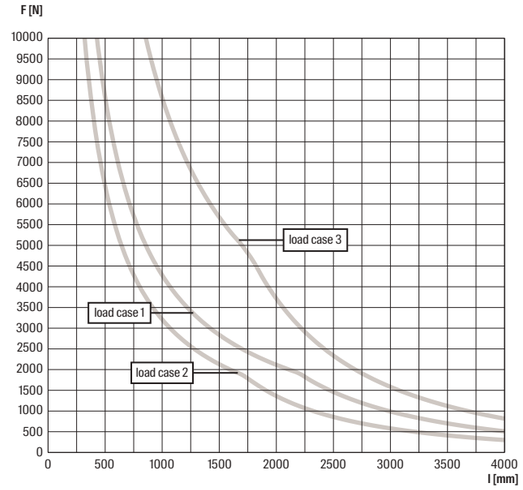
FUS 41/2.0 hdg



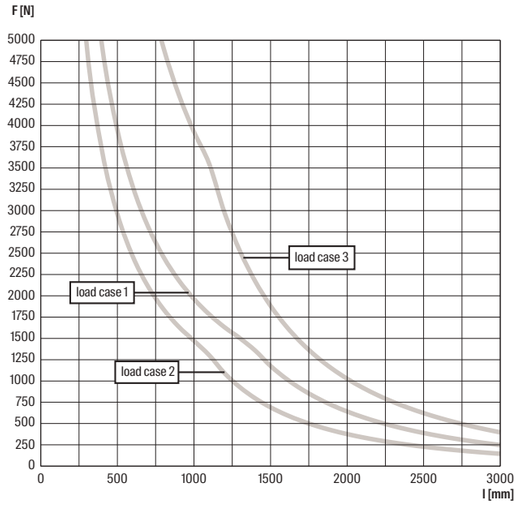
FUS 41/2.5 hdg



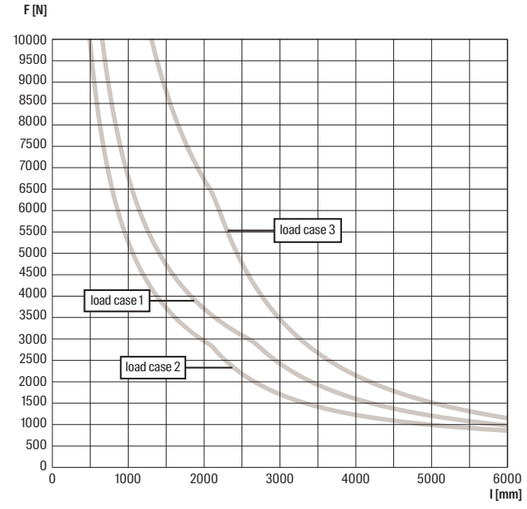
FUS 62/2.5 hdg



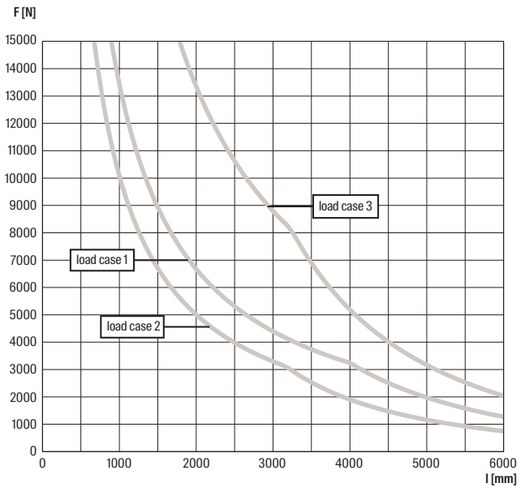
FUS 21D/2.0 hdg



FUS 41D/2.5 hdg



FUS 62D/2.5 hdg



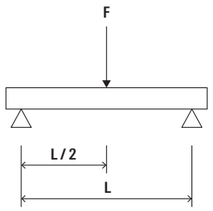
Loads Channel FUS A2/A4

Item	A2 Item no.	A4 Item no.	Profile weight [kg/m]	Channel cross section [cm²]	Permissible tensile stress σ_{per}* [kN/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]	Sales unit [pcs]
FUS 21/2,0 - 2 m	504466	–	1.44	1.82	14.94	1.06	4.63	0.92	2.26	0.50	0.11	0.03	1
FUS 21/2,0 - 2 m	–	504472	1.44	1.82	15.58	1.06	4.63	0.92	2.26	0.50	0.11	0.03	1
FUS 21/2,0 - 6 m	542735[1)]	–	1.44	1.82	14.94	1.06	4.63	0.92	2.26	0.50	0.11	0.03	1
FUS 41/2,0 - 2 m	504468	–	2.06	2.62	14.94	5.72	7.67	2.63	3.74	1.56	0.66	0.27	1
FUS 41/2,0 - 2 m	–	504474	2.06	2.62	15.58	5.72	7.67	2.63	3.74	1.63	0.66	0.27	1
FUS 41/2,0 - 6 m	542736[1)]	–	2.06	2.62	14.94	5.72	7.67	2.63	3.74	1.56	0.66	0.27	1
FUS 21/2,0 - 6 m	–	542738[1)]	1.44	1.82	15.58	1.06	4.63	0.92	2.26	0.50	0.11	0.03	1
FUS 41/2,0 - 6 m	–	542739[1)]	2.06	2.62	15.58	5.72	7.67	2.63	3.74	1.63	0.66	0.27	1
FUS 41/2,5 - 2 m	504470	–	2.45	3.11	14.94	6.44	8.95	2.90	4.37	1.72	0.74	0.30	1
FUS 41/2,5 - 2 m	–	504475	2.45	3.11	15.58	6.44	8.95	2.90	4.37	1.80	0.74	0.30	1
FUS 41/2,5 - 6 m	542737[1)]	–	2.45	3.11	14.94	6.44	8.95	2.90	4.37	1.72	0.74	0.30	1
FUS 41/2,5 - 6 m	–	542740[1)]	2.45	3.11	15.58	6.44	8.95	2.90	4.37	1.80	0.74	0.30	1
FUS 62/2,5 - 6 m	–	557765	3.27	4.17	15.58	18.74	12.85	5.70	6.27	5.28	2.60	1.70	1
FUS 41D/2.5 - 6 m	–	562655	4.89	6.23	15.58	34.88	17.91	8.51	8.73	5.28	2.60	1.70	1

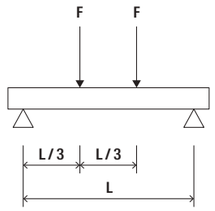
[1)] Delivery time on request.

[1)] For load case 1.
[2)] The permissible stress is derived from the increased yield strength due to cold forming in accordance with EN 1993-1-3:2010-12, considering a partial safety factor of 1.54

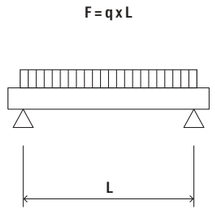
Load case 1



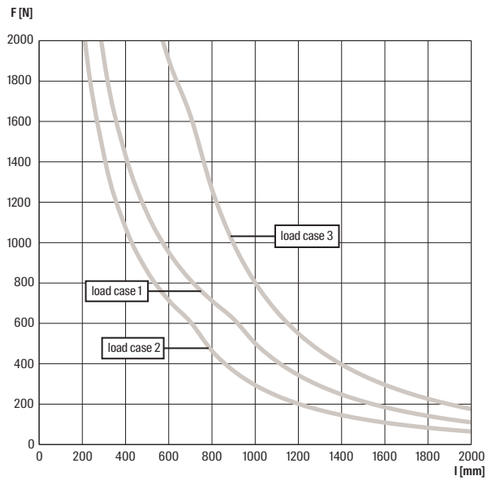
Load case 2



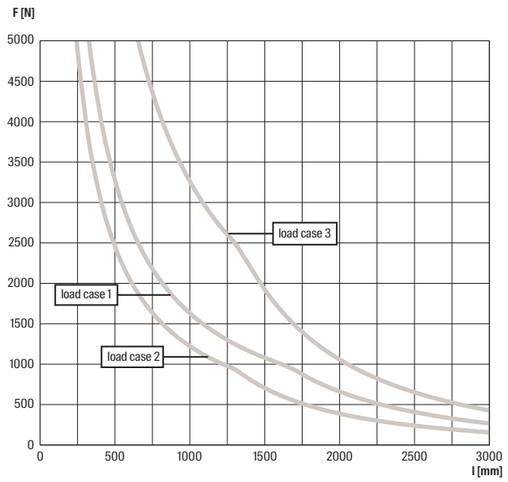
Load case 3



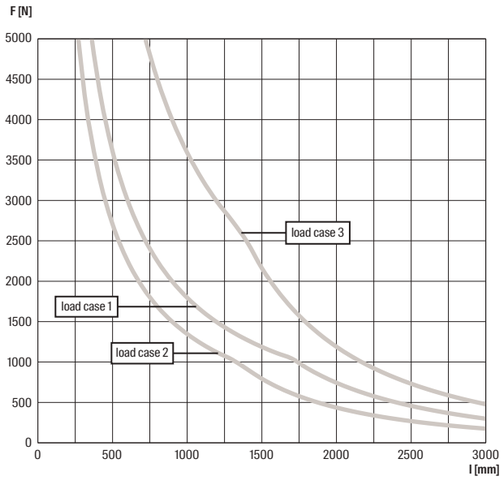
FUS 21/2.0 A4



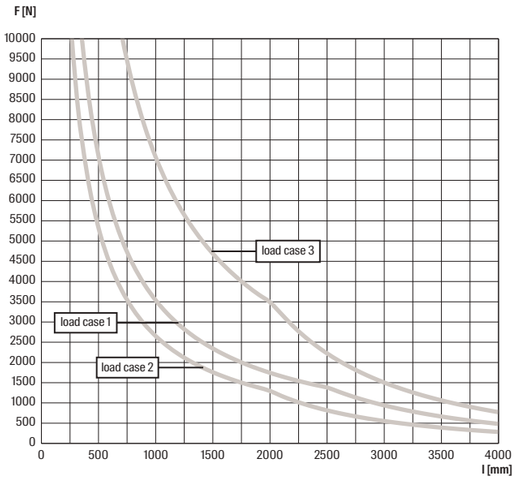
FUS 41/2.0 A4



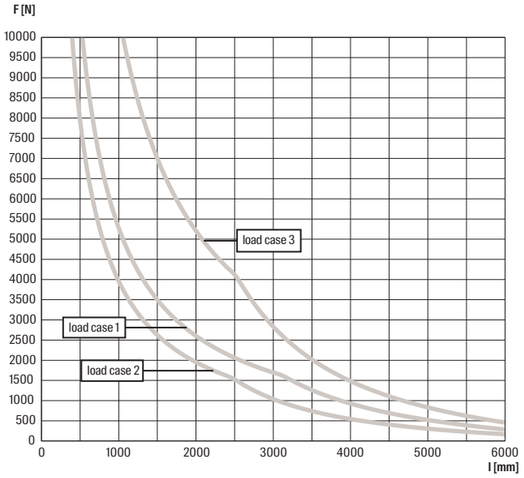
FUS 41/2.5 A4



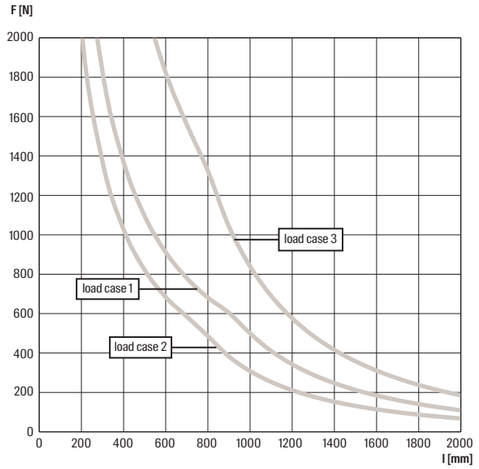
FUS 62/2.5 A4



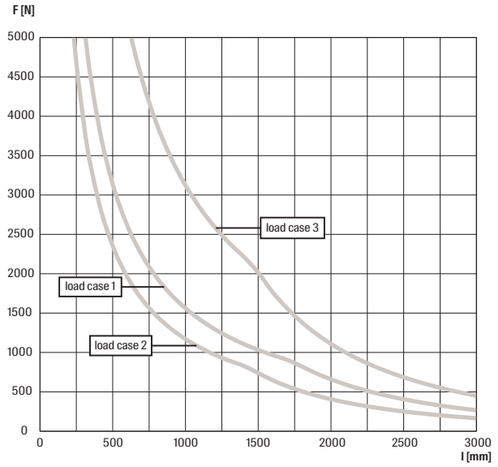
FUS 41D/2.5 A4



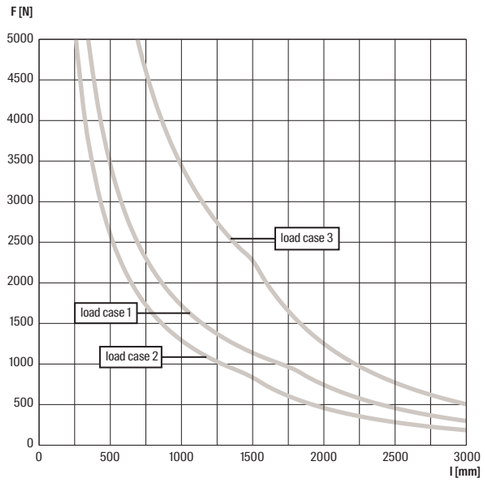
FUS 21/2.0 A2



FUS 41/2.0 A2

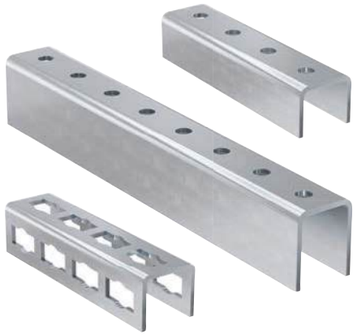


FUS 41/2.5 A2



Channel connector FUF OC and PFUF OC

Construction element - Channel connector FUF OC and PFUF OC.



Connector for installation grid

Longitudinal channel connection

Applications

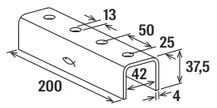
- Connection and precise alignment of channels.
- FUF OC and PFUF OC electro zinc-plated: For use in dry interior areas.
- PFUF zinclamella: For indoor and outdoor application.
- PFUF A4: For indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

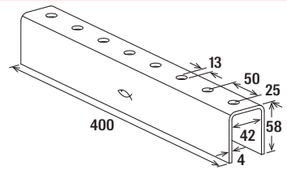
- The FUF OC connector in combination with FCN Clix P allows a simple and time-saving installation.
- The PFUF OC connector in combination with PFCN allows a simple and time-saving installation.

Properties

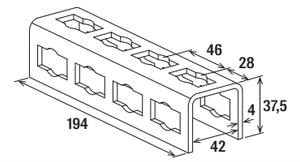
- Material FUF OC zp and hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Material PFUF OC zp and zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated, hot-dip galvanised or zinc flake coated
- Material PFUF OC A4: stainless steel A4 (material no. 1.4401)



FUF OC 41



FUF OC 62



PFUF OC

Channel connector FUF OC and PFUF OC

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	Length	Sales unit
				L	
	Item no.	Item no.	Item no.	[mm]	[pcs]
Item	gvz	hdg / zl	A4		
FUF OC 41	504517	517415	–	200	20
PFUF OC	533743	542719	562846	194	6
FUF OC 62	504518	537591	–	400	10

Socket wrench FSK

FSK socket wrench SW 17 long, the solution for tightening in the FUS mounting channels.

Applications

- Installation of the fischer FUS channel system.
- Tightening anchor bolts and plugs.

Advantages

- The socket wrench FSK fits perfectly through the open side of the
- FUS mounting channel.
- The two snap-in holes between the impact wrench insert and ½“ socket ensure increased connection accuracy.
- The long length of the socket wrench FSK allows it to be used for the FUS mounting channels 21, 41 and 62.

Properties

- Material: quenched and tempered steel 42CrMo4 according to EN 10083-3 (material no. 1.7225)
- Coating: black phosphatized

Technical data

	Item no.	Length L [mm]	Width across nut SW [mm]	Drive	For profile	Sales unit [pcs]
Item						
FSK Socket wrench SW17-1/2“ long	**563656**	100	17	1/2“ / SW17	FUS 21, 41, 62	1

Channel connector FDCC

Channel connector for easy preparation of FUS double channels.

FUS double channel with channel connector

Applications

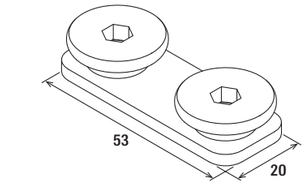
- Easy construction of double channels made from the FUS channel assortment.
- Suitable for FUS channels FUS 41 and FUS 62 with thickness 2,0 and 2,5 mm.
- The connection of two single channels is made with the channel connector inside the channel slots.
- Each double channel has to be equipped with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

Advantages

- Easy connection of single channels back to back to build double channels.
- Simple solution to create individual double channels on job site.

Properties

- Material base plate FDCC and FDCC zl: JIS G3131-SPHE (similar to DD13 acc. to DIN EN 10111, material no. 1.0335)
- Material screw: steel grade 8.8
- Zinc plating: electro zinc-plated or zinclamella coated
- Material base plate and screw FDCC A4: stainless steel A4 (material no. 1.4401)

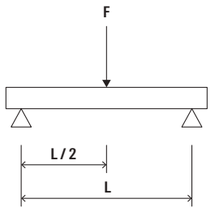


FDCC

Technical data

	Galvanised steel Item no.	Hot-dip galvanised / Zinc flake coated Item no.	A4 Item no.	Thread A	Drive	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item	**gvz**	**hdg / zl**	**A4**				
FDCC	**546148**	**557278**	**557376**	M10	Hexagon socket 5 mm	25	100

Load case 1

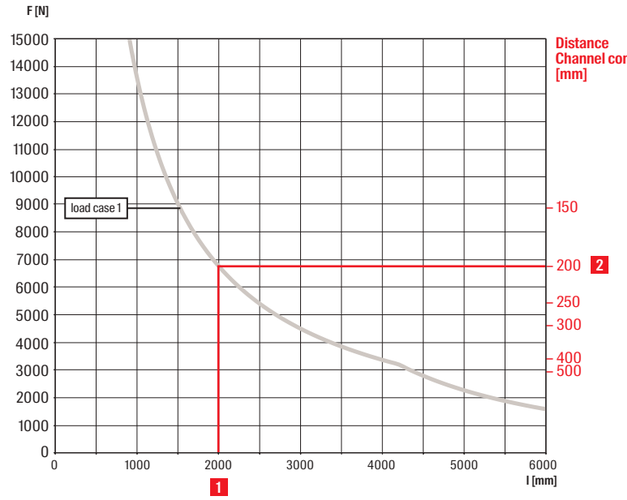


4

FUS 41D/2.0 - 2.5

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

FUS 62D/2.5



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

Cantilever arm FCA

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

Media lines with thermal expansion

Wall mounting on cantilever arm

4

Applications

- Quick and easy installation of pipelines (e.g. along the wall)
- FCA: For use in dry indoor areas.
- FCA hdg: For indoor and outdoor application.
- FCA A4: For indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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 serration in the channel gives the sliding nuts a secure hold for high shear loads, e.g. for vertical installation.

Properties

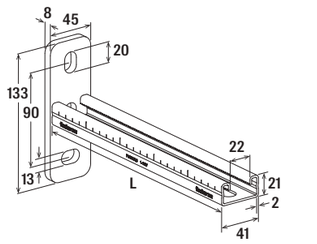
- Material FCA and FCA hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated and hot-dip galvanised
- Material FCA A4: stainless steel A4 (material no. 1.4401)

Certificates / Features

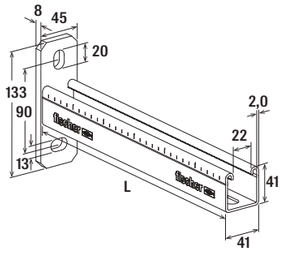
ETA CE R 120

R 30 MLAR

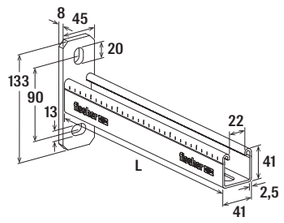
BZS S 25-315



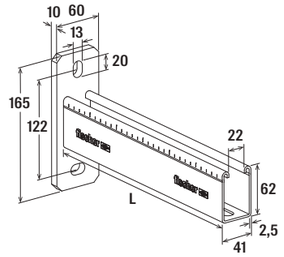
FCA 21/2.0



FCA 41/2.0



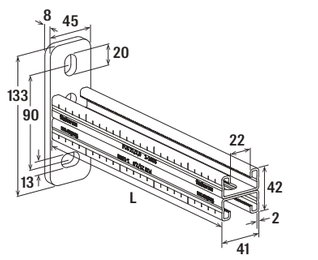
FCA 41/2.5



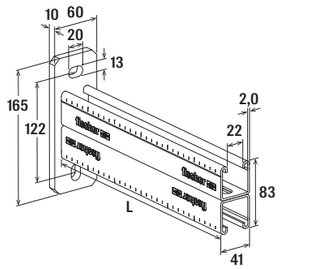
FCA 62/2.5

Cantilever arm FCA

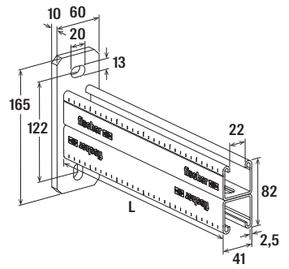
Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A4 Item no. A4	Approval ETA	Fire test report	Profile	Length L [mm]	Sales unit [pcs]
FCA 21/2.0 - 200	537207	–	–	–	–	21 / 2.0	200	1
FCA 21/2.0 - 300	537208	–	–	–	–	21 / 2.0	300	1
FCA 21/2.0 - 450	537209	–	–	–	–	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 - 1,000	559919	–	–	–	–	41 / 2,0	1,000	1
FCA 41/2.5 - 300	077359	517411	505487	●	Yes	41 / 2.5	300	1
FCA 41/2.5 - 450	077361	517412	505488	●	Yes	41 / 2.5	450	1
FCA 41/2.5 - 600	077363	517413	505489	●	Yes	41 / 2.5	600	1
FCA 41/2.5 - 750	077365	517414	–	●	Yes	41 / 2.5	750	1
FCA 62/2.5 - 1,000	504315	538015	–	–	Yes	62 / 2.5	1,000	1



FCA 21D/2.0



FCA 41D/2.0



FCA 41D/2.5

Cantilever arm FCA D

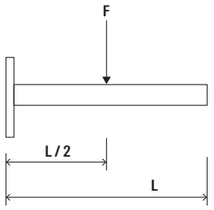
Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	Profile	Length L [mm]	Sales unit [pcs]
FCA 21D/2.0 - 300	536978	–	21D / 2.0	300	1
FCA 21D/2.0 - 450	536979	–	21D / 2.0	450	1
FCA 21D/2.0 - 600	536980	–	21D / 2.0	600	1
FCA 41D/2.0 - 750	559920	–	41D / 2,0	750	1
FCA 41D/2.0 - 1,000	559921	–	41D / 2,0	1,000	1
FCA 41D/2.5- 750	504317	538016	41D / 2.5	750	1
FCA 41D/2.5 - 1,000	504319	538017	41D / 2.5	1,000	1

Laods Cantilever arm FCA / FCA D

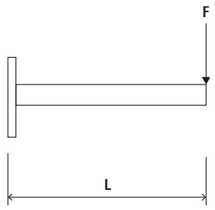
Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	Approval ETA	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Max. recommended static load load case 3 F_{rec} [kN]	Sales unit [pcs]
FCA 21/2.0 - 200	537207	–	–	1.39	0.70	1.39	1
FCA 21/2.0 - 300	537208	–	–	0.93	0.46	0.93	1
FCA 21/2.0 - 450	537209	–	–	0.62	0.22	0.62	1
FCA 41/2.0 - 300	559915	–	–	1.79	0.90	1.79	1
FCA 41/2.0 - 450	559916	–	–	1.20	0.60	1.20	1
FCA 41/2.0 - 600	559917	–	–	0.90	0.45	0.90	1
FCA 41/2.0 - 750	559918	–	–	0.72	0.36	0.72	1
FCA 41/2.0 - 1,000	559919	–	–	0.54	0.26	0.54	1
FCA 41/2.5 - 300	077359	517411	●	1.79	0.90	1.79	1
FCA 41/2.5 - 450	077361	517412	●	1.20	0.60	1.20	1
FCA 41/2.5 - 600	077363	517413	●	0.90	0.45	0.90	1
FCA 41/2.5 - 750	077365	517414	●	0.72	0.36	0.72	1
FCA 62/2.5 - 1,000	504315	538015	–	1.24	0.62	1.24	1
FCA 21D/2.0 - 300	536978	–	–	1.83	0.92	1.83	1
FCA 21D/2.0 - 450	536979	–	–	1.22	0.61	1.22	1
FCA 21D/2.0 - 600	536980	–	–	0.92	0.46	0.92	1
FCA 41D/2.0 - 750	559920	–	–	2.48	1.24	2.48	1
FCA 41D/2.0 - 1,000	559921	–	–	1.86	0.93	1.86	1
FCA 41D/2.5- 750	504317	538016	–	2.48	1.24	2.48	1
FCA 41D/2.5 - 1,000	504319	538017	–	1.86	0.93	1.86	1

For load information under fire exposure, see chapter Basic knowledge.
ETA approval only for galvanized steel variants.

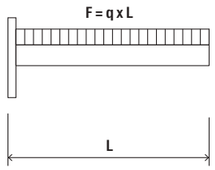
Load case 1



Load case 2

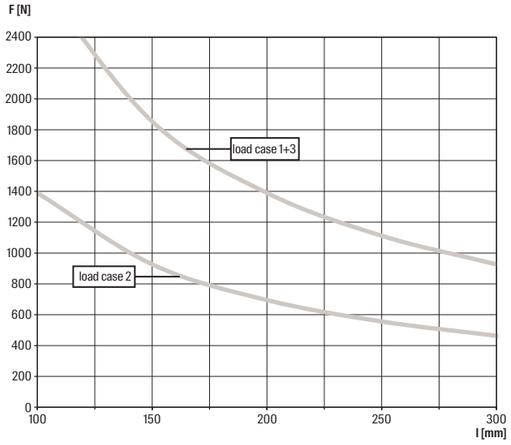


Load case 3

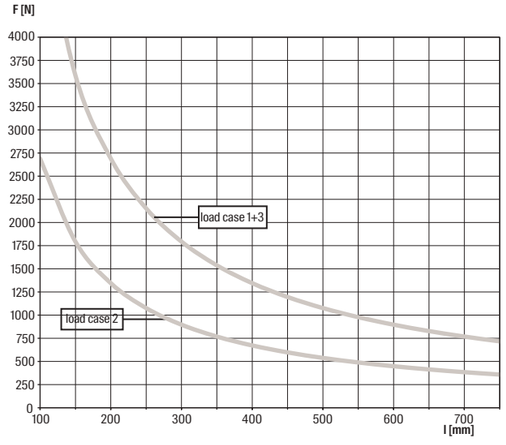


4

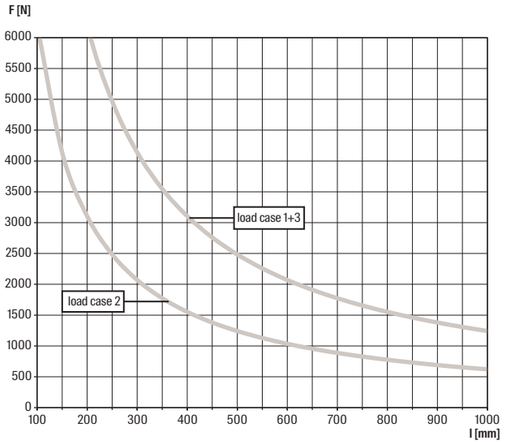
FCA 21



FCA 41



FCA 62



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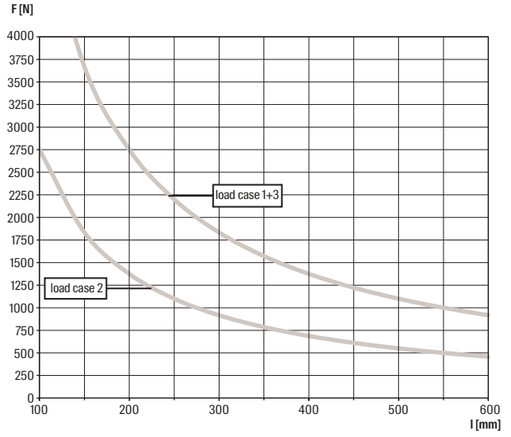
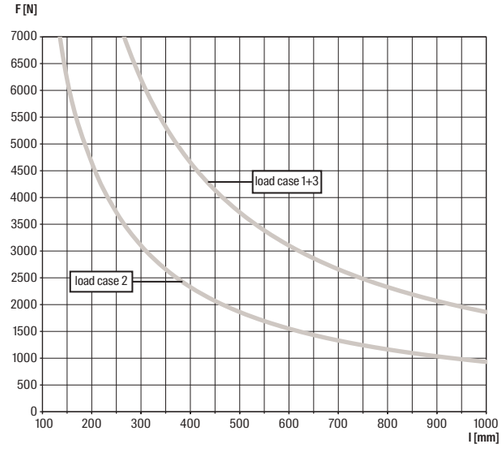


FCA 41D



4

Large cantilever arm FCAM

The large cantilever arm for heavy loads.

Stiff pipe connection with base plate on cantilever arm

Applications

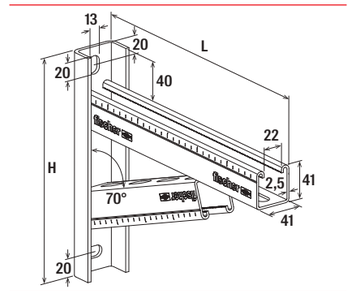
- Quick and easy installation of pipelines with heavy loads, (e.g. along the wall).
- FCAM: for use in dry interior areas.
- FCAM hdg: for indoor and outdoor application.

Advantages

- 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 serration in the channel gives the sliding nuts a secure hold for high shear loads, e.g. for vertical installation.

Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated and hot-dip galvanised



FCAM

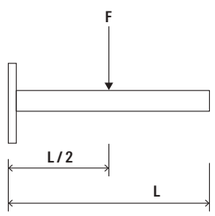
Large cantilever arm FCAM

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	Length L [mm]	Height H [mm]	Sales unit [pcs]
FCAM 300	504477	538018	300	246	1
FCAM 400	504479	538019	400	270	1
FCAM 500	504480	538020	500	284	1
FCAM 600	504482	538021	600	319	1
FCAM 700	505460	538022	700	343	1

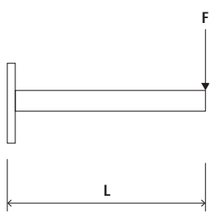
Loads Large cantilever arm FCAM

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	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]	Sales unit [pcs]
FCAM 300	504477	538018	7.00	3.70	7.00	1
FCAM 400	504479	538019	7.50	2.80	7.50	1
FCAM 500	504480	538020	6.50	2.30	6.50	1
FCAM 600	504482	538021	6.00	1.90	6.00	1
FCAM 700	505460	538022	5.50	1.30	5.50	1

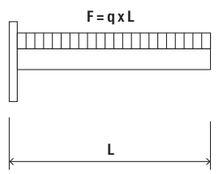
Load case 1



Load case 2



Load case 3



Cover cap FEC

The form-flush cover cap, tailored to the FUS channel profiles for a safe termination.

Applications

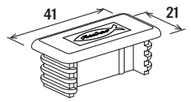
- Closing for channel FUS and cantilever arms FCA and large cantilever arms FCAM.

Advantages

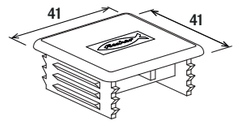
- Suitable for channels FUS 21, FUS 41, FUS 62 and cantilever arms FCA and FCAM.

Properties

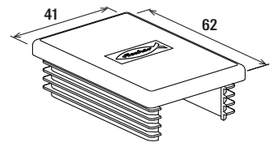
- Material: PP Polypropylene, colour black



FEC 21 B



FEC 41 B



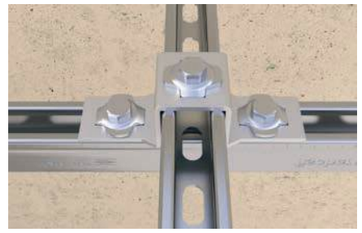
FEC 62 B

Technical data

Item	Item no.	For profile	Material	Sales unit [pcs]
FEC 21 B	**077357**	41/21	polypropylene	100
FEC 41 B	**077355**	41/41	polypropylene	100
FEC 62 B	**505551**	41/62	polypropylene	100

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.
- PFCN: for use in dry interior areas.
- PFCN zl: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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 serration on the push-through connector provides a secure hold in the FUS channel.
- Installation by rotating 90° enables generally the post-installation in set channels.

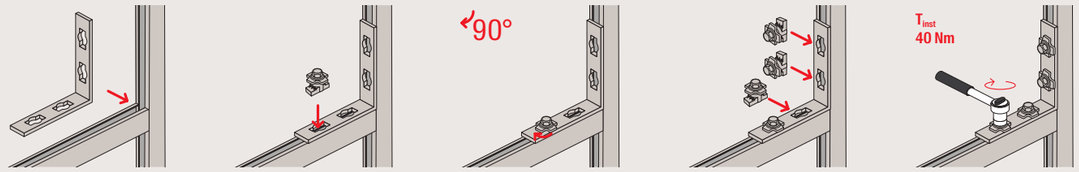
Properties

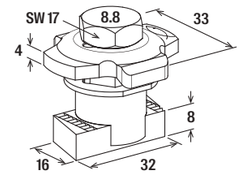
- Material cap PFCN and PFCN zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Material sliding nut: steel S420MC, EN 10149-2
- Material hexagon screw: 8.8 M10x28, DIN 933
- Zinc plating: electro zinc-plated or zinclamella coated
- Material A4: all steel components in stainless steel A4 (material no. 1.4401)
- Material plastic parts: polypropylene

Certificates / Features

BZS S 25-315

Installation PFCN

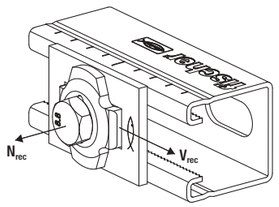




PFCN

Push-through connector PFCN

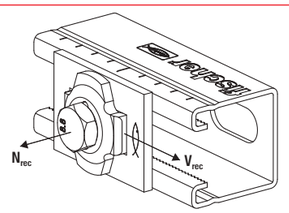
	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	Thread	Sales unit
	Item no.	Item no.	Item no.	A	[pcs]
Item	gvz	hdg / zl	A4		
PFCN 41	533739	542733	–	M10	50
PFCN 41	–	–	562662	M10	25



PFCN

Loads Push-through connector PFCN 41

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Max. recommended tension load for FUS 1,5 mm	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Max. recommended shear load for FUS 1,5 mm	Max. recommended shear load for FUS 2,0 mm	Max. recommended shear load for FUS 2,5 mm	Tightening torque for screw grade ≥ 8.8	Sales unit
	Item no.	Item no.	N_{rec} [kN]	N_{rec} [kN]	N_{rec} [kN]	V_{rec} [kN]	V_{rec} [kN]	V_{rec} [kN]	T_{inst} [Nm]	[pcs]
Item	gvz	hdg / zl								
PFCN 41	533739	–	4.0	5.0	7.0	4.0	4.5	5.0	40	50
PFCN 41	–	542733	4.0	5.0	7.0	3.5	4.0	4.0	40	50



PFCN

Loads Push-through connector PFCN 41 A4

	Item no.	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Max. recommended shear load for FUS 2,0 mm	Max. recommended shear load for FUS 2,5 mm	Tightening torque for screw grade ≥ 8.8	Sales unit
	Item no.	N_{rec} [kN]	N_{rec} [kN]	V_{rec} [kN]	V_{rec} [kN]	T_{inst} [Nm]	[pcs]
Item							
PFCN 41	562662	5.0	7.0	4.5	5.0	40	25

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.
- For indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

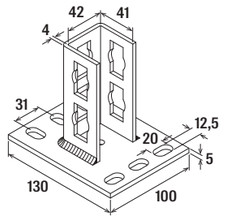
- The perfect-fit saddle allows a simple installation by inserting the mounting channels
- The saddle flange‘s stable design offers a secure hold for a load-bearing construction

Properties

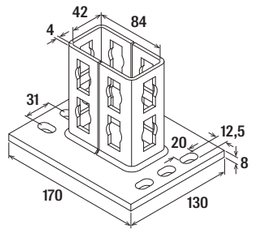
- Material PSF and PSF zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zink flake coated
- Material PSF A4: stainless steel A4 (material no. 1.4401)

Certificates / Features

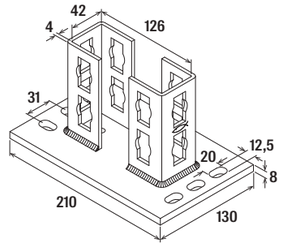
BZS S 25-315



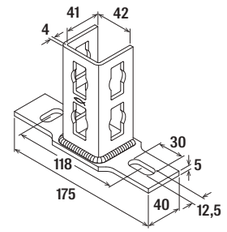
PSF 41



PSF 82



PSF 124



PSFQ 41

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	For profile	Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	**gvz**	**hdg / zl**	**A4**		
PSF 41	**533740**	**542715**	**562848**	21D, 41, 62	10
PSF 82	**533741**	**542716**	**562849**	41	5
PSF 124	**533742**	**542718**	**–**	62	5
PSFQ 41	**535266**	**542723**	**562847**	21D, 41, 62	10

See push-through connector PFCN for loads.

Universal angle PUWS

Construction element - Universal angle PUWS.

3D-frame constructions

Applications

- Reinforcement of supporting structures for the push-through system.
- PUWS: for use in dry interior areas.
- PUWS zl: for indoor and outdoor applications.
- PUWS A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

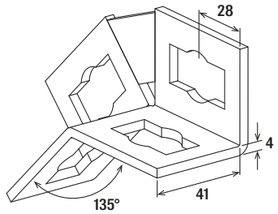
- The universal angle for the connection of FUS channels gives a supporting structure, great stability and safety (we recommend using in pairs).
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

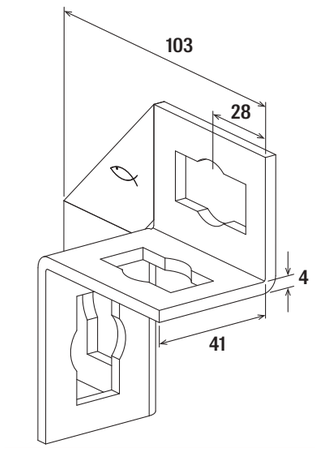
- Material PUWS and PUWS zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material A4: stainless steel A4 (material no. 1.4401)

Certificates / Features

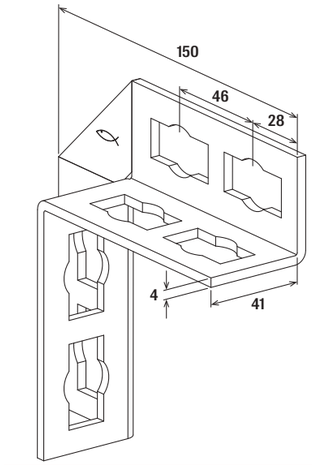
BZS S 25-315



PUWS 2 x 2/135°



PUWS 2 x 2



PUWS 4 x 4

Universal bracket PUWS

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PUWS 2 x 2/135°	533731	542708	562835		10
PUWS 2 x 2	533733	542709	562833		10
PUWS 4 x 4	533734	542710	562834		8

See push-through connector PFCN for loads

Angle bracket PWK

Construction element - Angle bracket PWK.

Solid frame construction

Solid frame construction

Applications

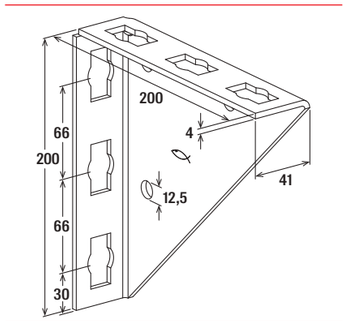
- Variable angular positioning of profile support in the push-through system.
- Bracket for installation with FUS channels from 0° to 180°.
- For use in dry interior areas.

Advantages

- The stable angle bracket ensures a supporting structure with a very high level of stability and safety.
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

- Material PWK and PWK zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PWK A4: stainless steel A4 (material no. 1.4401)



PWK 200

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PWK 200/200	533744	542720	–		15
PWK 200/200	–	–	562837		10

See push-through connector PFCN for loads.

Angle bracket fire-tested PUWF

Construction element - Angle bracket fire-tested PUWF.

Frame construction for ceiling suspension with one level

Frame construction for ceiling suspension with two levels

Applications

- Unique construction element for use as a connection to the substrate and for 90° angle connections.
- Allows the construction of applications with or without fire resistance requirements.
- For use in dry interior areas.

Advantages

- The fire test report in accordance with MLAR/EN1366 guarantees objectively tested functional safety.
- The stable design of the angle bracket allows high loads and ensures a secure hold. (use in pairs is recommended).
- Quick installation thanks to 90° rotation of the PFCN 41 push-through connector in the channel.
- The hole geometry allows the angle bracket to be attached to the FUS mounting channel in 3 positions with identical load-bearing capacity.

Properties

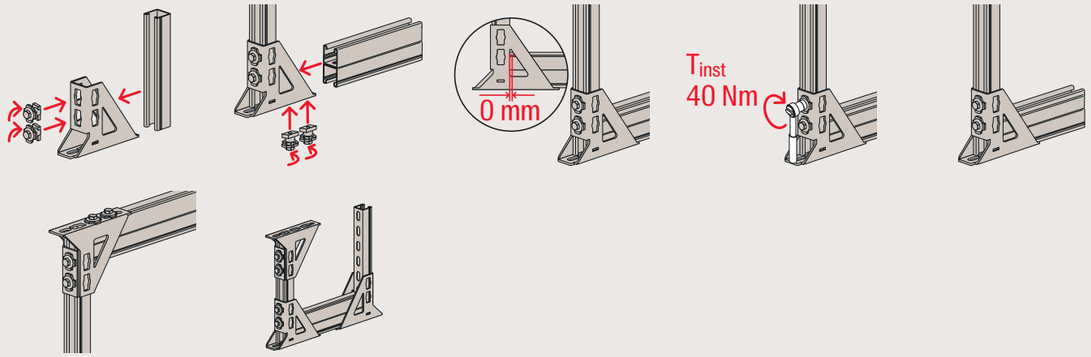
- Material: steel acc. to DIN EN 10025-2 (material no. 1.0038)
- Zinc plating: electro zinc-plated

Certificates / Features

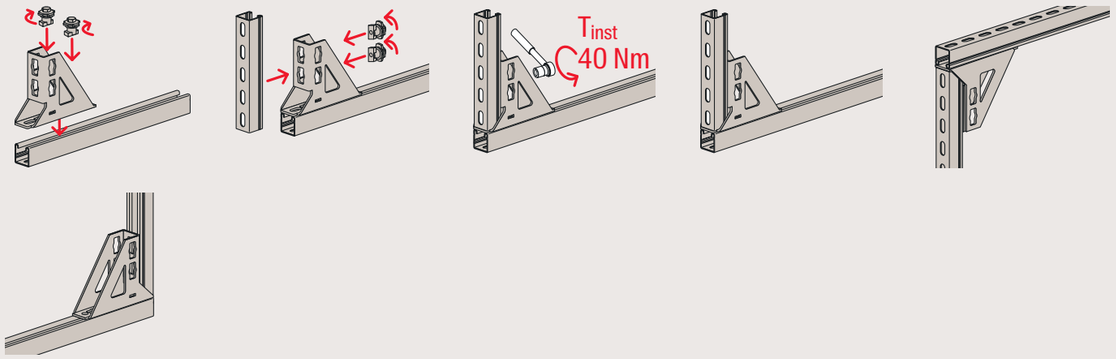
R 120

R 30 MLAR

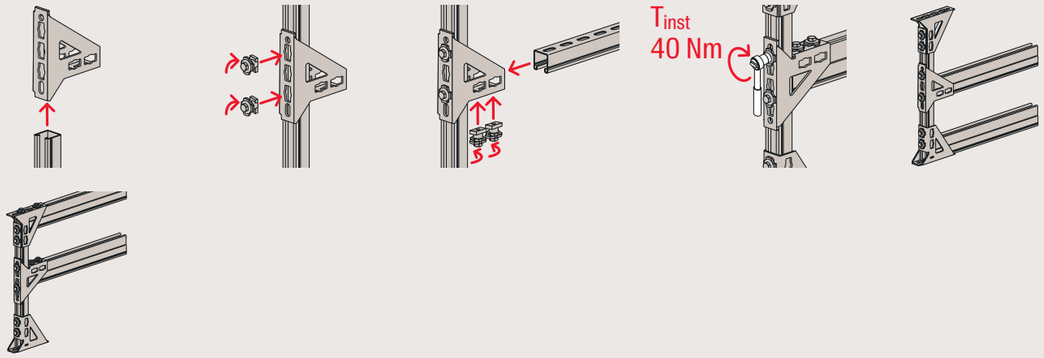
U-frame construction type 1



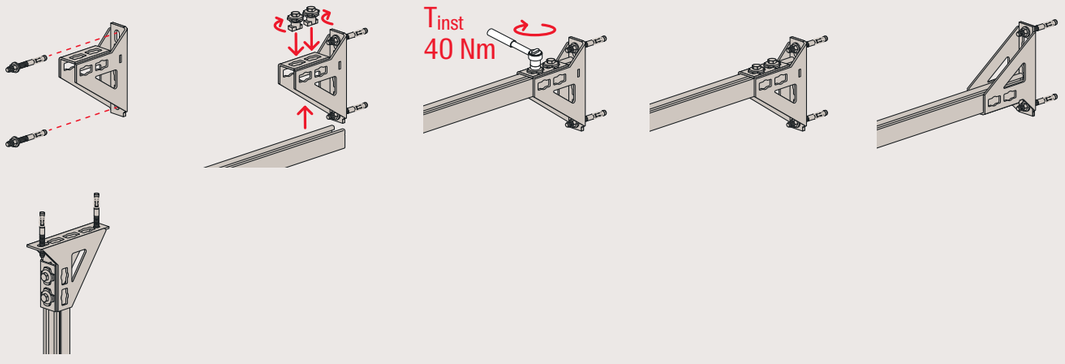
U-frame construction type 2



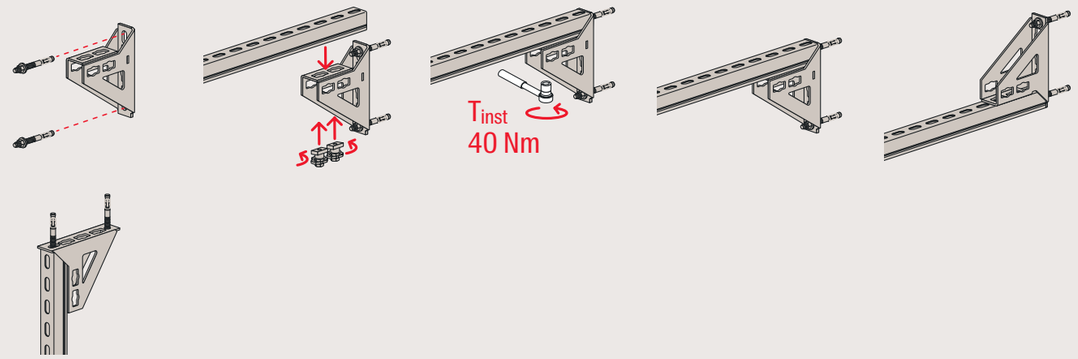
U-frame construction type 3



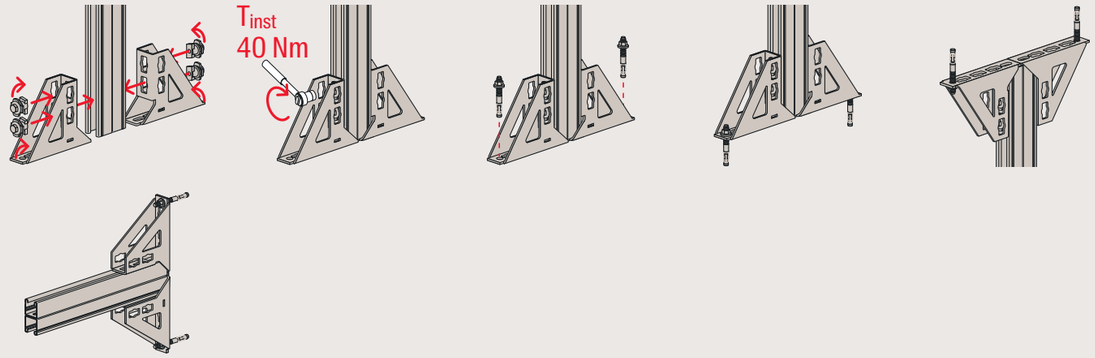
Substrate connection type 1

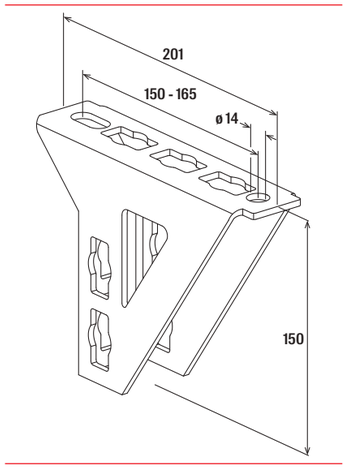


Substrate connection type 2



Substrate connection type 3



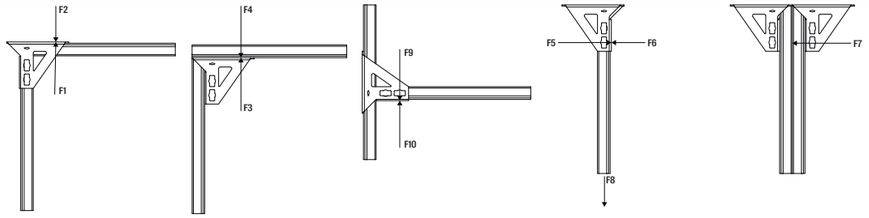


PUWF

Technical data

Item	Item no.	Fire test report	For profile	Sales unit [pcs]
PUWF	571851	Yes	FUS 21D, 41, 62, 41D	10

Loads



Item	Item no.	Max. recommended load $F1_{rec}$ [kN]	$F2_{rec}$ [kN]	$F3_{rec}$ [kN]	$F4_{rec}$ [kN]	$F5_{rec}$ [kN]	$F6_{rec}$ [kN]	$F7_{rec}$ [kN]	$F8_{rec}$ [kN]	$F9_{rec}$ [kN]	$F10_{rec}$ [kN]
PUWF	571851	7,04	4,89	6,18	5,23	8,65	15,18	16,51	8,29	6,1	4,81

Please note: Load tables for fire testing see chapter „Basics - good to know“.

Variable bracket PVB

Construction elements - Variable bracket PVB.

Massive bracing of cantilever arm

Applications

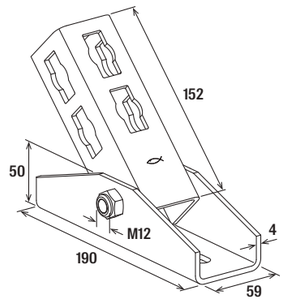
- Variable angular positioning of profile support in the push-through system.
- Bracket for installation with FUS channels from 0° to 180°.
- PVB: for use in dry interior areas.
- PVB zl: for indoor and outdoor application.
- PVB A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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 PVB and PVB zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PVB A4: stainless steel A4 (material no. 1.4401)



PVB

Loads Variable bracket PVB

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PVB	534960	542722	562838		5

See push-through connector PFCN for loads.

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.
- PSAE: for use in dry interior areas.
- PSAE zl: for indoor and outdoor application.
- PSAE A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

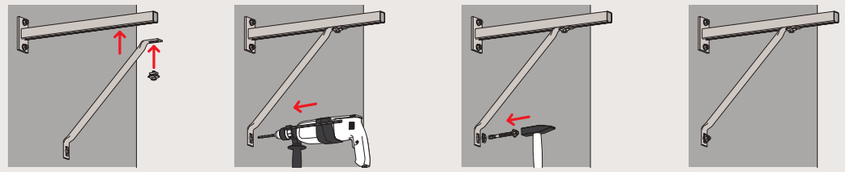
Advantages

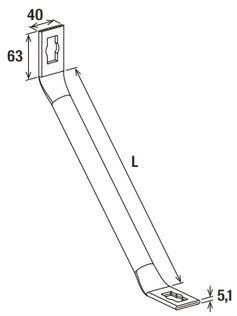
- The stable bracing element PSAE gives the supporting structure very high stability and safety.
- The holes in the base plate of the element make it compatible with the push-through connector PFCN.
- An additional PU-washer allows for fixing of elements with formholes directly onto a wall or ceiling by anchor or screw.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

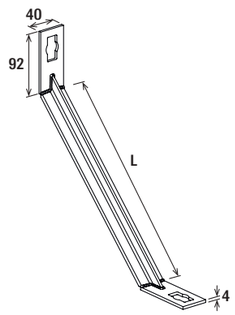
- Material PSAE: steel P235TR2 (material no. 1.0255) acc. to EN 10216-1
- Material PSAE zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PSAE A4: stainless steel A4 (material no. 1.4401)

Installation PSAE

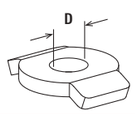




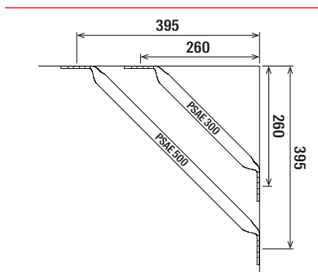
PSAE



PSAE zl



PU



PSAE 300 and PSAE 500

Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A4 Item no. A4	Length L [mm]	Sales unit [pcs]
PSAE 300	535269	542726	562839	300	10
PSAE 500	535270	542727	562840	500	10
PU 10.5	535271	542728	–	–	50
PU 10.5	–	–	562841	–	20
PU 12.5	535272	542729	–	–	50
PU 12.5	–	–	562842	–	20

See push-through connector PFCN for loads.

Flat fittings PFFF

Construction elements - Flat fittings PFFF

Waste water pipe

Applications

- Arrangement of simple channel constructions in the push-through system.
- For use in dry interior areas.

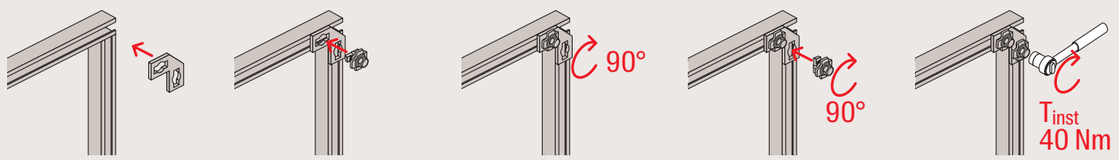
Advantages

- The holes in the flat fittings make them compatible with the push-through connector PFCN.
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

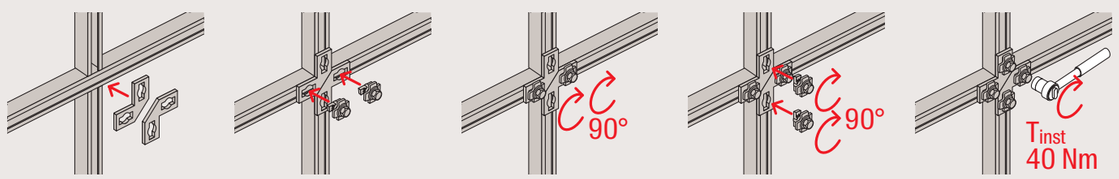
Properties

- Material PFFF and PFFF zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PFFF A4: stainless steel A4 (material no. 1.4401)

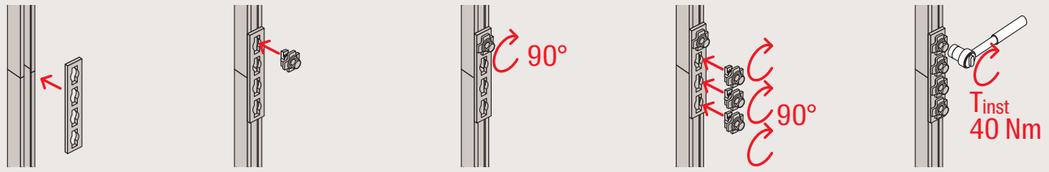
Installation Flat fitting PFFF 2L single

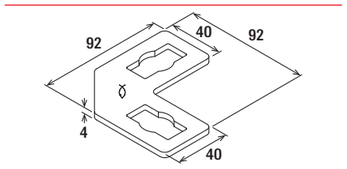


Installation Flat fitting PFFF 2L double

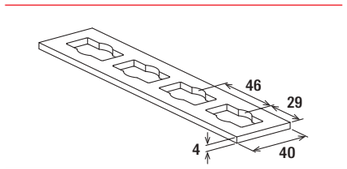


Installation Flat fitting PFFF 4L





PFFF 2L



PFFF 4L

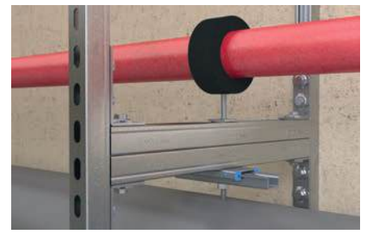
Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PFFF 2L	577099	577100	577101		20
PFFF 4L	535268	–	562828		25
PFFF 4L	–	542725	–		10

See push-through connector PFCN for loads.

Angle fitting PFAF

Construction elements - Angle fittings PFAF.



Frame constructions

Spiral airduct on cantilever

Applications

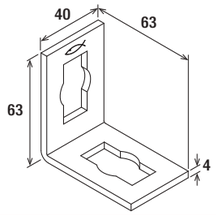
- Arrangement of simple channel constructions in the push-through system.
- PFAF: for use in dry interior areas.
- PFAF zl: for indoor and outdoor application.
- PFAF A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

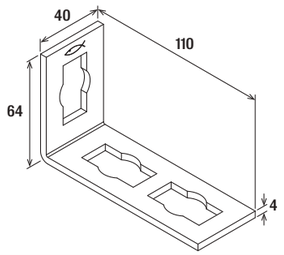
- The holes in the angle fittings make them compatible with the push-through connector PFCN.
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

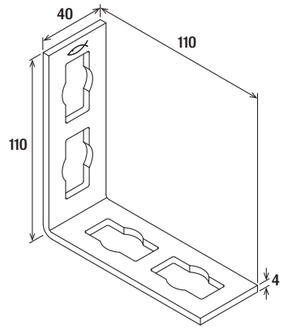
- Material PFAF and PFAF zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PFAF A4: stainless steel A4 (material no. 1.4401)



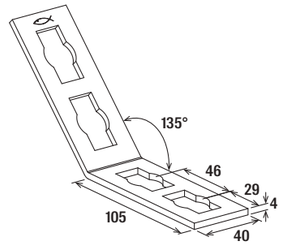
PFAF 2



PFAF 3



PFAF 4



PFAF 4/135°

Technical data

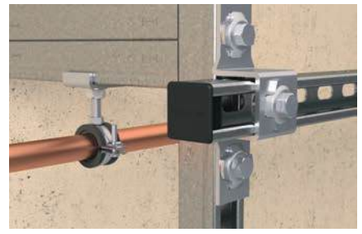
	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PFAF 2	533735	542711	562829		25
PFAF 3	533736	542712	562830		25
PFAF 4	535267	542724	562832		25
PFAF 4/135°	533737	542713	562831		20

See push-through connector PFCN for loads.

U-fitting PFUF

Construction elements - U-fitting PFUF.

Cross connection on channel



Cross connection on channel

Applications

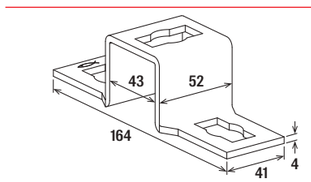
- Construction element for the production of multi-dimensional constructions with FUS channels using push-through connector PFCN.
- PFUF: for use in dry interior areas.
- PFUF zl: for indoor and outdoor application.
- PFUF A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- The various shapes of the U-fitting elements offer flexibility during the installation of channel constructions.
- The holes in the construction elements make them compatible with the push-through channel nut PFCN.
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

- Material PFUF and PFUF zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinclamella coated
- Material PFUF A4: stainless steel A4 (material no. 1.4401)



PFUF 41

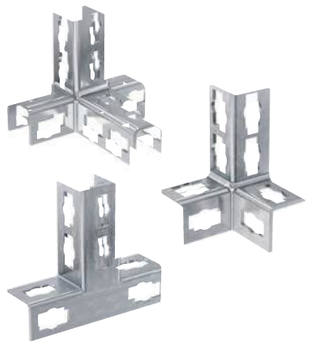
Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PFUF 41	533738	542714	–		25
PFUF 41	–	–	562836		10

See push-through connector PFCN for loads.

Multidimensional angles PFUF D

Connectors PFUF 2D, 3D and 4D for multidimensional constructions.



Frame constructions

Frame constructions

Applications

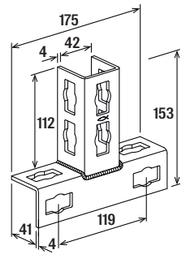
- Construction elements for multidimensional constructions with FUS channels connected by the push-through connector PFCN.
- PFUF D: for use in dry interior areas.
- PFUF D zl: for indoor and outdoor application.
- PFUF D A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

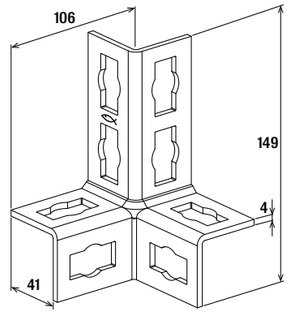
- The multidimensional PFUF construction elements enable multidimensional constructions in a very short time.
- The holes in the construction elements make them compatible with the push-through connector PFCN.
- The different shapes of the construction elements generate a high flexibility for channel constructions.
- Simple creation of channel constructions in connection with FUS channels and PFCN 41.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

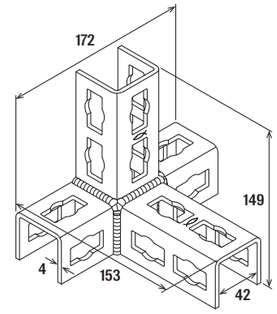
- Material PFUF D and PFUF D zl: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or zinc flake coated
- Material PFUF D A4: stainless steel A4 (material no. 1.4401)



PFUF 2D



PFUF 3D



PFUF 4D

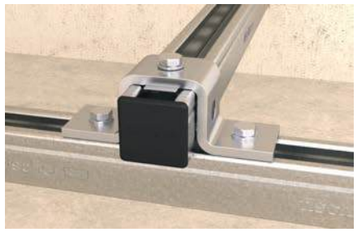
Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
PFUF 2D	563148	563149	563150		10
PFUF 3D	577094	569756	577095		10
PFUF 4D	535275	542732	562845		10

See push-through connector PFCN for loads.

Channel nut FCN Clix P

Channel nut for quick and easy fixing in FUS profiles.



Cross connection

Applications

- Connection of FUS channels and fixtures.
- For indoor and outdoor applications and environments with high stress to components due to corrosion.

Advantages

- 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 serration on the sliding nut provides a secure hold in the FUS channel.
- Installation by rotating 90° enables post-installation in installed channel.

Properties

- Material FCN Clix P and FCN Clix P hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025, plastic Nylon PA6
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material FCN Clix P A4: stainless steel A4 (material no. 1.4401)

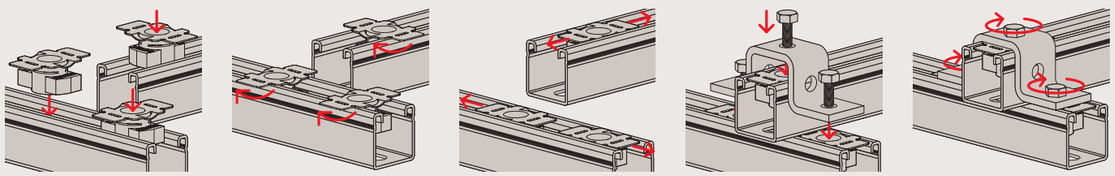
Certificates / Features

R 120

R 30 MLAR

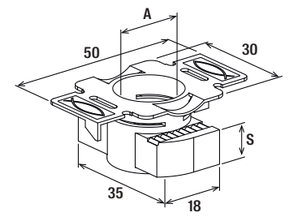
BZS S 25-315

Installation FCN Clix P



See also:

Product family Channel nut FCN Clix M
Page 174

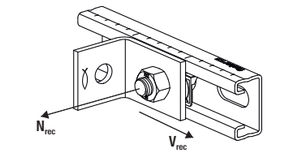


FCN Clix P

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Approval	Fire test report	Thread	Thickness	Sales unit
					A	S	
	Item no.	Item no.	ETA			[mm]	[pcs]
Item	gvz	hdg / zl					
FCN Clix P 6	559757	–	–	No	M6	6.0	50
FCN Clix P 8	559758	559765	–	No	M8	6.0	50
FCN Clix P 10	559759	559766	●	Yes	M10	8.0	50
FCN Clix P 12	559760	559767	●	Yes	M12	9.5	50

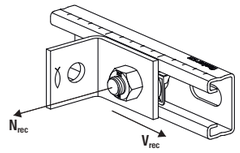
ETA approval only for galvanized steel variants.



FCN Clix P

Loads Channel nut FCN Clix P zp / hdg

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Approval	Max. recommended tension load for FUS 1,5 mm	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Max. recommended shear load for FUS 2,0 mm	Max. recommended shear load for FUS 2,5 mm	Tightening torque for screw grade ≥ 8.8	Sales unit
				N_{rec}	N_{rec}	N_{rec}	V_{rec}	V_{rec}	T_{inst}	
	Item no.	Item no.	ETA	[kN]	[kN]	[kN]	[kN]	[kN]	[Nm]	[pcs]
Item	gvz	hdg / zl								
FCN Clix P 6	559757	–	–	2.5	3.0	3.0	3.0	3.0	10	50
FCN Clix P 8	559758	–	–	3.0	4.0	4.0	4.0	4.0	20	50
FCN Clix P 8	–	559765	–	3.0	4.0	4.0	1.0	1.0	20	50
FCN Clix P 10	559759	–	●	4.0	5.0	8.0	5.0	8.0	40	50
FCN Clix P 10	–	559766	–	4.0	5.0	8.0	1.5	1.5	40	50
FCN Clix P 12	559760	–	●	4.0	5.0	8.0	5.0	8.0	50	50
FCN Clix P 12	–	559767	–	4.0	5.0	8.0	2.0	2.0	50	50



FCN Clix P

Loads Channel nut FCN Clix P A4

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]	Max. recommended shear load for FUS 2,0 mm V_{rec} [kN]	Max. recommended shear load for FUS 2,5 mm V_{rec} [kN]	Sales unit [pcs]
FCN Clix P 8 A4	**559754**	4.0	4.0	4.0	4.0	25
FCN Clix P 10 A4	**559755**	5.0	8.0	5.0	8.0	25
FCN Clix P 12 A4	**559756**	5.0	8.0	5.0	8.0	25

Channel nut FCN Clix M

Channel nut for quick and easy fixing in FUS profiles.

Connection on channel

Applications

- Connection of pipe clamps to FUS channel under the use of threaded rods.
- For use in dry interior areas.

Advantages

- The sliding nut design enables a quick and easy setting in the channel.
- The serration on the sliding nut provides a secure hold in the FUS channel.
- Installation by rotating 90° enables post-installation in installed channel.

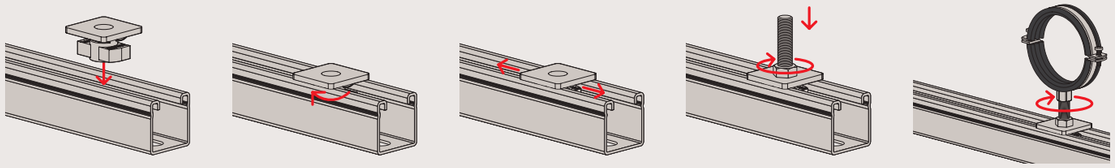
Properties

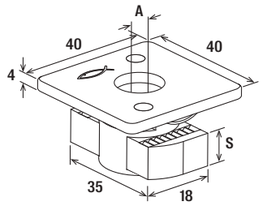
- Material FCN Clix M and FCN Clix M hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Material plastic: Nylon PA6
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material FCN Clix M A4: stainless steel A4 (material no. 1.4401)

Certificates / Features

BZS S 25-315

Installation FCN Clix M



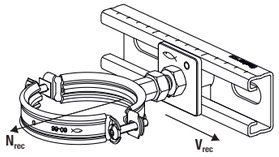


FCN Clix M

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	Approval	Fire test report	Thread	Thickness	Sales unit
	Item no.	Item no.	Item no.	ETA		A	S [mm]	[pcs]
Item	gvz	hdg / zl	A4					
FCN Clix M 6	559761	–	–	–	No	M6	6.0	50
FCN Clix M 8	559762	559768	–	–	No	M8	6.0	50
FCN Clix M 8	–	–	559752	–	No	M8	6.0	25
FCN Clix M 10	559763	559769	–	●	Yes	M10	8.0	50
FCN Clix M 10	–	–	559753	–	Yes	M10	8.0	25
FCN Clix M 12	559764	559770	–	●	Yes	M12	9.5	50
FCN Clix M 12	–	–	562663	–	Yes	M12	9.5	25

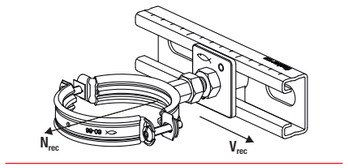
ETA approval only for galvanized steel variants.



FCN Clix M

Loads Channel nut FCN Clix M gvz / hdg

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Approval	Max. recommended tension load for FUS 1,5 mm	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Tightening torque for screw grade ≥ 4.6	Sales unit
	Item no.	Item no.	ETA	N_{rec} [kN]	N_{rec} [kN]	N_{rec} [kN]	T_{inst} [Nm]	[pcs]
Item	gvz	hdg / zl						
FCN Clix M 6	559761	–	–	2.5	3.0	3.0	5	50
FCN Clix M 8	559762	559768	–	3.0	4.0	4.0	10	50
FCN Clix M 10	559763	559769	●	4.0	5.0	8.0	15	50
FCN Clix M 12	559764	559770	●	4.0	5.0	8.0	20	50



FCN Clix M

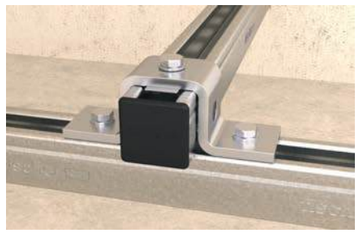
Loads Channel nut FCN Clix M A4

	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]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item					
FCN Clix M 8	559752	4.0	4.0	10	25
FCN Clix M 10	559753	5.0	8.0	15	25
FCN Clix M 12	562663	5.0	8.0	20	25

Channel nut FCN

Connector - Channel nut FCN.

Lightweight installation on cantilever



Cross connection

Applications

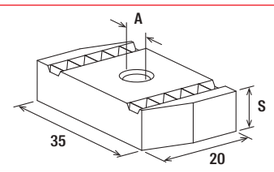
- Simple hammer-head nut for installation in FUS channels
- The FCN is suitable for the connection of different fixtures and pipe clamps with the channel.
- FCN: for use in dry interior areas.
- FCN hdg: for indoor and outdoor application.
- FCN A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- The serration on the sliding nut provides a secure hold in the FUS channel.

Properties

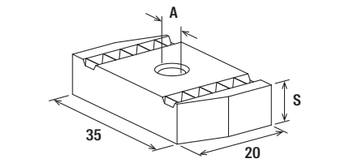
- Material FCN and FCN hdg: steel with min. tensile strength of 415 N/mm²
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material FCN A4: stainless steel A4 (material no. 1.4401)



FCN

Technical data

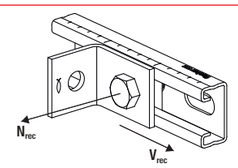
	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	Thread	Thickness	Sales unit
				A	S	
	Item no.	Item no.	Item no.		[mm]	[pcs]
Item	gvz	hdg / zl	A4			
FCN 6	077405	–	–	M6	6.0	100
FCN 8	077407	–	–	M8	6.0	100
FCN 10	077409	–	–	M10	8.0	100



FCN

Technical data

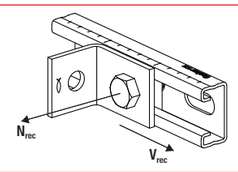
	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	Thread	Thickness	Sales unit
				A	S	
	Item no.	Item no.	Item no.		[mm]	[pcs]
Item	gvz	hdg / zl	A4			
FCN 12	077411	–	–	M12	9.0	100
FCN 16	561773	561774	–	M16	12.0	100
FCN 16	–	–	562664	M16	12.0	50



FCN

Loads Channel nut FCN gvz / hdg

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Max. recommended tension load for FUS 1,5 mm	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Max. recommended shear load for FUS 1,5 mm	Max. recommended shear load for FUS 2,0/2,5 mm	Tightening torque for screw grade ≥ 8.8	Sales unit
			N_{rec}	N_{rec}	N_{rec}	V_{rec}	V_{rec}	T_{inst}	
	Item no.	Item no.	[kN]	[kN]	[kN]	[kN]	[kN]	[Nm]	[pcs]
Item	gvz	hdg / zl							
FCN 6	077405	–	2.5	3.0	3.0	1.0	1.0	10	100
FCN 8	077407	–	3.0	4.0	4.0	1.5	2.0	20	100
FCN 10	077409	–	4.0	5.0	8.0	2.0	2.5	40	100
FCN 12	077411	–	4.0	5.0	8.0	2.0	2.5	50	100
FCN 16	561773	561774	4.0	5.0	8.0	2.0	3.0	50	100



FCN

Loads Channel nut FCN A4

	Item no.	Max. recommended tension load for FUS 2,0 mm	Max. recommended tension load for FUS 2,5 mm	Max. recommended shear load for FUS 2,0/2,5 mm	Tightening torque for screw grade ≥ 8.8	Sales unit
		N_{rec}	N_{rec}	V_{rec}	T_{inst}	
		[kN]	[kN]	[kN]	[Nm]	[pcs]
Item						
FCN 16	562664	5.0	8.0	3.0	50	50

T-head bolt FCN Clix S

Hammer-head bolt for quick and easy fixing of pipe clamps in FUS profiles.

Lightweight installation on cantilever

Connection on channel

Applications

- For the quick connection of pipe clamps with FUS channels.
- For use in dry interior areas.

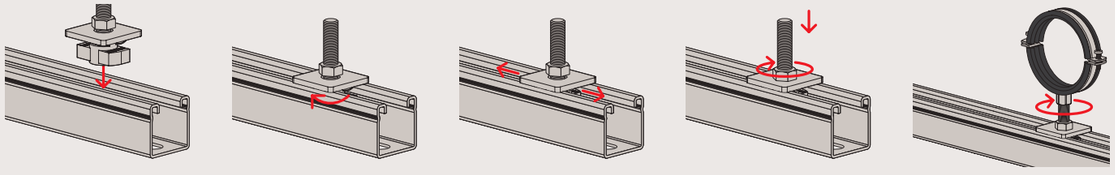
Advantages

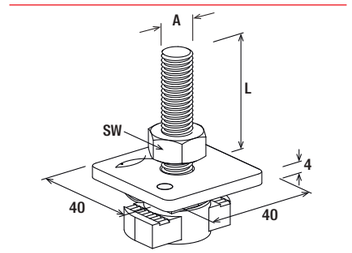
- The design of the FCN Clix S fits to the FUS channel profile and allows for a quick and easy installation.
- The spring effect of the FCN Clix S guarantees simple and precise positioning in the channel.
- Installation by rotating 90° enables post-installation to installed channel.
- The serration on the T-head bolt provides a secure hold in FUS channels.
- The pre-mounted threaded stud allows for direct mounting of the pipe clamps to the channel without additional material.

Properties

- Washer: S235JR (material no. 1.0038)
- Threaded stud: DIN 976 steel 4.8
- Hexagonal nut: resistance class 8
- Plastic cage: Polyamide PA 6
- Zinc plating: electro zinc-plated

Installation FCN Clix S

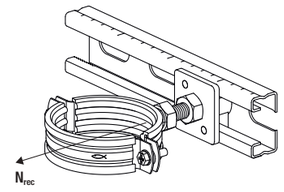




FCN Clix S

Technical data

Item	Item no.	Thread A [mm]	Length L [mm]	Width across nut SW [mm]	Sales unit [pcs]
FCN Clix S 8x30	567462	M8	30	13	50
FCN Clix S 8x40	567463	M8	40	13	50
FCN Clix S 8x60	567464	M8	60	13	50
FCN Clix S 8x80	567465	M8	80	13	50
FCN Clix S 8x100	567466	M8	100	13	50
FCN Clix S 10x30	567467	M10	30	17	50
FCN Clix S 10x40	567468	M10	40	17	50
FCN Clix S 10x60	567469	M10	60	17	50
FCN Clix S 10x100	567470	M10	100	17	50
FCN Clix S 12x40	567471	M12	40	19	50
FCN Clix S 12x60	567472	M12	60	19	50



FCN Clix S

Loads T-head bolt FCN 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]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FCN Clix S 8x30	567462	3.0	4.0	4.0	10	50
FCN Clix S 8x40	567463	3.0	4.0	4.0	10	50
FCN Clix S 8x60	567464	3.0	4.0	4.0	10	50
FCN Clix S 8x80	567465	3.0	4.0	4.0	10	50
FCN Clix S 8x100	567466	3.0	4.0	4.0	10	50
FCN Clix S 10x30	567467	4.0	5.0	8.0	15	50
FCN Clix S 10x40	567468	4.0	5.0	8.0	15	50
FCN Clix S 10x60	567469	4.0	5.0	8.0	15	50
FCN Clix S 10x100	567470	4.0	5.0	8.0	15	50
FCN Clix S 12x40	567471	4.0	5.0	8.0	20	50
FCN Clix S 12x60	567472	4.0	5.0	8.0	20	50

T-head bolt FCSN

Hammer-head bolt for easy fixing in FUS profiles.

Lightweight installation on cantilever

Connection on channel

Applications

- Connection of pipe clamps to the channel.
- For use in dry interior areas.

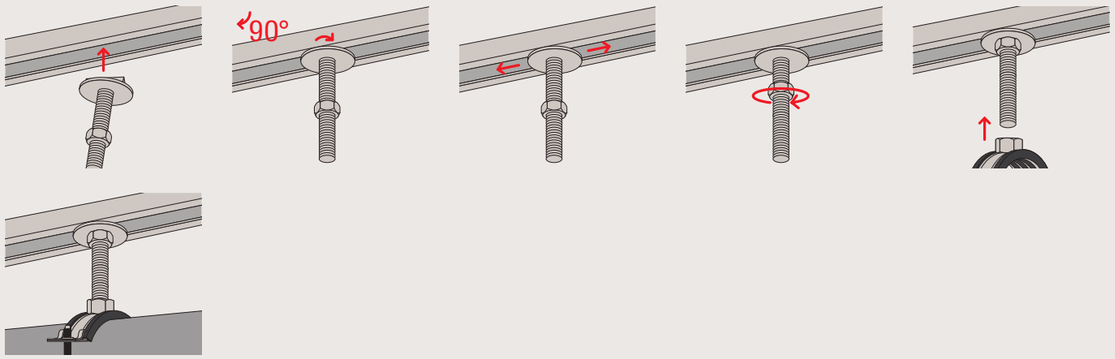
Advantages

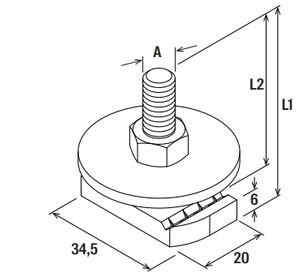
- The hammer-head nut design for an easy setting in the channel.
- Installation by rotating 90° enables post-installation in installed channel.

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

Installation FCSN

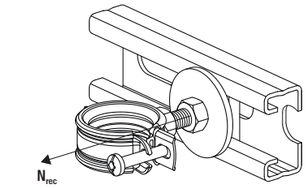




FCSN

Technical data

Item	Item no.	Thread A	Length L1 [mm]	Length L2 [mm]	Sales unit [pcs]
FCSN M8 x 30	**092960**	M8	36	30	50
FCSN M8 x 40	**092961**	M8	46	40	50
FCSN M8 x 50	**093354**	M8	56	50	50
FCSN M8 x 60	**093355**	M8	66	60	50
FCSN M10 x 30	**093360**	M10	38	30	50
FCSN M10 x 40	**093361**	M10	48	40	50
FCSN M10 x 50	**093362**	M10	58	50	50
FCSN M10 x 60	**093363**	M10	68	60	50
FCSN M12 x 30	**093366**	M12	39	30	50
FCSN M12 x 40	**093367**	M12	49	40	50



FCSN

LoadsT-Head bolt FSCN

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]	Sales unit [pcs]
FCSN M8 x 30	**092960**	3.0	4.0	4.0	50
FCSN M8 x 40	**092961**	3.0	4.0	4.0	50
FCSN M8 x 50	**093354**	3.0	4.0	4.0	50
FCSN M8 x 60	**093355**	3.0	4.0	4.0	50
FCSN M10 x 30	**093360**	4.0	4.0	5.0	50
FCSN M10 x 40	**093361**	4.0	4.0	5.0	50
FCSN M10 x 50	**093362**	4.0	4.0	5.0	50
FCSN M10 x 60	**093363**	4.0	4.0	5.0	50
FCSN M12 x 30	**093366**	4.0	4.0	5.0	50
FCSN M12 x 40	**093367**	4.0	4.0	5.0	50

Adjustment wheel FAW

Construction Element - Adjusting Wheel FAW - Channel fastening without tools, fire tested.

Applications

- Fastening and height adjustment of suspended channels FUS with threaded rods.
- Use in pairs for fastening is recommended.
- For use in dry indoor area.

Advantages

- The fire test report according to MLAR/ EN1366 guarantees objectively tested functional safety.
- The height adjustment and fixing of the FUS channel with the adjustment wheel FAW is possible without tools (hand-tightened).
- Guidance and stabilization of the FUS channel, as well as central alignment, is provided by the engagement of the adjustment wheel FAW in the open side of the rail.
- The quick installation of the suspended FUS channel on threaded rods is provided by the complete adjusting wheel FAW as a replacement for the combination of retaining claw, slider and nut.
- Subsequent adjustment using the adjusting wheel FAW under load can be made easier using a hook wrench (DIN 1810-A40-42).

Properties

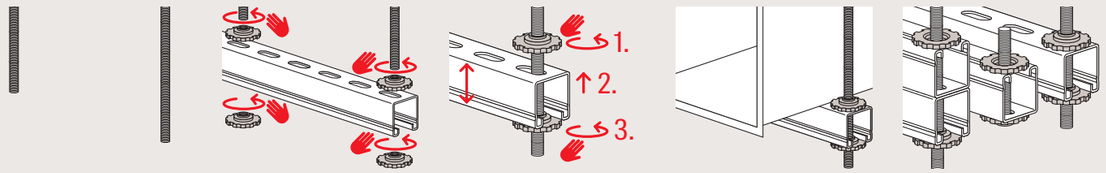
- Material: steel
- Zinc plating: electro zinc-plated

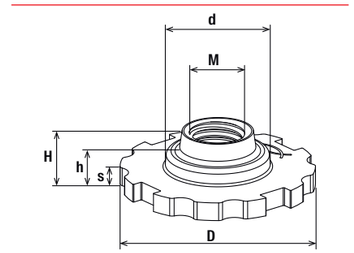
Certificates / Features

R 120

R 30 MLAR

Installation Adjustment wheel FAW





Technical data

Item	Item no.	Thread M	Diameter d [mm]	Outer diameter D [mm]	Height H [mm]	Height h [mm]	Thickness S [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FAW M8	**576592**	M8	21.5	41	10	7.5	4.0	6.50	50
FAW M10	**576593**	M10	21.5	41	10	7.5	4.0	10.40	50
FAW M12	**576594**	M12	21.5	41	12	7.5	4.0	10.90	50

Please note: Load tables for fire testing see Brochure „Fire proof pipe-installation“

Channel washer HK 41

Connector - Channel washer HK.

Lateral pipe mounting at channel

Channel installation at ceiling

Applications

- The channel washer HK is used for stable connections and to strengthen the FUS profile for a fixing to the substrate.
- HK 41: for use in dry interior areas.
- HK 41 hdg: for indoor and outdoor application.
- HK 41 A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- Perfect connection with the FUS channel thanks to laterally curved contours.
- The shape of the channel washer makes the push-through installations of channel profiles quick and easy.
- Fire resistance classification R120 & German model pipeline system guideline MLAR R30.

Properties

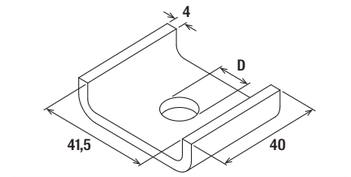
- Material HK 41 and HK 41 hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material HK 41 A4: stainless steel A4 (material no. 1.4401) acc. to DIN EN 10088-1

Certificates / Features

R 120

R 30 MLAR

BZS S 25-315



HK 41

Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A4 Item no. A4	Approval ETA	Fire test report	Hole-ø D [mm]	Sales unit [pcs]
HK 41 8.5	547492	–	–	–	–	8.5	50
HK 41 10.5	547493	547495	–	●	Yes	10.5	50
HK 41 12.5	547494	547496	–	●	Yes	12.5	50
HK 41 12.5	–	–	559750	–	Yes	12.5	25
HK 41 17	561253	561254	–	–	–	17	50
HK 41 17	–	–	562665	–	–	17	25

ETA approval only for galvanized steel variants.

Saddle flange SF L

Construction element - Saddle flange SF L

Pipe installation in escape route

Cantilever with saddle flange

Applications

- Construction element between channel and building-structures.
- For use in dry interior areas.

Certificates / Features

R 120

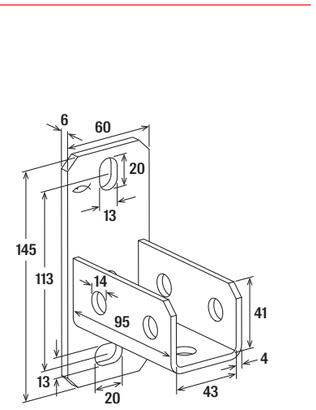
R 30 MLAR

Advantages

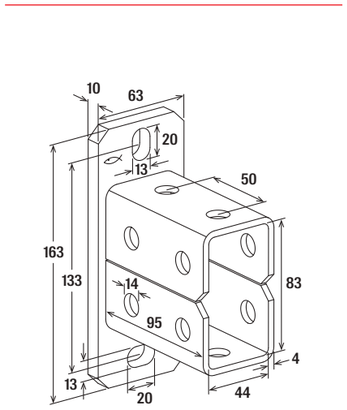
- The perfect-fit saddle of the SF enables a simple installation by inserting the channel.
- The saddle flange's stable design offers a secure hold for a load-bearing construction.
- Fire resistance classification R120 & German model pipeline system guideline MLAR R30.

Properties

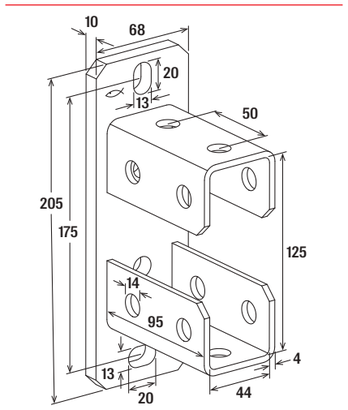
- Material base plate (SF and SF hdg): steel DC01 (material no. 1.0330) acc. to DIN EN 10139
- Material U-Profile (SF and SF hdg): steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material SF A4: stainless steel A4 (material no. 1.4401) acc. to DIN EN 10088-1



SF L 41



SF L 82



SF L 124

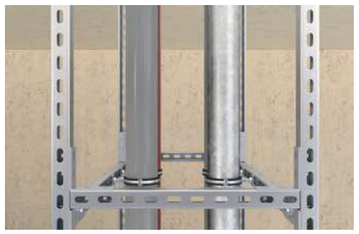
Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A4 Item no. A4	Fire test report	For profile	Sales unit [pcs]
SF L 41	504355	517421	504522	Yes	21, 41, 21D, 62	10
SF L 82	504357	538125	–	–	41	5
SF L 124	504358	538126	–	–	62	5

See channel nut FCN Clix P for loads.

Universal angle UWS

Construction element - Universal angle UWS.



3D-frame constructions

Applications

- Universal angle for the reinforcement of supporting structures.
- UWS: for use in dry interior areas.
- UWS hdg: for indoor and outdoor application.

Advantages

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

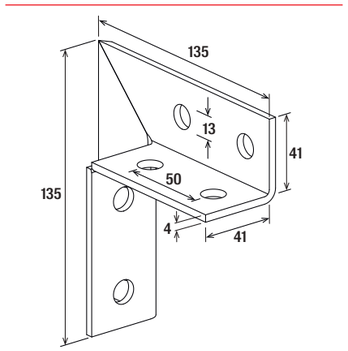
Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised

Certificates / Features

R 120

R 30 MLAR



UWS

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated		Sales unit
	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl		
UWS	049479	538115		10

See channel nut FCN Clix P for loads.

Angle bracket WK

Construction element - Angle bracket WK.

Heavy drainage pipe under angle bracket

Solid frame construction

Applications

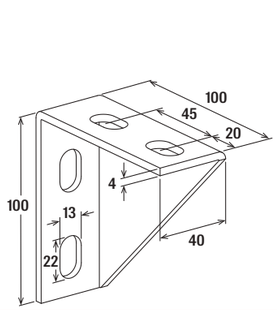
- Stable angle bracket for stiffening FUS channel constructions and for fixing pipelines.
- WK: for use in dry interior areas.
- WK hdg: for indoor and outdoor application.

Advantages

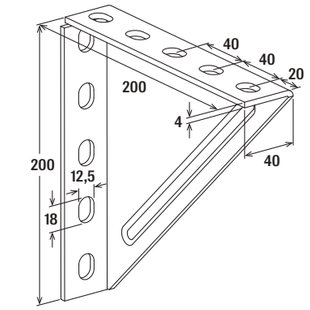
- The design of the angle bracket allows for the fixing of pipe clamps or channels.
- The stable angle ensures a very high level of stability and safety to the structure.

Properties

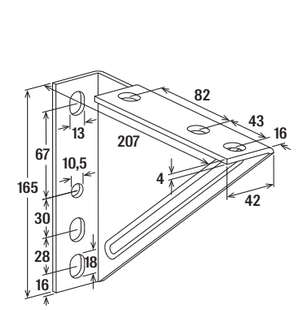
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated or hot-dip-galvanised



WK 100/100



WK 200/200



WK 207/165

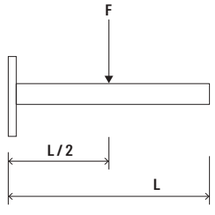
Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl		Sales unit [pcs]
WK 100/100	063559	538117		5
WK 200/200	079570	538118		5
WK 207/165	079571	–		6

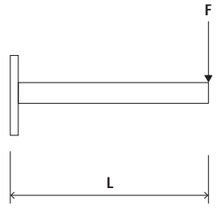
Loads

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Sales unit [pcs]
WK 100/100	063559	538117	–	4.00	5
WK 200/200	079570	538118	4.00	1.80	5
WK 207/165	079571	–	–	1.80	6

Load case 1



Load case 2



Flat fitting FFF

Construction elements - Flat fittings FFF.

Waste water pipe

Applications

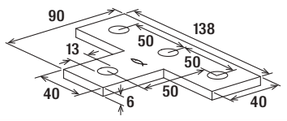
- Construction elements for the joining or strengthening of simple channel constructions.
- FFF: for use in dry interior areas.
- FFF hdg: for indoor and outdoor application.

Advantages

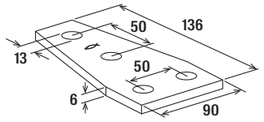
- The various shapes of the flat fittings offer flexibility when it comes to the installation of channel constructions.
- The holes in the flat fittings guarantee a system fit with the FCN Clix P.
- Quick assembly by 90° rotation of the push-through connector PFCN 41 in the channel.

Properties

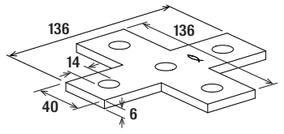
- Material FFF: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Material FFF 5C hdg: steel Q235B (equivalent to S235JR)
- Zinc plating: electro zinc-plated or hot-dip galvanised



FFF 4T



FFF 4D

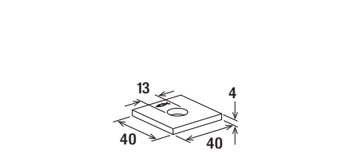


FFF 5C

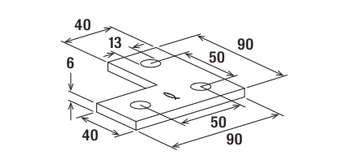
Mounting bracket FFF 4D / 4T / 5C

	Galvanised steel	Hot-dip galvanised / Zinc flake coated		Sales unit
	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl		
FFF 4T	504500	537583		25
FFF 4D	504368	537584		25
FFF 5C	553073	553075		20

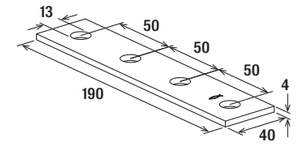
See channel nut FCN Clix P for loads.



FFF 1



FFF 3L



FFF 4

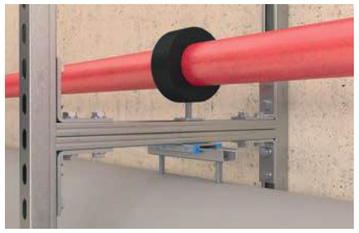
Mounting bracket FFF 1 / 3L / 4

	Galvanised steel	Hot-dip galvanised / Zinc flake coated		Sales unit
	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl		
FFF 1	547500	547506		25
FFF 3L	504498	537581		25
FFF 4	547501	547507		25

See channel nut FCN Clix P for loads.

Angle fitting FAF

Construction elements - Angle fitting FAF.



Frame constructions

Applications

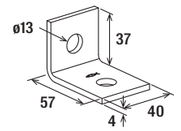
- Construction elements for the joining or strengthening of simple channel constructions.
- FAF: for use in dry interior areas.
- FAF hdg: for indoor and outdoor application.
- FAF A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

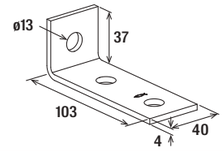
- The various shapes of the angle fittings offer flexibility when it comes to the installation of channel constructions.
- The holes in the angle fittings guarantee a system fit with the sliding nut FCN Clix P.

Properties

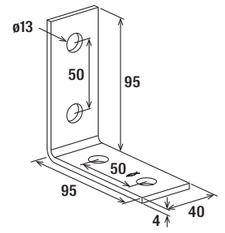
- Material FAF and FAF hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material FAF A4: stainless steel A4 (material no. 1.4401) acc. to DIN EN 10088-1



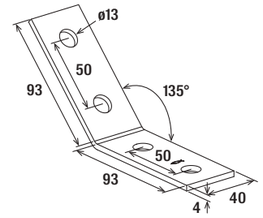
FAF 2



FAF 3



FAF 4



FAF 4/135°

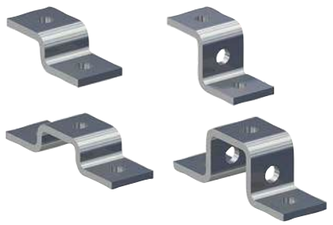
Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl	A4 Item no. A4		Sales unit [pcs]
FAF 2	547502	547508	547512		25
FAF 3	547503	547509	–		25
FAF 4	547504	547510	547513		25
FAF 4/135°	547505	547511	547514		25

See channel nut FCN Clix P for loads.

Z-Fitting FZF, U-Fitting FUF

Construction elements - Z-Fitting FZF, U-Fitting FUF.



Cross connection on channel

Applications

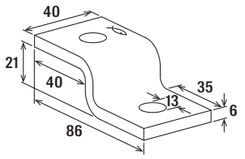
- Construction elements for multi-dimensional channel constructions.
- FZF, FUF: for use in dry interior areas.
- FZF, FUF hdg: for indoor and outdoor application.

Advantages

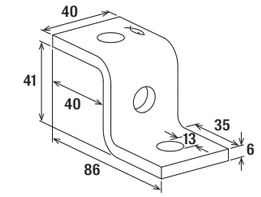
- The various shapes of the Z- and U-Fittings offer flexibility during the installation of channel constructions.
- The holes in the Z- and U-Fittings make them compatible with the FCN Clix P.

Properties

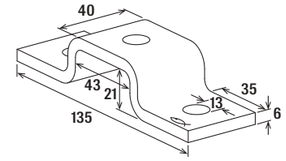
- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Material FUF 62 hdg: steel Q235B (equivalent to S235JR)
- Zinc plating: electro zinc-plated or hot-dip galvanised



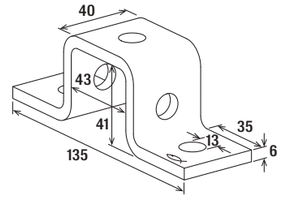
FZF 21



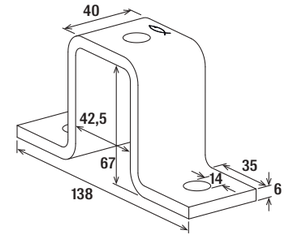
FZF 41



FUF 21



FUF 41



FUF 62

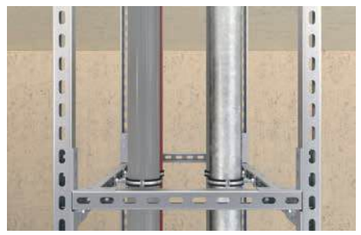
Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl		Sales unit [pcs]
FZF 21	504375	–		25
FZF 41	504515	–		25
FUF 21	504376	537588		25
FUF 41	504377	537589		25
FUF 62	553076	553083		15

See channel nut FCN Clix P for loads.

Multidimensional angle FUF

Construction elements - Mounting brackets FUF.



3D-frame constructions

Applications

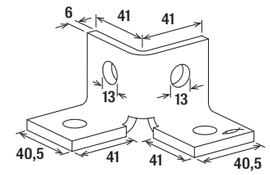
- Construction elements for multi-dimensional channel constructions.
- FUF: For use in dry interior areas.
- FUF hdg: for indoor and outdoor application.

Advantages

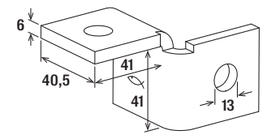
- The various shapes of the multidimensional angles FUF offer flexibility during the installation of channel constructions.
- The holes in the multidimensional angles make them compatible with the FCN Clix P.

Properties

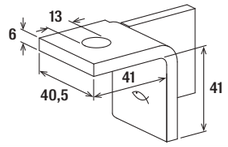
- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised



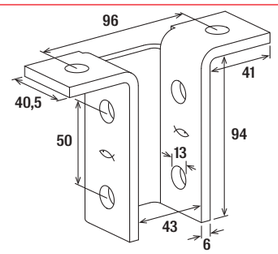
FUF 4Y



FUF 180°L



FUF 180°R



FUF 8T

Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised / Zinc flake coated Item no. hdg / zl		Sales unit [pcs]
FUF 4Y	504378	537585		20
FUF 180°L	504379	537586		20
FUF 180°R	504383	537587		20
FUF 8T	504387	537590		10

See channel nut FCN Clix P for loads.

Variable bracket VB

Construction element - Variable bracket VB.

Massive bracing of cantilever arm

Applications

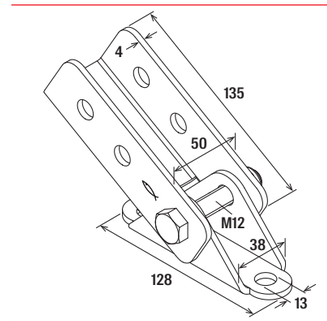
- Variable bracket to build up and strengthen supporting structures of FUS channel constructions with an angle from 0° to 180°.
- VB: for use in dry interior areas.
- VB hdg: for indoor and outdoor application.
- VB A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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 VB and VB hdg: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material VB A4: stainless steel A4 (material no. 1.4401)



VB

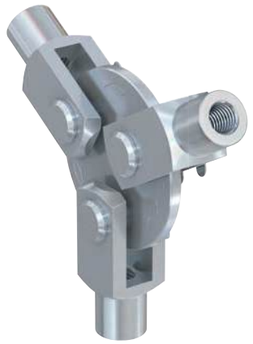
Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4		Sales unit
	Item no.	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl	A4		
VB	545650	545771	563574		5

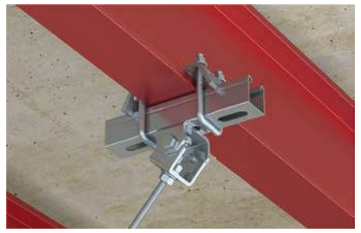
See channel nut FCN Clix P for loads.

Bracing element FYJB

Variable bracing element FYJB for bracing and suspending installation grids made of FUS channel profiles.



Installation grid with FYJB



Connection to steal beam

Applications

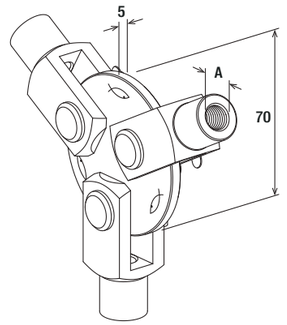
- Variable bracing element for bracing installation grids made of FUS channel profiles to the steel structure.
- For use with M12 threaded rods.
- For use in dry interior areas.

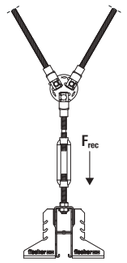
Advantages

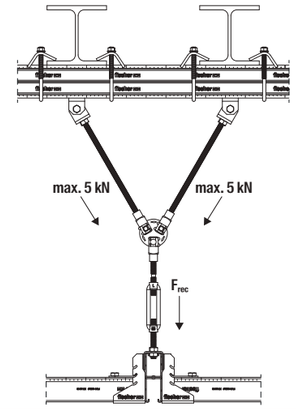
- The design of the FYJB bracing element allows bracing at any angle using ordinary threaded rods.
- In conjunction with the SPS turnbuckle, the FYJB bracing element enables height adjustment and thus an easy way to align FUS channel systems, especially installation grids, horizontally.
- High stability thanks to robust construction to accommodate high loads.
- Optimal addition to our cross connectors FVS for setting up an installation grid in production halls, warehouses or comparable buildings.

Properties

- Material round plate and bolt: steel S235JR (material no. 1.0038)
- Material clevises: steel 11SMnPb30+C (material no. 1.0718)
- Material pin lock: spring steel
- Zinc plating: electro zinc-plated







FYJB

Technical data

	Item no.	Thread A	Max. recom. load FYJB F_{rec} [kN]	Max. recom. load FYJB with FUH13, TKR 82, and FUS 62 profile F_{rec} [kN]	Sales unit [pcs]
Item					
FYJB M12	**569185**	M12	13	10	10

Universal hinge FUH

Construction elements - Universal hinge FUH.

Inclined bracing for installation grid

Applications

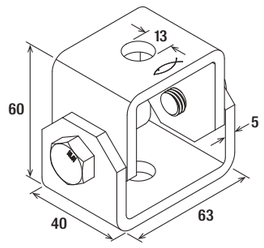
- Variable construction element for bracing with threaded rods or to fix pipelines to sloped substructures.
- Can be attached directly to the underground or to FUS channels.
- Flexible use especially for sloped substructures or undergrounds.
- For use in dry interior areas.

Advantages

- Flexible solution for many applications such as fixing of pipelines to sloped undergrounds or bracing with threaded rods.
- Free adjustable angle from 0° up to 180°.
- Easy to use.

Properties

- Material: steel S235JR (material no. 1.0037)
- Zinc plating: electro zinc-plated

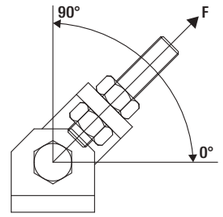


FUH

Technical data

	Galvanised steel Item no.	Hot-dip galvanised / Zinc flake coated Item no.		Sales unit [pcs]
Item	gvz	hdg / zl		
FUH 13	543065	573141		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.

Bracing bracket FTRB 45

Bracing bracket for easy reinforcement of channel constructions

Heavy pipe on cantilever

Longitudinal pipe bracing with FTRB 45

Applications

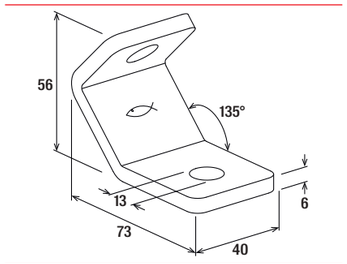
- Bracing element for easy stabilisation of FUS channel constructions and cantilever arms using threaded rods
- FTRB zp: For dry interior areas
- FTRB hdg: For indoor and outdoor use

Advantages

- Easy bracing or stiffening using threaded rods
- Allows the reinforcement of channel structures using threaded rods
- Designed to be used as bracing for fixed points, FUS channel constructions and FCA cantilever arms

Properties

- Material: steel S235JR (material no. 1.0038)
- Zinc-plating: electro zinc-plated or hot-dip galvanised

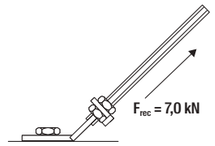


FTRB

Technical data

	Galvanised steel	Hot-dip galvanised / Zinc flake coated		Sales unit
	Item no.	Item no.		[pcs]
Item	gvz	hdg / zl		
FTRB 45	576536	576537		20

Loads



Beam clamp TKR

Beam clamp for fixing of profiles to steel girders.

Channel to steelbeam

Applications

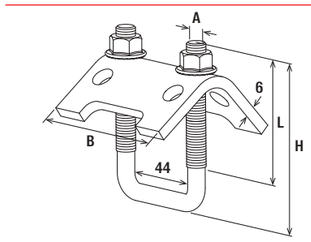
- Fixing to steel girders requires two clamps per connection.
- TKR: for use in dry interior areas.
- TKR hdg: for indoor and outdoor application.
- TKR A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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

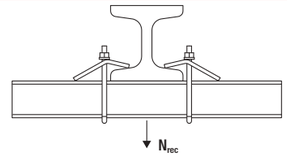
- Material plate/U-bolt pipe hanger: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Material hexagon nut: steel resistance class 8
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material TKR A4: stainless steel A4 (material no. 1.4401) acc. to DIN EN 10088-3



TKR

Technical data

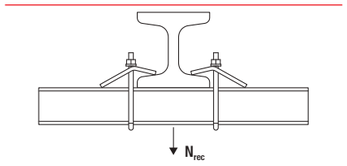
	Galvanised steel	Hot-dip galvanised / Zinc flake coated	A4	For profile	Thread	Width	Height	Length	Sales unit
					A	B	H	L	
	Item no.	Item no.	Item no.			[mm]	[mm]	[mm]	[pcs]
Item	gvz	hdg / zl	A4						
TKR 21 - 42	504363	–	–	FUS 21 + FUS 21D + FUS 41	M8	79	97	50	20
TKR 21 - 42	–	538122	–	FUS 21 + FUS 21D + FUS 41	M10	79	97	48	20
TKR 21 - 42	–	–	559751	FUS 21 + FUS 21D + FUS 41	M8	79	97	50	10
TKR 82	504366	538123	–	FUS 62 + FUS 41D	M10	79	137	80	20
TKR 82	–	–	562666	FUS 62 + FUS 41D	M10	79	137	80	10
TKR 124	504367	538124	–	FUS 62D	M10	79	179	80	10



TKR

Loads Beam clamp TKR gvz and hdg

	Galvanised steel	Hot-dip galvanised / Zinc flake coated	Max. recom. static load (centr. tension)	Installation torque	Max. clamping range girders	Sales unit
			N_{rec}	T_{inst}		
	Item no.	Item no.	[kN]	[Nm]	[mm]	[pcs]
Item	gvz	hdg / zl				
TKR 21 - 42	504363	–	5.00	15	25	20
TKR 21 - 42	–	538122	10.00	20	25	20
TKR 82	504366	538123	10.00	20	25	20
TKR 124	504367	538124	10.00	20	25	10



TKR

Loads Beam clamp TKR A4

	A4	Max. recom. static load (centr. tension)	Installation torque	Max. clamping range girders	Sales unit
	Item no.	N_{rec} [kN]	T_{inst} [Nm]	[mm]	[pcs]
Item	A4				
TKR 21 - 42	559751	10.00	20	25	10
TKR 82	562666	10.00	20	25	10

Beam clamp FHBC hdg

Beam clamp FHBC - 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 application.

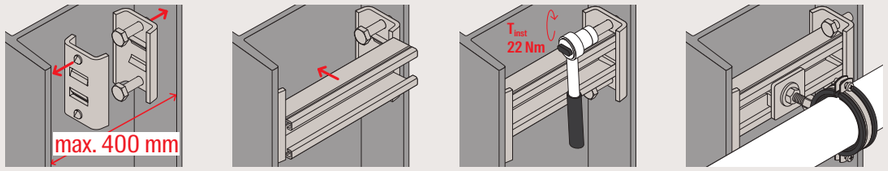
Advantages

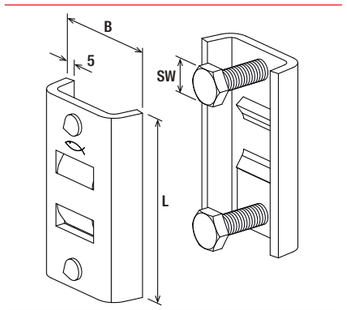
- Easy installation of FUS profile to the flanges of steel girders.
- The FHBC allows for the installation of FUS channels on steel girders without drilling.

Properties

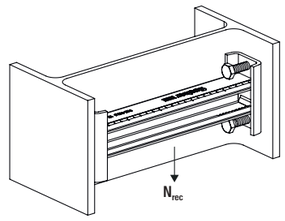
- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025 (74074882)
- Zinc plating: hot-dip galvanised

Installation FHBC





FHBC



FHBC

Technical data

	Item no.	Width B [mm]	Length L [mm]	Width across nut SW [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item							
FHBC	**557375**	55	90	17	3.00	22	10

Cross connector FVS II

Cross connector for creation of flexible installation grids made of FUS channels.

Applications

- Cross connectors for creation of an installation grid by utilisation of FUS channels.
- For use in dry interior areas.

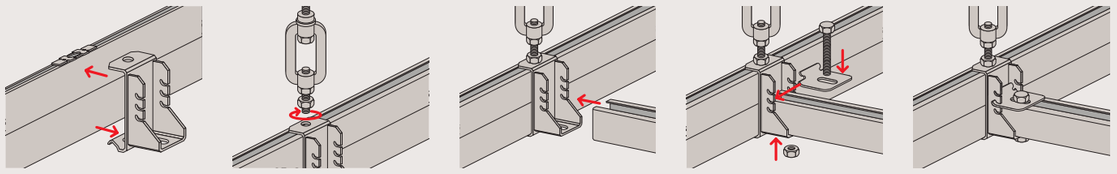
Advantages

- The design of the cross connector allows for a simple and time-saving creation of an installation grid.
- Ceiling suspension in combination with threaded rods
- Suitable for FUS channels (longitudinal): FUS 62D
- Suitable for FUS channels (transversal): FUS 41, FUS 21D, FUS 62, FUS 41D

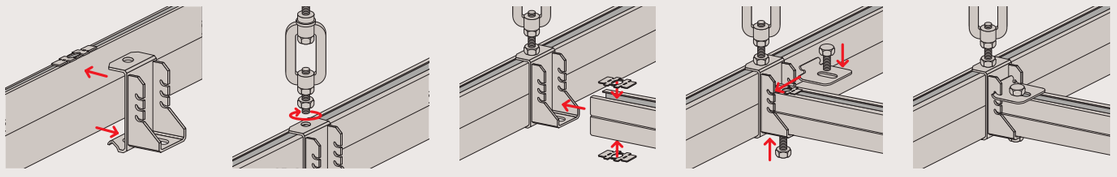
Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated

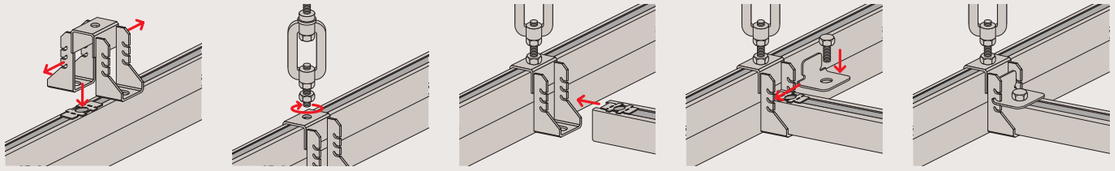
Installation FVS 3 with single channel

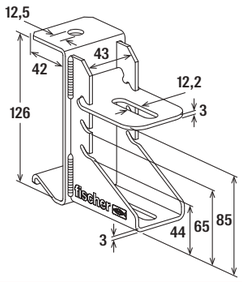


Installation FVS 3 with double channel

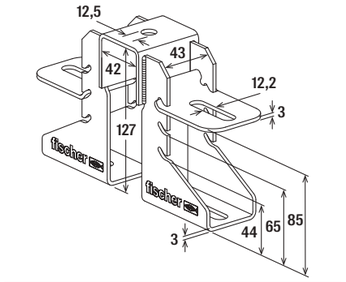


Installation FVS 4





FSV 3 II



FVS 4 II

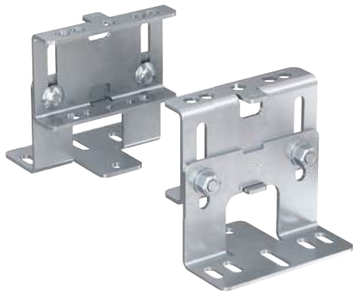
Technical data

Item	Item no.	For profile	Sales unit [pcs]
FVS 3 II	**543060**	FUS channel crosswise: FUS 41, FUS 21D, FUS 62, FUS 41D, FUS channel lengthwise: FUS 62D	8
FVS 4 II	**543063**	FUS channel crosswise: FUS 41, FUS 21D, FUS 62, FUS 41D, FUS channel lengthwise: FUS 62D	5

5
Fixed point and sliding elements

Fixed point saddle FFS-M / FFS-M2

The fixed point solutions for medium loads.



Hot water and circulation pipes

Media lines with thermal expansion

Applications

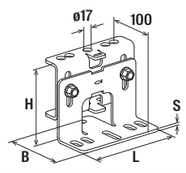
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

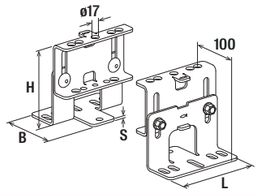
- The massive design of the fixed point and the massive subsoil connection allow the absorption of high loads for a stable and secure connection.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment of the fixed point allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The fixed point is suitable for mounting the FFPC fixed point solid clamp and FFRC refrigeration fixed point clamp for even more flexibility.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C



FFS-M



FFS-M2

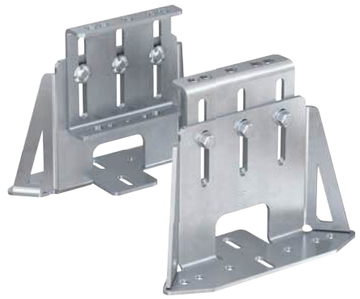
Technical data

	Item no.	Max. recom. pipe-ø	Length L [mm]	Width B [mm]	Thickness S [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item										
FFS-M	**569306**	168.3	180	130	5.0	120	180	9.0	80	2
FFS-M2	**569307**	168.3	180	130	5.0	120	180	23.0	80	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point saddle FFS-H / FFS-H2

The fixed point solutions for heavy loads.



Hot water and circulation pipes

Media lines with thermal expansion

Applications

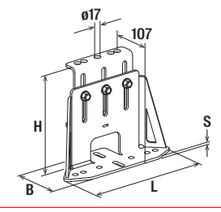
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

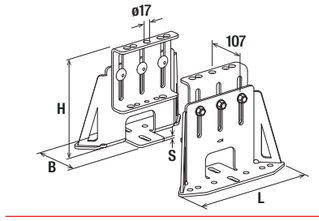
- The massive design of the fixed point and the massive subsoil connection allow the absorption of high loads for a stable and secure connection.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The fixed point is suitable for mounting the FFPC and FFRC for even more flexibility.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C



FFS-H



FFS-H2

Technical data

	Item no.	Max. recom. pipe-ø	Length L [mm]	Width B [mm]	Thickness S [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item										
FFS-H	**569308**	355.6	325	130	6.0	210	310	14.0	80	2
FFS-H2	**569309**	355.6	325	130	6.0	210	310	36.0	80	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point compact FFP-C

The fixed point solutions for light loads.

Media lines with thermal expansion

Applications

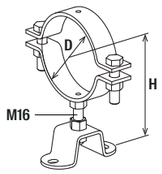
- Heating pipes
- Cooling lines
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

- The compact design of the fixed point enables a small distance to the substrate and ensures safe transfer of the occurring forces into the substrate.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamp FFPC and the threaded rod G16 (chapter „Accessories“ Art. no. 568434) are not included in the set.



FFP-C

Technical data

Item	Item no.	Max. recom. pipe-ø D	Min. construction height H [mm]	Max. construction height H [mm]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-C	**567696**	60.3	120	150	5.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point light FFP-L / FFP-L2

The fixed point solutions for light loads.

Media lines with thermal expansion

Applications

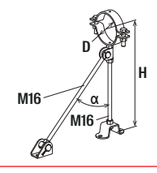
- Heating pipes
- Cooling lines
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

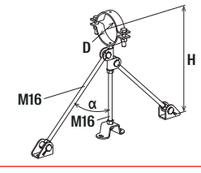
- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamp FFPC and threaded rod G16 (chapter „Accessories“ Art. no. 568434) are not included in the set.



FFP-L



FFP-L2

Technical data

Item	Item no.	Max. recom. pipe-ø D	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-L	**567697**	139.7	241	500	35 – 45	3.0	1
FFP-L2	**567698**	139.7	291	500	35 – 45	7.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point light FFP-L22 / FFP-L42

The fixed point solutions for light loads.

Media lines with thermal expansion

Applications

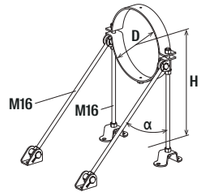
- Heating pipes
- Cooling lines
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

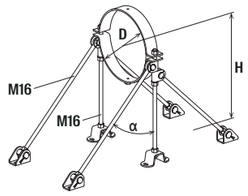
- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamp FFPC and the threaded rod G16 (chapter „Accessories“ Art. no. 568434) are not included in the set.



FFP-L22



FFP-L42

Technical data

Item	Item no.	Max. recom. pipe-ø D [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-L22	**567699**	193.7	160	500	35 – 45	4.0	1
FFP-L42	**567700**	193.7	210	500	35 – 45	7.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point medium FFP-M / FFP-M2

The fixed point solutions for medium loads.

Media lines with thermal expansion

Applications

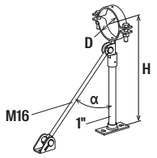
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

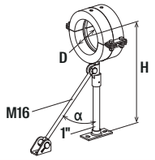
- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The fixed point is suitable for mounting the FFPC fixed point solid clamp and FFRC refrigeration fixed point clamp for even more flexibility.

Properties

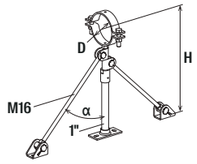
- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamps FFPC and FFRC and the threaded rod G16 and G1“ (chapter „Accessories“ Art. no. 568434 and 568435) are not included in the set.



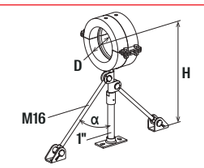
FFP-M with FFPC



FFP-M with FFRC



FFP-M2 with FFPC



FFP-M2 with FFRC

Technical data

Item	Item no.	Max. recom. pipe-ø D [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-M	**567701**[1]	193.7	268	1,000	35 – 45	4.0	1
FFP-M2	**567702**[2]	193.7	298	1,000	35 – 45	8.0	1

[1] When using the refrigeration fixed point clamp FFRC, the minimum construction height is 296 mm.
[2] When using the refrigeration fixed point clamp FFRC, the minimum construction height is 346 mm.

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point medium FFP-M22 / -M42

The fixed point solutions for medium loads.

Media lines with thermal expansion

Applications

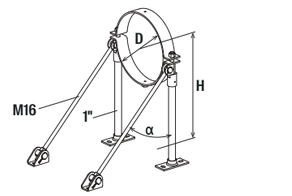
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

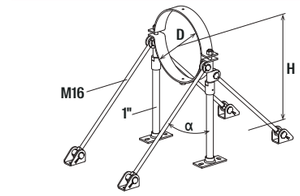
- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil.
- The fix points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The axially and laterally adjustable bracing angles allow the subsoil connection to be adapted to the conditions on site and simplify the installation.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamp FFPC and the threaded rod G16 and G1“ (chapter „Accessories“ Art. no. 568434 and 568435) are not included in the set.



FFP-M22



FFP-M42

Technical data

Item	Item no.	Max. recom. pipe-ø D [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-M22	**567703**	193.7	160	1,500	35 – 45	7.0	1
FFP-M42	**567704**	193.7	210	1,500	35 – 45	14.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point medium FFP-MD2 / -MD4

The fixed point solutions for medium loads.

Media lines with thermal expansion

Applications

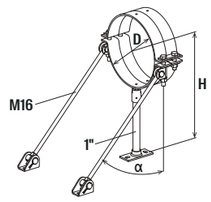
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

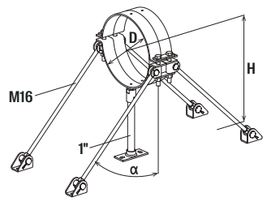
- The supports and braces on one or both sides allow adaptation to the distance of the pipeline to the subsoil.
- Easy assembly with the same tools can be ensured by components with the same thread sizes and plug holes.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The axially and laterally adjustable bracing angles allow the subsoil connection to be adapted to the conditions on site and simplify the installation.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamp FFPC and the threaded rod G16 and G1“ (chapter „Accessories“ Art. no. 568434 and 568435) are not included in the set.



FFP-MD2-V1 and FFP-MD2-V2



FFP-MD4-V1 and FFP-MD4-V2

Technical data

Item	Item no.	Max. recom. pipe-ø D [mm]	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-MD2-V1	**567706**	193.7	218	1,500	35 – 45	12.0	1
FFP-MD2-V2	**567707**	355.6	299	1,500	35 – 45	12.0	1
FFP-MD4-V1	**567709**	193.7	218	1,500	35 – 45	18.0	1
FFP-MD4-V2	**567710**	355.6	299	1,500	35 – 45	18.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10.
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point heavy FFP-HD22 / FFP-HD42

The fixed point solutions for heavy loads.

Media lines with thermal expansion

Applications

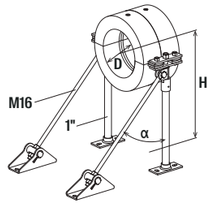
- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

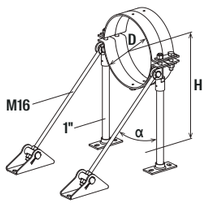
- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil.
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.
- The axially and laterally adjustable bracing angles allow the subsoil connection to be adapted to the conditions on site and simplify the installation.
- The fixed point is suitable for mounting the FFPC fixed point solid clamp and FFRC refrigeration fixed point clamp for even more flexibility.

Properties

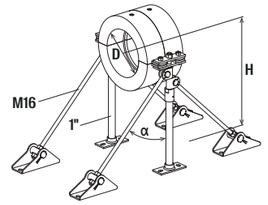
- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C
- Note: Fixed point solid clamps FFPC and FFRC and the threaded rod G16 and G1“ (chapter „Accessories“ Art. no. 568434 and 568435) are not included in the set.



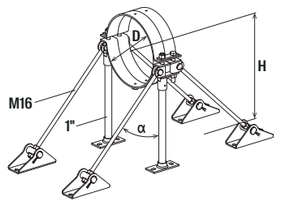
FFP-HD22



FFP-HD22-V1 and FFP-HD22-V2



FFP-HD42



FFP-HD42-V1 and FFP-HD42-V2

Technical data

Item	Item no.	Max. recom. pipe-ø D	Min. construction height H [mm]	Max. construction height H [mm]	Bracing angle α [°]	Max. recom. axial load $F_{x\,rec.}$ [kN]	Sales unit [pcs]
FFP-HD22	**567711**	355.6	264	2,000	35 – 45	18.0	1
FFP-HD22-V1	**567712**	193.7	270	2,000	35 – 45	18.0	1
FFP-HD22-V2	**567713**	355.6	270	2,000	35 – 45	18.0	1
FFP-HD42	**567714**	355.6	264	2,000	35 – 45	30.0	1
FFP-HD42-V1	**567715**	193.7	270	2,000	35 – 45	30.0	1
FFP-HD42-V2	**567716**	355.6	270	2,000	35 – 45	30.0	1

Note: Maximum loads for orientation. Please contact fischer for the design of the fixed points. Load values for fixing with: 564586 Bolt anchor FAZ II Plus 12/10; 564594 Bolt anchor FAZ II Plus 16/5
For detailed information on assembly, see the assembly instructions for download or as an enclosure to the article.

Fixed point solid clamp FFPC

The solid fixed point clamp with load-optimized clamp band.

Media lines with thermal expansion

Applications

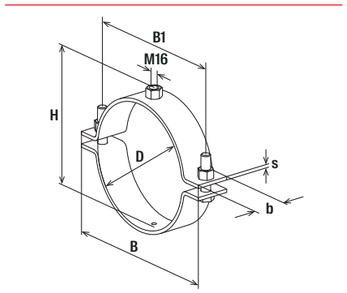
- Heating pipes
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Advantages

- The use of the fixed point solid clamp FFPC with the fixed point saddles FFS or the braced fixed points FFP allows a wide range of applications.
- The high load level due to the matching clamp band allows optimized adjustment of the fixing distances.
- The range of FFPC allows the fixing of pipes from 21 mm to 355 mm in diameter.

Properties

- Material: steel
- Bolts and nuts: strength class 8
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C



FFPC

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Width B [mm]	Width B1 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FFPC 21	**567717**	1/2	21	91.7	60.7	45.4	40 x 4.0	M16	60	10.15	2
FFPC 27	**567718**	3/4	27	97.7	66.7	51.4	40 x 4.0	M16	60	10.15	2
FFPC 28	**567719**[1)]	–	28	98.7	67.7	52.4	40 x 4.0	M16	60	10.15	2
FFPC 31	**567720**[1)]	–	31	101.7	70.7	55.4	40 x 4.0	M16	60	10.15	2
FFPC 34	**567721**	1	34	104.7	73.7	58.4	40 x 4.0	M16	60	10.15	2
FFPC 40	**567722**[1)]	–	40	110.7	79.7	64.4	40 x 4.0	M16	60	10.15	2
FFPC 43	**567723**	1 1/4	43	113.7	82.7	67.4	40 x 4.0	M16	60	10.15	2
FFPC 49	**567724**	1 1/2	49	119.7	88.7	73.4	40 x 4.0	M16	60	10.15	2
FFPC 50	**567725**	–	50	120.7	89.7	74.4	40 x 4.0	M16	60	10.15	2
FFPC 61	**567726**	2	61	131.7	100.7	85.4	40 x 4.0	M16	60	10.15	2
FFPC 63	**567727**	–	63	145.1	110.1	91.4	40 x 6.0	M16	60	17.60	2
FFPC 70	**567728**	–	70	152.1	117.1	98.4	40 x 6.0	M16	60	17.60	2
FFPC 76.1	**567729**	2 1/2	76.1	158.2	123.2	104.5	40 x 6.0	M16	60	17.60	2
FFPC 88.9	**567730**	3	88.9	171	136	117.3	40 x 6.0	M16	60	17.60	2
FFPC 108	**567731**[1)]	–	108	190.1	155.1	136.4	40 x 6.0	M16	60	17.60	2
FFPC 114.3	**567732**	4	114.3	196.4	161.4	142.7	40 x 6.0	M16	60	17.60	2
FFPC 133	**567733**[1)]	–	133	215.1	180.1	161.4	40 x 6.0	M16	60	17.60	2
FFPC 139.7	**567734**	5	139.7	221.8	186.8	168.1	40 x 6.0	M16	60	17.60	2
FFPC 159	**567735**	–	159	241.1	206.1	187.4	40 x 6.0	M16	60	17.60	2
FFPC 168.3	**567736**	6	168.3	250.4	215.4	196.4	40 x 6.0	M16	60	17.60	2
FFPC 193.7	**567737**[1)]	–	193.7	275.8	240.8	222.1	40 x 6.0	M16	60	17.60	2
FFPC 219.1	**567738**	8	219.1	305	269.8	247.5	60 x 6.0	M16	80	22.30	2
FFPC 267	**567739**[1)]	–	267	352.9	317.7	295.4	60 x 6.0	M16	80	22.30	2
FFPC 273	**567740**	10	273	358.9	323.7	301.4	60 x 6.0	M16	80	22.30	2
FFPC 323.9	**567741**	12	323.9	409.8	374.6	352.3	60 x 6.0	M16	80	22.30	2
FFPC 355.6	**567742**[1)]	14	355.6	441.5	406.3	384	60 x 6.0	M16	80	22.30	2

[1)] Delivery time on request

Refrigeration fixed point clamp FFRC

Fixed point pipe clamp with rigid foam insulation for absorbing pipe expansions in cold-running pipelines.

Cold running media lines

Applications

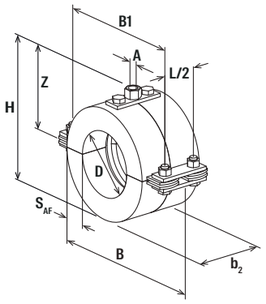
- Cooling lines
- Refrigeration lines
- Cold running media lines
- For use in dry interior areas.

Advantages

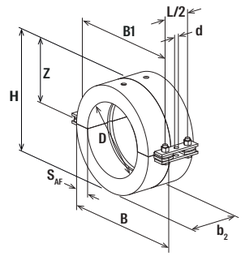
- The FFRC Refrigeration clamp made of closed PUR foam can be used with all common insulation materials.
- The design of the FFRC Refrigeration clamp with external screw holes and internal welding ring enables the support of high loads.
- The age-resistant material ensures consistent function of the FFRC.
- The included connecting plates with matching connection holes and threads reduce the assembly effort by providing an optimal fit.
- The FFRC Refrigeration fixed point clamp can be mounted on the fixed point saddles FFS-M or FFS-H as well as on the braced fixed points FFP.

Properties

- Material: closed-cell polyurethane foam, silicone-free, halogen-free
- Density: 250 kg/m³
- Heat conductivity: 0.045 W/(m*K)
- Fire behaviour: DIN 4102: Class B2
- Diffusion resistance: >1000 µ
- Compressive strength: 3,96 mPa at 23 °C
- Temperature range: -50 °C to +105 °C
- Material steel clamp: steel, electro zinc-plated
- Material welding ring: steel



FFRC with coupler (to 168.3)



FFRC without coupler (above 193.7)

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Thread A	Hole-ø d [mm]	Insulation thickness S_{AF} [mm]	Length of insulation material b_2 [mm]	Width B [mm]	Width B1 [mm]	Height H [mm]	Height Z [mm]	Max. recom. static load (centr. tension) $Z_{z,rec.}$ [kN]	Max. recom. axial load $F_{x,rec.}$ [kN]	Installation torque (Bolt Connector Screws) $T_{inst.BC}$ [Nm]	Installation torque (Coupler) $T_{inst.Co}$ [Nm]	Sales unit [pcs]
FFRC 76.1	**567747**	2 1/2	76.1	M16	–	30	100	203	173	156	88	3.60	2.5	12	12	1
FFRC 88.9	**567748**	3	88.9	M16	–	30	100	211	181	169	94	4.30	3.0	12	12	1
FFRC 108	**567749**	–	108	M16	–	30	120	230	200	187	103	6.50	4.0	20	12	1
FFRC 114.3	**567750**	4	114.3	M16	–	40	120	274	238	212	116	6.90	4.0	20	20	1
FFRC 133	**567751**	–	133	M16	–	40	120	300	264	233	126	7.70	4.5	20	20	1
FFRC 139.7	**567752**	5	139.7	M16	–	40	120	264	300	236	128	8.10	4.5	20	20	1
FFRC 159	**567753**	–	159	M16	–	40	120	319	283	258	139	9.20	6.0	20	20	1
FFRC 168.3	**567754**	6	168.3	M16	–	40	120	328	292	272	146	9.70	6.0	20	20	1
FFRC 193.7	**567755**[1]	–	193.7	–	17	60	200	439	399	340	170	23.00	9.0	45	45	1
FFRC 219.1	**567756**	8	219.1	–	17	60	200	439	399	340	170	23.00	9.0	45	–	1
FFRC 273	**567757**	10	273	–	17	60	200	493	453	393	197	28.00	12.0	45	–	1
FFRC 323.9	**567758**	12	323.9	–	17	60	200	544	504	448	224	32.80	15.0	45	–	1
FFRC 355.6	**567759**[1]	14	355.6	–	17	60	200	576	536	477	239	36.00	17.0	45	–	1
FFRC 368	**567760**[1]	–	368	–	17	60	240	588	548	492	246	46.30	17.0	45	–	1
FFRC 406.4	**567761**[1]	16	406.4	–	17	60	240	646	596	530	265	50.40	19.0	45	–	1
FFRC 457	**567762**[1]	18	457	–	17	60	240	697	647	578	289	57.10	19.0	45	–	1
FFRC 508	**567763**[1]	20	508	–	17	60	240	748	698	635	318	62.40	20.0	45	–	1
FFRC 609	**567764**[1]	24	609	–	17	60	280	848	798	731	366	89.20	25.0	45	–	1

[1] Delivery time on request

Note on the required adhesive: 59389 fischer construction adhesive Multi MS white 290 ml; 503318 fischer construction adhesive Multi MS grey 290 ml
Note on loads: The loads apply to the FFRC without considering wether the associated fix point design is a braced fix point or fix point saddle. The component with the lower load specification determines the loads.

Sound insulated fixed point FSFP

The compact fixed point with a sound insulation insert.

Sound insulated fixpoint at ceiling

Applications

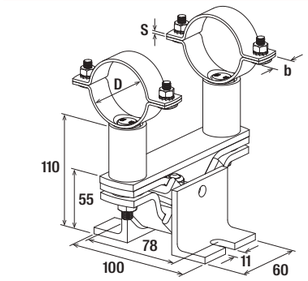
- Prevention of unwanted displacement between the pipes and the structures.
- Ensuring of the expansion into the desired direction.
- For use in dry interior areas.

Advantages

- The supports and braces on one or both sides of the variable fixed point allow adaptation to the distance of the pipeline to the subsoil
- The fixed points consist of components with matching thread sizes and plug holes, thus ensuring easy assembly with the same tools.
- The height adjustment on the base plate allows for precise adjustment to match mounted pipelines and therefore ensures the safe function of the fixed point.

Properties

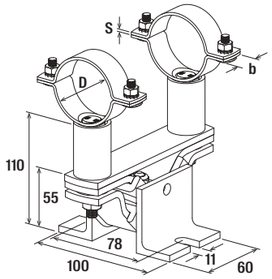
- Clamp strap: StW22 (material no. 1.0032)
- Base plate: S235JR (material no. 1.0038)
- Zinc plating: electro zinc-plated
- Elastomer: ISO 1629 SBR/EPDM chloride-free and silicone-free
- Temperature range: -40 °C to +100 °C



FSFP

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Locking screw	Width x thickness clamp band b x s [mm]	Sales unit [pcs]
FSFP 1“	**512716**	1	33.7	M6	20 x 1.5	1
FSFP 1 1/4“	**512717**	1 1/4	42.4	M6	20 x 2	1
FSFP 1 1/2“	**512718**	1 1/2	48.3	M6	20 x 2	1
FSFP 2“	**512719**	2	60.3	M8	30 x 2.5	1
FSFP 2 1/2“	**512720**	2 1/2	76.1	M8	30 x 2.5	1



FSFP

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Locking screw	Width x thickness clamp band b x s [mm]	Sales unit [pcs]
FSFP 3“	**512721**	3	88.9	M8	30 x 2.5	1
FSFP 4“	**512722**	4	114.3	M8	30 x 2.5	1

Axial slider compact FASC

The compact axial slider with combination connecting thread.

Media lines with thermal expansion

Applications

- Heating pipes
- Cooling lines
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

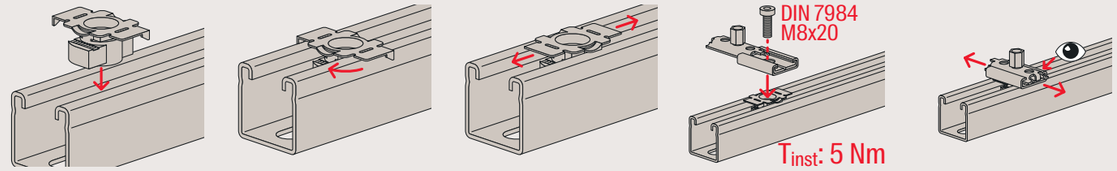
Advantages

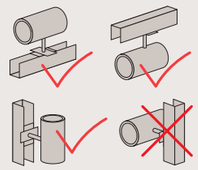
- The FASC can be used flexibly, thanks to the application options as a standing or hanging slider.
- The low sliding friction of the plastic sliding pad enables optimum force application at the fixed point.
- The base plate of the FASC is compatible with the FLS and FUS channel systems and allows fixing with only one screw.
- The flexible combination thread allows the use of pipe clamps of various sizes.

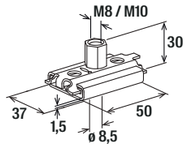
Properties

- Material: steel
- Zinc plating: electro zinc-plated
- Sliding strip material: glass fiber reinforced polyamide
- Thermal capacity: -30 °C to +130 °C

Installation FASC on FUS channel







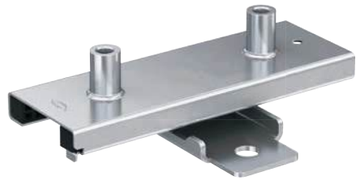
FASC M8/M10

Technical data

	Item no.	Thread A	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Max. recommended static load (suspended) N_{rec} [kN]	Max. recommended static load (upright) N_{rec} [kN]	Static friction factor µh	Sliding friction factor µg	Max. sliding distance [mm]	Sales unit [pcs]
Item												
FASC M8/10	**567948**	M8 / M10	50	37	30	1.5	0.7	0.7	0.18	0.14	42	50

Axial slider light FASL

The light axial slider with single or double mount and single or combination connection thread.



Applications

- Heating pipes
- Cooling lines
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

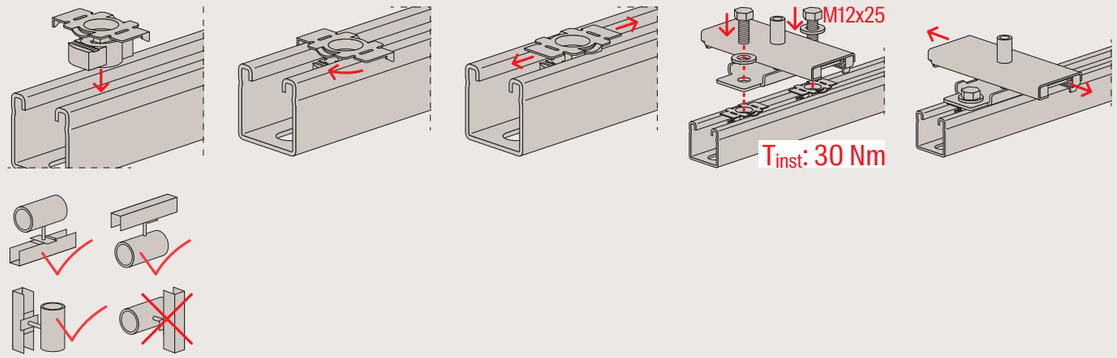
Advantages

- The FASL can be used flexibly, thanks to the application options as a standing or hanging slider and as a guide bearing on vertical pipelines.
- The low sliding friction of the plastic sliding rails enables optimum force application at the fixed point.
- The large sliding path and the long slide rails allow large expansions to be accommodated without any problems.
- The base plate of the FASL is compatible with the FLS and FUS channel systems and allows fixing with one or two screws.
- The flexible combination thread allows the use of pipe clamps of various sizes.

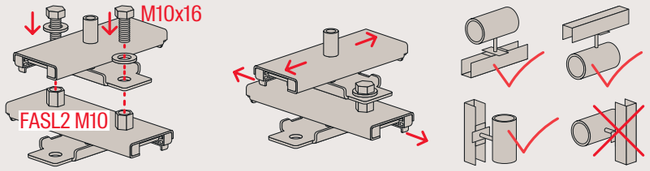
Properties

- Material: steel
- Zinc plating: electro zinc-plated
- Sliding strip material: glass fiber reinforced polyamide
- Thermal capacity: -30 °C to +130 °C

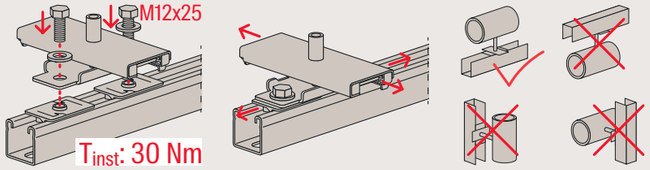
Installation FASL on FUS channel



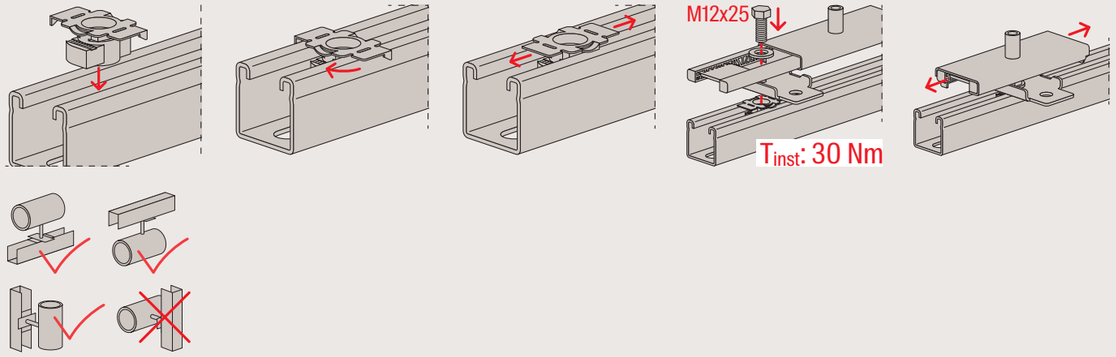
Cross-slide function through double mounting with FASL2 M10

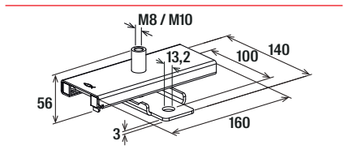


Cross-slide function with FCSM

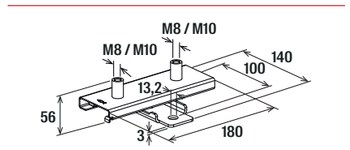


Installation FASL with central fixing on FUS channel

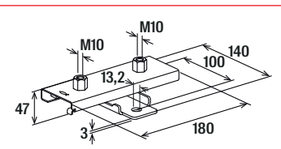




FASL1 M8/M10



FASL2 M8/M10



FASL2 M10

Technical data

Item	Item no.	Thread A	Length L [mm]	Width B [mm]	Height H [mm]	Max. recommended static load (suspended) N_{rec} [kN]	Max. recommended static load (upright) N_{rec} [kN]	Static friction factor µh	Sliding friction factor µg	Max. recommended lever arm [mm]	Max. sliding distance [mm]	Sales unit [pcs]
FASL1 M8/10	**567949**	M8 / M10	160	140	56	1.2	1.2	0.13	0.1	200	100	10
FASL2 M8/10	**568670**	M8 / M10	180	140	56	1.5	1.5	0.13	0.1	200	120	10
FASL2 M10	**567950**	M10	180	140	47	1.5	1.5	0.13	0.1	200	120	10

Axial slider medium FASM

The medium axial slider with single or double mount and combination connection thread.

Applications

- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Certificates / Features

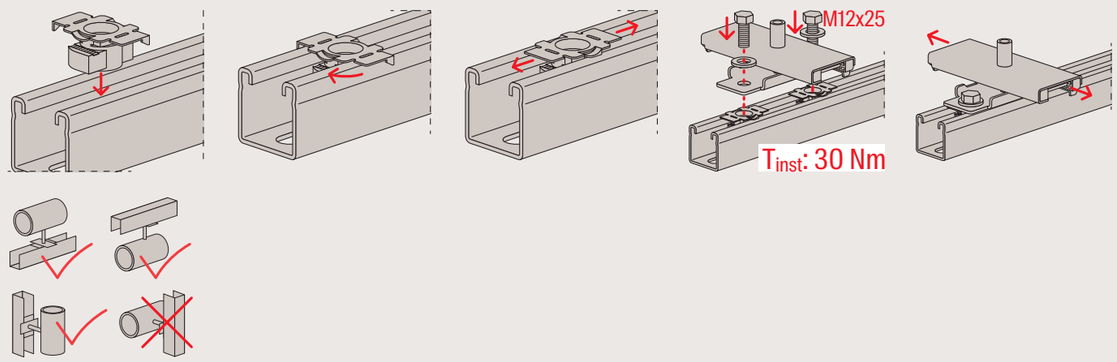
Advantages

- The fire test report according to MLAR R30 up to a maximum of R120 guarantees objectively tested safety of function.
- The FASM can be used flexibly, thanks to the application options as a standing or hanging slider and as a guide bearing on vertical pipelines.
- The low sliding friction of the plastic sliding rails enables optimum force application at the fixed point.
- The large sliding path and the long slide rails allow large expansions to be accommodated without any problems.
- The base plate of the FASM is compatible with the FUS and FMS channel systems and allows fixing with one or two screws.
- A cross-slide function of the FASM is possible with the FCSM cross slider as well as with the FASL2 M10.

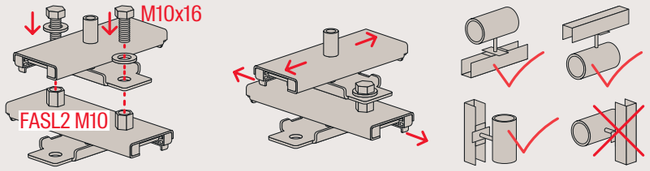
Properties

- Material zp and hdg: steel
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material A4: stainless steel A4
- Sliding strip material: glass fiber reinforced polyamide
- Thermal capacity: -30 °C to +130 °C

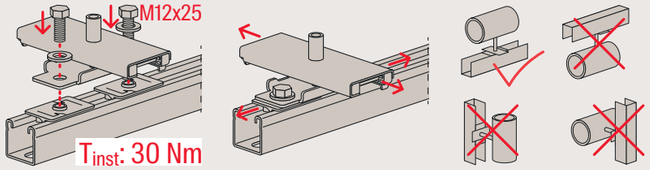
Installation FASM on FUS channel



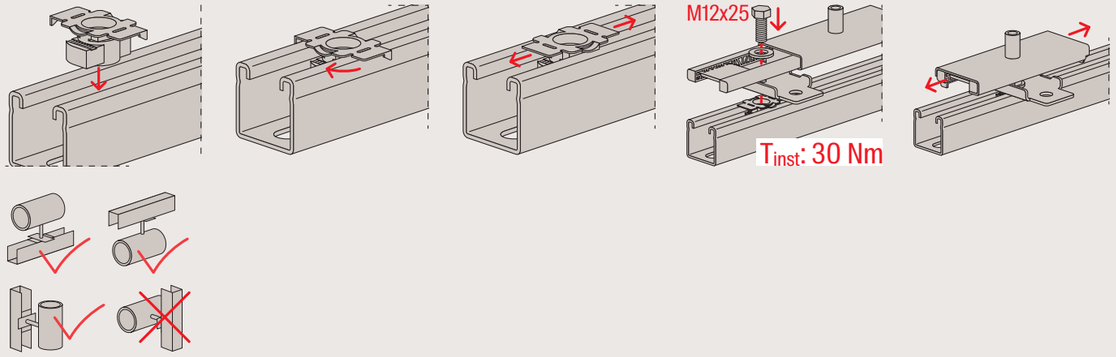
Cross-slide function through double mounting with FASL2 M10

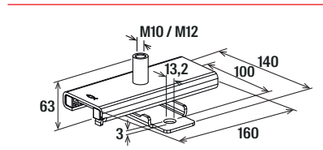


Cross-slide function with FCSM

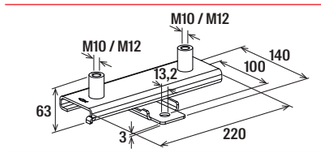


Installation FASM with central fixing on FUS channel





FASM1 M10/M12



FASM2 M10/M12

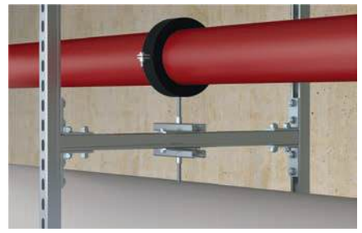
Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A4 Item no. A4	Fire test report	Thread A	Length L [mm]	Width B [mm]	Thickness S [mm]	Max. recommended static load (suspended) N_{rec} [kN]	Max. recommended static load (upright) N_{rec} [kN]	Static friction factor µh	Sliding friction factor µg	Max. recommended lever arm [mm]	Max. sliding distance [mm]	Sales unit [pcs]
FASM1 M10/12	567951	573330	573332	–	M10 / M12	160	140	3.0	2.5	2.5	0.13	0.1	200	100	10
FASM2 M10/12	567952	573331	573333	Yes	M10 / M12	220	140	3.0	3.0	3.0	0.13	0.1	200	150	10

For load information under fire exposure, see chapter Basic knowledge.

Axial roller slider heavy FASH

The heavy axial roller slider with single or double mount and combination connection thread.



Media lines with thermal expansion

Media lines with thermal expansion

Applications

- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For use in dry interior areas.

Certificates / Features

R 120

R 30 MLAR

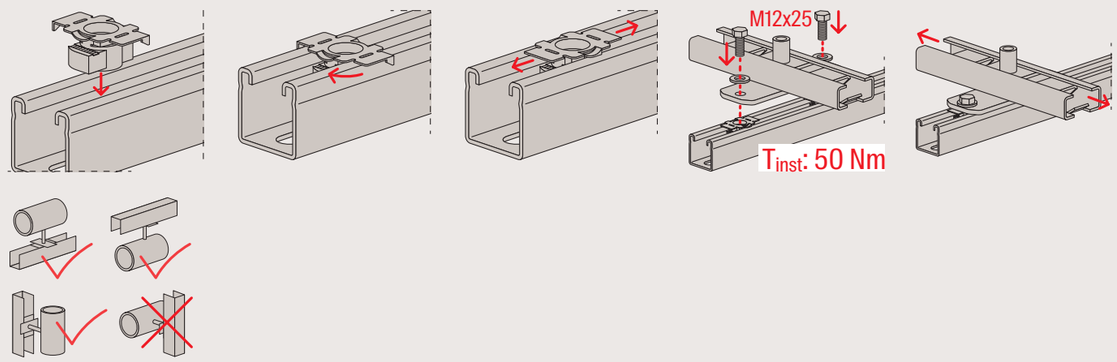
Advantages

- The fire test report according to MLAR R30 up to a maximum of R120 guarantees objectively tested safety of function.
- The FASH can be used flexibly, thanks to the application options as a standing or hanging slider and as a guide bearing on vertical pipelines.
- The low sliding friction of the two sliding rollers enables optimum force application at the fixed point.
- The large sliding path and the two sliding rollers allow large expansions to be accommodated without any problems.
- The base plate of the FASH is compatible with the FUS and FMS channel systems and allows fixing with one or two screws.
- A cross-slide function of the FASH1 or FASH2 is possible with the FCSM cross slider as well as with the FASH2.

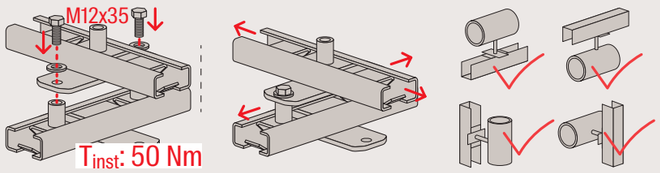
Properties

- Material: steel
- Zinc plating: electro zinc-plated
- Thermal capacity: -30 °C to +300 °C

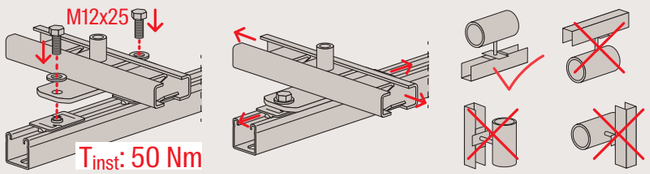
Installation FASH on FUS channel



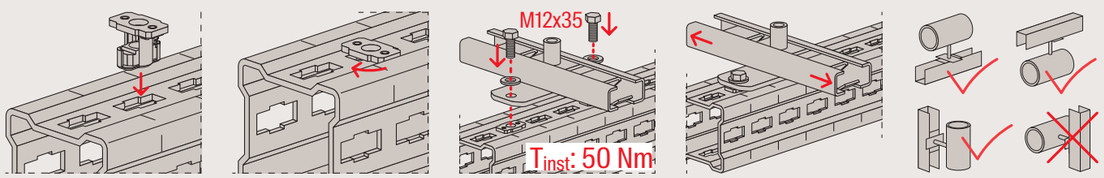
Cross-slide function through double mounting with FASH2 M12/16

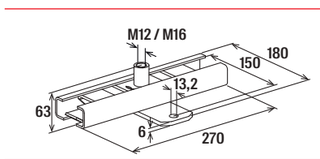


Cross-slide function with FCSM

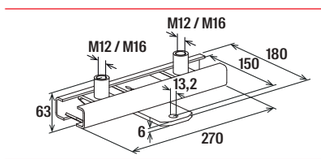


Installation FASH on FMP channel





FASH1 M12/16



FASH2 M12/16

Technical data

	Item no.	Fire test report	Thread	Length	Width	Height	Thickness	Max. recommended static load (suspended)	Max. recommended static load (upright)	Static friction factor	Sliding friction factor	Max. recommended lever arm	Max. sliding distance	Sales unit
			A	L	B	H	S	N_{rec}	N_{rec}	µh	µg			
Item				[mm]	[mm]	[mm]	[mm]	[kN]	[kN]			[mm]	[mm]	[pcs]
FASH1 M12/16	**567953**	–	M12 / M16	270	180	63	6.0	6.5	6.5	0.06	0.06	400	140	5
FASH2 M12/16	**567954**	Yes	M12 / M16	270	180	63	6.0	10.0	10.0	0.06	0.06	400	140	5

For load information under fire exposure, see chapter Basic knowledge.

Cross slider FCSM

The channel slider for all load levels.

Applications

- Heating pipes
- Cooling lines
- Steam pipes
- Hot water and circulation pipes
- Media lines with thermal expansion
- For indoor and outdoor application.

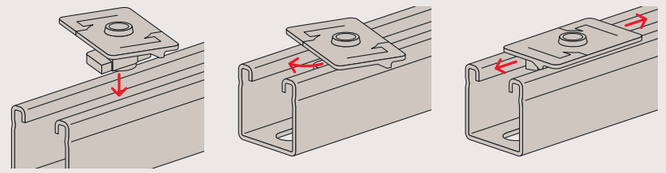
Advantages

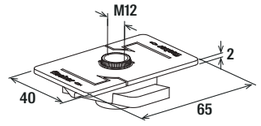
- The simple connection of the FCSM Cross Slider with the FUS mounting channels by simply inserting and rotating by 45° also allows subsequent installation at any position.
- Due to the application as a upright slider in the FUS mounting channels, the FCSM is the universal cross slider substructure for all axial and roller sliders.
- The unique design and the use as a single glider or double glider enable a high load capacity.
- The low sliding friction of the plastic sliding surface minimizes resistance during lateral expansion.

Properties

- Material: steel
- Zinc plating: hot-dip galvanised
- Material plastic components: glass fiber reinforced polyamide
- Thermal capacity: -30 °C to +130 °C

Installation FCSM





FCSM

Technical data

Item	Item no.	Thread A	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Max. recommended static load (upright) N_{rec} [kN]	Static friction factor µh	Sliding friction factor µg	Sales unit [pcs]
FCSM M12	**567955**[1)]	M12	65	40	21	2.0	5.0	0.2	0.16	50

[1)] Max. recommended lever arm: with FASL and FASM: 200 mm; with FASH: 300 mm. Sliding and static friction values apply to galvanised and hot-dip galvanised FUS mounting channels.

Sliding hanger SB

Sliding hanger SB - the lightweight sliding element with fire test report.

Channel with sliding element

Channel to steelbeam

Applications

- Adjustments of axial length to pipelines.
- Installation of sliding elements in line with the expected length expansions (Ensuring that no sliding distance is lost and sliding isn‘t inhibited).
- For use in dry interior areas.

Advantages

- The design of the sliding hanger allows pipes to be mounted securely and easily.
- The sliding hanger is ideally suited to adjust the axial length of pipelines.

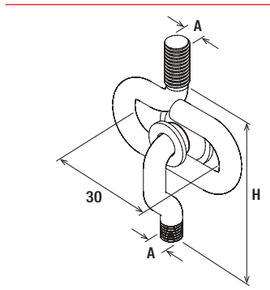
Properties

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

Certificates / Features

R 120

R 30 MLAR



SB

Technical data

Item	Item no.	Fire test report	Height H [mm]	Max. recom. static load (centr. tension) [kN]	Sales unit [pcs]
SB M 8	**079680**	–	75	0.40	25
SB M10	**079681**	Yes	90	0.65	25

Pendulum hanger PDH / PDH K

Pendulum hanger PDH / PDH K - the single fixing element for length expansion.

Double pendulum hanger

Applications

- Single fixing for the absorption of pipeline length adjustments in any direction.
- Installation of the pendulum in pairs for pipe movement without tipping.
- Secure threaded rod with lock nut to prevent loosening.
- For use in dry interior areas.

Advantages

- The design of the pendulum hanger allows a rotation of 360°.
- The pendulum hanger‘s screw-in sleeve allows for large height adjustments.
- The max. pendulum angle of 12° enables the absorption of large expansions.
- The screw-in depth of the threaded bolts guarantees a high tension load.

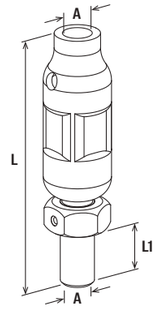
Properties

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

Certificates / Features

R 120

R 30 MLAR



PDH

Technical data

Item	Item no.	Fire test report	Thread A	Length L [mm]	Length L1 [mm]	Max. recom. static load (centr. tension) [kN]	Sales unit [pcs]
PDH K M 8	**068267**	–	M8	50	18	2.40	50
PDH K M10	**068269**	Yes	M10	54	18	3.00	50
PDH M 8	**079676**	–	M8	76	18	2.40	50
PDH M10	**079677**	Yes	M10	80	18	3.00	50
PDH M12	**064037**	Yes	M12	90	20	3.50	25

For load information under fire exposure, see chapter Basic knowledge.

6
Seismic bracing assortment

6

Shaped reinforcement strut SAE

Shaped reinforcement strut for bracing FUS channel profiles and FCA cantilevers.

Bracing of cantilever construction

Applications

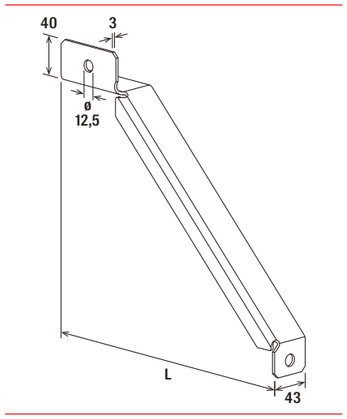
- Seismic bracing of framework constructions with FUS channels and FCA cantilevers.
- For use in dry interior areas.

Advantages

- The shaped L enables the fixing of the bracing not only in the horizontal but also at the vertical level.
- The stable shaped reinforcement strut provides very high stability and safety to a supporting structure.

Properties

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



SAE

Technical data

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

Applications

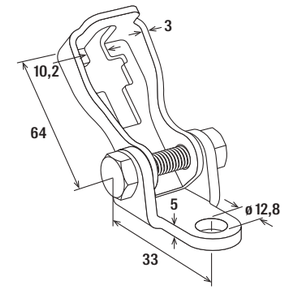
- For bracing of new as well as already installed frame constructions with threaded rods M10.
- For use in dry interior areas.

Advantages

- The design of the threaded rod brace connector S-VA allows a variable fixation at angles between 30° and 60° 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) acc. to DIN EN 10025-2
- Material supporting plate: steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Screw: M10x45, strength class 8.8, electro zinc-plated
- Nut: M10, strength class 8, electro zinc-plated



S-VA

Technical data

Item	Item no.	For profile	Sales unit [pcs]
S-VA	552360	FUS, FLS	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

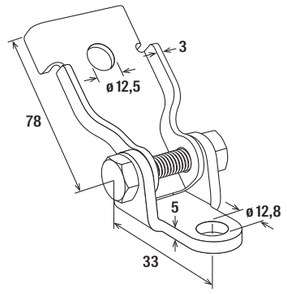
- For seismic bracing of new as well as already installed framework constructions with FUS channel profiles.
- For use in dry interior areas.

Advantages

- The design of the channel brace connector S-VB allows a variable fixation at angles between 30° and 60° 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) acc. to DIN EN 10025-2
- Material supporting plate: steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Screw: M10x45, strength class 8.8, electro zinc-plated
- Nut: M10, strength class 8, electro zinc-plated



S-VB

Technical data

Item	Item no.	For profile	Sales unit [pcs]
S-VB	**552362**	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

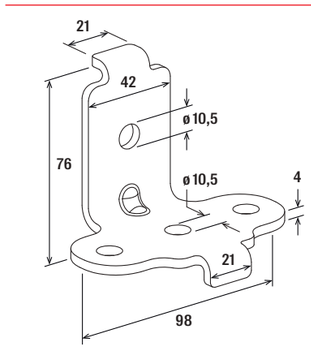
- For the connection of channel profiles and the installation of bracing elements.
- For use in dry interior areas.

Advantages

- 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) acc. to DIN EN 10025-2
- Zinc plating: electro zinc-plated



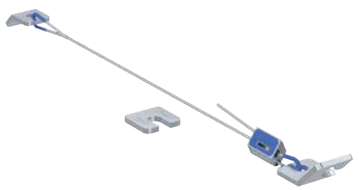
S-FAF

Technical data

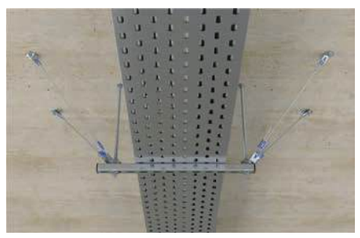
Item	Item no.	For profile	Sales unit [pcs]
S-FAF	**552363**	FUS	10

Seismic wire cable system FWI-S

The wire cable system for securing installations against horizontal forces.



Lateral bracing of ventilation ducts



Four-way bracing of cable trays

Applications

- Securing installations in buildings in the event of an earthquake, such as electrical cable routes, mechanical systems, ventilation ducts, hydraulic pipes.
- The FWI-S wire cable system ensures a safe transmission of the longitudinal and transversal forces into the subsurface and thus effectively prevents damage to installations.
- Also ideal for retrofitting existing installations.
- For use in dry interior areas.

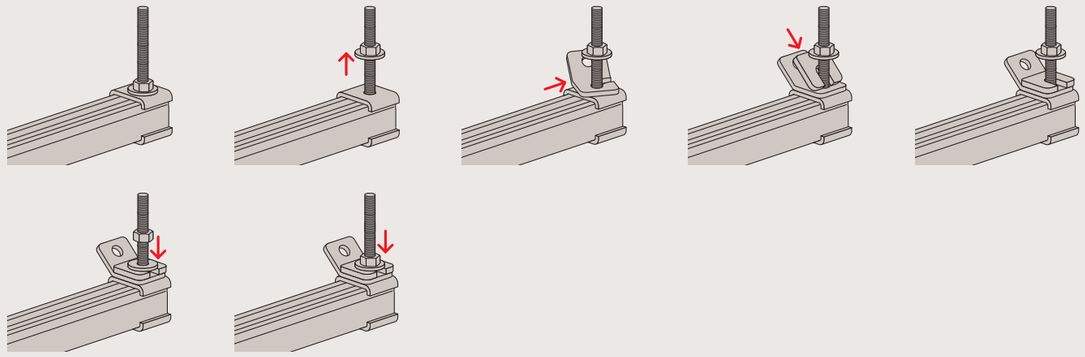
Advantages

- The system protects installations from damage caused by horizontal forces.
- The FWI-S wire cable system offers a safe and reliable method of bracing MEP installations to ensure their integrity during an earthquake.
- The FWI-S wire cable system can minimise damage to installations, resulting in lower repair costs and downtime.
- Easy installation thanks to pre-assembled sets in lengths of 2, 3 and 5 m.
- The available wire cable diameters of 2, 3 or 5 mm provides the right kit for your load case.
- Suitable for new buildings or for retrofitting. Each set has a retrofit plate that allows particularly easy installation into existing installations.
- Each set has a type-specific color marking for identification on the construction site.

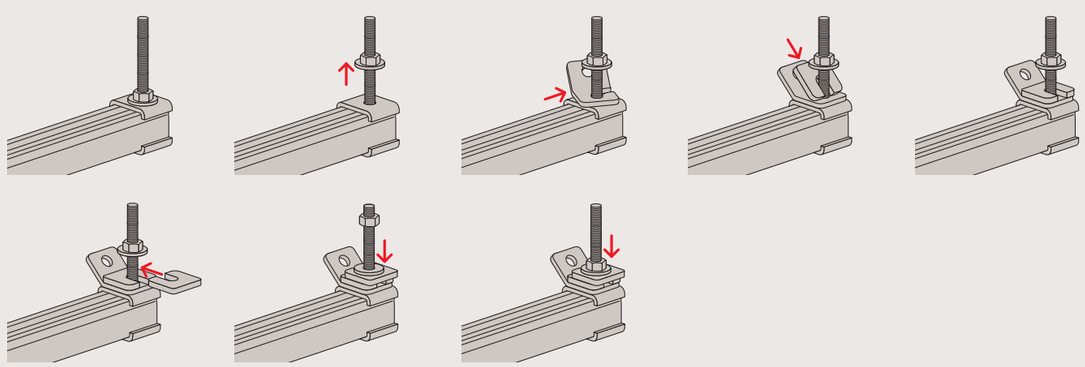
Properties

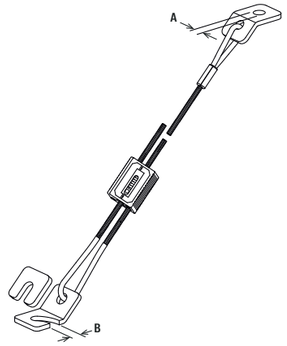
- Material wire cable lock: zinc-diecasting (material no. 2.2140.05)
- Material stamped and bent parts: steel (material no. 1.0038)
- Material wire cable: steel (material no. 1.5122)
- Material protective sleeve: PVC
- Corrosion protection: zinc lamella coating

Installation FWI-SR / FWI-SB

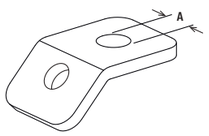


Installation FWI-SGY

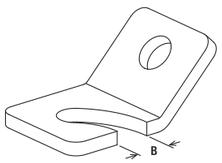




FWI-S



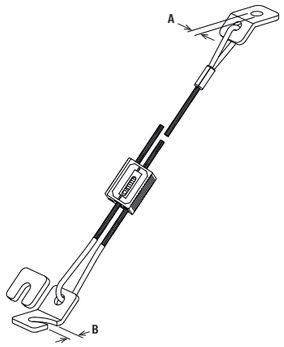
FWI-S anchor bracket



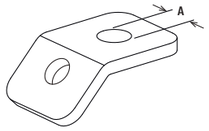
FWI-S retrofit bracket

Technical data

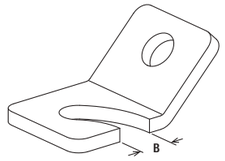
Item	Item no.	Cable length [m]	Wire-ø [mm]	Diameter anchor bracket A [mm]	Diameter retrofit bracket B [mm]	Max. recommended load N_{rec} [kN]	Colour	Sales unit [pcs]
FWI-SR-Kit 2.0 2 m	**569504**	2	2.0	11.0	13.0	1.4	red	2
FWI-SR-Kit 2.0 3 m	**569505**	3	2.0	11.0	13.0	1.4	red	2
FWI-SR-Kit 2.0 5 m	**569506**	5	2.0	11.0	13.0	1.4	red	2



FWI-S



FWI-S anchor bracket



FWI-S retrofit bracket

Technical data

Item	Item no.	Cable length [m]	Wire-ø [mm]	Diameter anchor bracket A [mm]	Diameter retrofit bracket B [mm]	Max. recommended load N_{rec} [kN]	Colour	Sales unit [pcs]
FWI-SB-Kit 3.0 2 m	**569507**	2	3.0	11.0	13.0	3.7	blue	2
FWI-SB-Kit 3.0 3 m	**569508**	3	3.0	11.0	13.0	3.7	blue	2
FWI-SB-Kit 3.0 5 m	**569509**	5	3.0	11.0	13.0	3.7	blue	2
FWI-SGY-Kit 5.0 2 m	**569510**	2	5.0	13.0	13.0	8.5	green / yellow	2
FWI-SGY-Kit 5.0 3 m	**569511**	3	5.0	13.0	13.0	8.5	green / yellow	2
FWI-SGY-Kit 5.0 5 m	**569512**	5	5.0	13.0	13.0	8.5	green / yellow	2

Accessories

Seismic wire cable system FWI-S spare-kit

FWI-S spare kit

Item	Item no.	Contents	Sales unit [pcs]
FWI-S spare kit	**569513**	1 x PVC hose red 1 x PVC hose blue 1 x PVC hose green/yellow 1 x Restraint washer 1 x Retrofit bracket	1

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

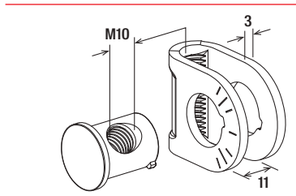
- For the seismic bracing of suspended threaded rods as well as new and existing frame constructions with threaded rods M10.
- Suitable to attach to M8 and M10 rods.
- For use in dry interior areas.

Advantages

- The design of the threaded rod brace connector allows a variable installation at angles between 30° and 60°.
- 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) acc. to DIN EN 10025-2
- Material threaded rod: steel 11SMnPb37 (material no. 1.0737) acc. to DIN EN 10277-3
- Zinc plating: electro zinc-plated



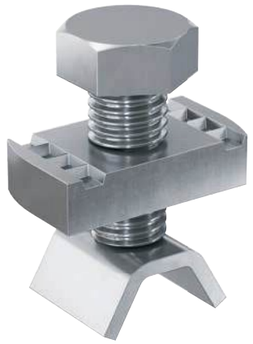
S-ROD

Technical data

Item	Item no.	For thread	Sales unit [pcs]
S-ROD	**552361**	M10	10

Rod stiffener FTRC M12

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



Rod stiffing for vertical seismic support

Applications

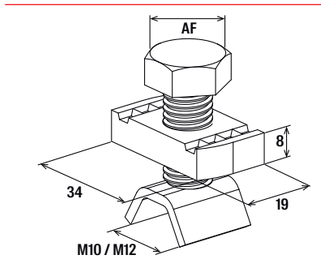
- For the reinforcement of existing suspended constructions due to bracing of threaded rods M10 or M12 to FUS channel profiles.
- For attaching strut channel to a threaded rod to accommodate compression loads.
- For use in dry interior areas.

Advantages

- 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



Technical data

Item	Item no.	Thread M	Width across nut SW [mm]	Thickness S [mm]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FTRC M12	**577054**	M12	19	8.0	20	50

Torque bolt SKS M12x30

Torque bolt for secure fixing of connection elements on mounting channels.

Applications

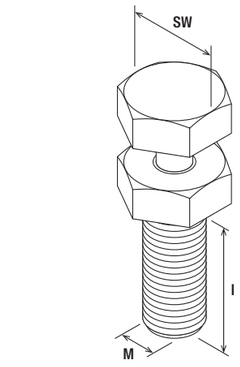
- Torque bolt for secure fixing of connection elements on channel profiles.
- For use in dry interior areas.

Advantages

- 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

- Material: steel SAE J403 acc. to DIN EN 10132-4
- Zinc plating: electro zinc-plated
- Torque range: 50-60 Nm



SKS TB M12x30

Technical data

Item	Item no.	Thread M	Width across nut SW [mm]	Sales unit [pcs]
SKS TB M12x30	**552441**	M12	19	100

7
Airduct and metal roof fixings

7

Ventilation duct clamp LGS

Clamps - Ventilation duct clamp LGS.

Support systems for ventilation

Spiral airduct on cantilever

Applications

- Two-screw ventilation pipe clamp with sound insulation insert for fastening spiral ducts.
- For use in dry interior areas.

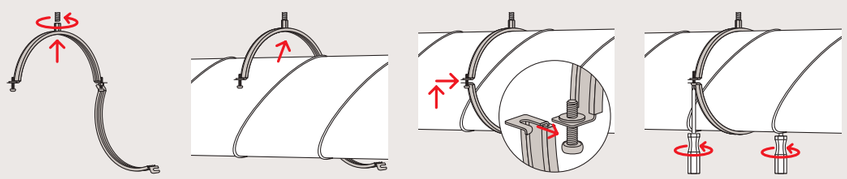
Advantages

- Quick-lock for sizes 80 to 400mm ensures quick installation.
- Loss prevention disc for the locking screws for sizes 80 to 400mm to avoid loss of the screws during transport and installation
- Large opening angle for easy pipe positioning.
- Two-screw pipe clamp for optimised adjustment to the pipe outer diameter.
- The sound insulation insert provides noise insulation and prevents contact corrosion.
- Connection nut with M8/M10 combination thread.
- From size 450 mm: Instad of utilizing the connection nut, two threaded rods can be attached to the clamp band to double the specified loads.

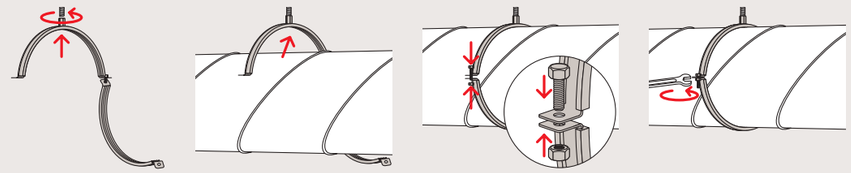
Properties

- Material: Steel DX51D-Z80
- Zinc plating: electro zinc-plated
- Connection nut M8/M10 point SW13
- Locking screw: Pan head screw with PH Drive (for sizes 80 to 400mm); Hex bolt with hex nut (for sizes 450 to 1250mm)
- Material sound insulation insert: PVC, silicone and halogen free
- Temperature range: -30 °C to +80 °C
- Hardness: 80 ± 5° Shore A

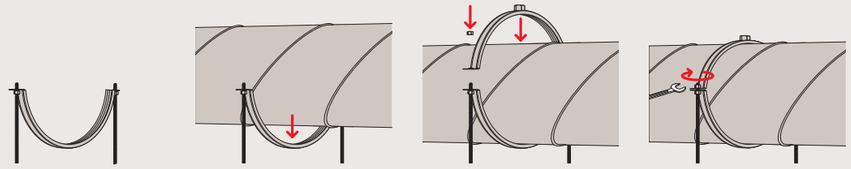
Installation LGS with connection nut for LGS ≤ 400

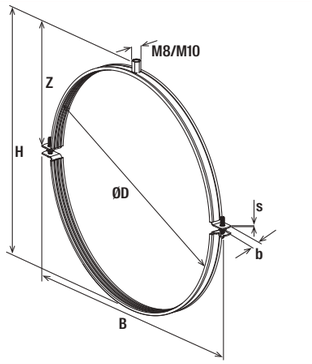


Installation LGS with connection nut for LGS ≥ 450

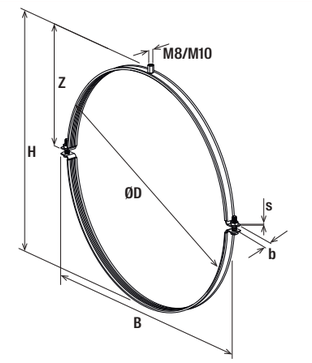


Installation LGS with two threaded rods for LGS ≥ 450





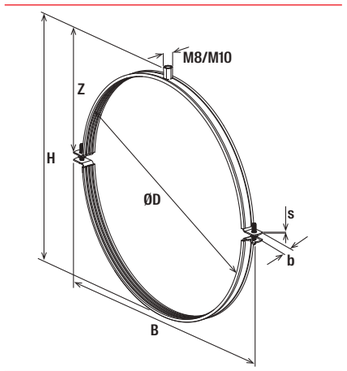
LGS 80-400



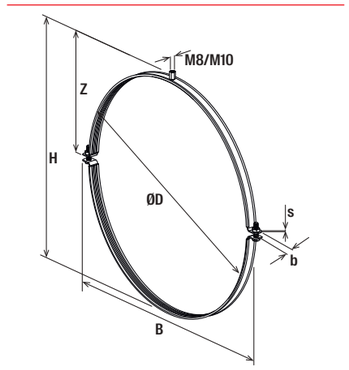
LGS 450-1250

Technical data

Item	Item no.	Thread A	Height H [mm]	Height Z [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Max. recom. static load (centr. tension) [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
LGS 80	**580652**	M8 / M10	115	67	133	20 x 1.8	M6	0.70	2	25
LGS 90	**580653**	M8 / M10	125	72	143	20 x 1.8	M6	0.70	2	25
LGS 100	**580654**	M8 / M10	136	78	154	20 x 1.8	M6	0.70	2	20
LGS 112	**580655**	M8 / M10	148	84	166	20 x 1.8	M6	0.70	2	20
LGS 125	**580656**	M8 / M10	161	90	188	20 x 1.8	M6	0.70	2	10
LGS 140	**580657**	M8 / M10	176	98	203	20 x 1.8	M6	0.70	2	10
LGS 150	**580658**	M8 / M10	186	103	213	20 x 1.8	M6	0.70	2	10
LGS 160	**580659**	M8 / M10	196	108	225	20 x 1.8	M6	0.70	2	10
LGS 180	**580660**	M8 / M10	216	118	245	20 x 1.8	M6	0.70	2	10
LGS 200	**580661**	M8 / M10	236	128	271	20 x 1.8	M6	0.70	2	10
LGS 224	**580662**	M8 / M10	260	140	295	20 x 1.8	M6	0.70	2	10
LGS 250	**580663**	M8 / M10	286	153	321	20 x 1.8	M6	0.70	2	10
LGS 280	**580664**	M8 / M10	316	168	351	20 x 1.8	M6	0.70	2	10
LGS 300	**580665**	M8 / M10	338	179	373	20 x 1.8	M6	0.70	2	10
LGS 315	**580666**	M8 / M10	353	186	388	20 x 1.8	M6	0.70	2	10
LGS 355	**580667**	M8 / M10	393	206	428	20 x 1.8	M6	0.70	2	10
LGS 400	**580668**	M8 / M10	438	229	473	20 x 1.8	M6	0.70	2	10



LGS 80-400



LGS 450-1250

7

Technical data

Item	Item no.	Thread A	Height H [mm]	Height Z [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Max. recom. static load (centr. tension) [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
LGS 450	580669	M8 / M10	490	255	527	24 x 2.5	M10	1.10	5	1
LGS 500	580670	M8 / M10	540	280	577	24 x 2.5	M10	1.10	5	1
LGS 560	580671	M8 / M10	600	310	637	24 x 2.5	M10	1.10	5	1
LGS 600	580672	M8 / M10	642	331	679	24 x 2.5	M10	1.10	5	1
LGS 630	580673	M8 / M10	672	346	709	24 x 2.5	M10	1.10	5	1
LGS 710	580674	M8 / M10	752	386	789	24 x 2.5	M10	1.10	5	1
LGS 800	580675	M8 / M10	843	431	880	24 x 2.5	M10	1.10	5	1
LGS 900	580676	M8 / M10	945	482	992	24 x 2.5	M10	1.10	5	1
LGS 1000	580677	M8 / M10	1,045	532	1,092	24 x 2.5	M10	1.10	5	1
LGS 1120	580678	M8 / M10	1,165	592	1,212	24 x 2.5	M10	1.10	5	1
LGS 1250	580679	M8 / M10	1,295	657	1,342	24 x 2.5	M10	1.10	5	1

Ventilation duct clamp LGSN

LGSN without sound insulation insert.

Support systems for ventilation

Spiral airduct on cantilever

7

Applications

- 2-screw-pipe clamp without sound insulation for fixing of spiral ducts.
- For use in dry interior areas.

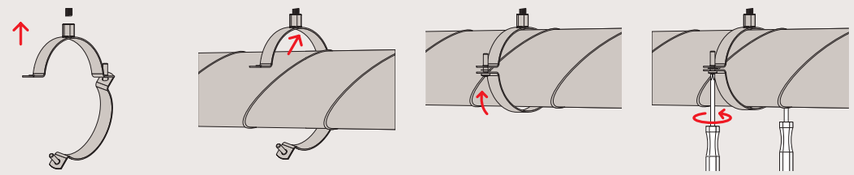
Advantages

- The large opening angle of the LGSN enables a quick and easy installation.
- The LGSN‘s two screws allow the adjustment to suit the outer pipe diameter.
- The screw´s loss protection prevents loss of the locking screws during installation.
- Connection nut with combination thread M8/M10.
- The LGS is drilled on both sides of the clamp from 450 mm diameter on. This allows for connection with two threaded rods with nuts. Thereby the recommended load of the clamp can be doubled.

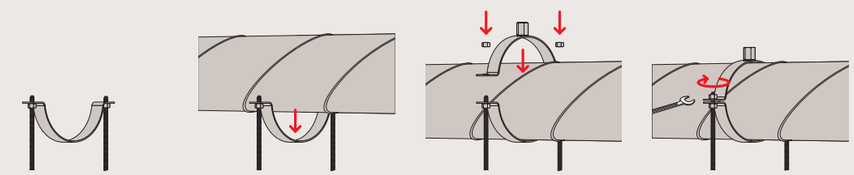
Properties

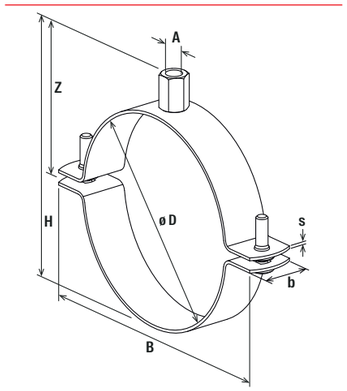
- Material: steel DC01 (material no. 1.330) according to DIN EN 10130
- Zinc plating: electro zinc-plated
- Connecting nut: resistance welded domed nut, M8 / M10, SW13
- Locking screw: cross recessed pan-head screw M6 (up to size 400), hexagon screw with nut M10 (size 450 to 1250)
- Fire behaviour: DIN 4102: Class A1

Installation LGSN with connection nut



Installation LGSN with two threaded rods (for LGSN ≥ 450mm)





LGSN

Technical data

Item	Item no.	Thread A	Clamping range D [mm]	Height H [mm]	Height Z [mm]	Width B [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Max. recom. static load (centr. tension) [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
LGSN 80	**564518**	M8 / M10	80	100	59	125	25 x 1.5	M6	0.60	2	25
LGSN 90	**564519**	M8 / M10	90	110	64	135	25 x 1.5	M6	0.60	2	25
LGSN 100	**564520**	M8 / M10	100	120	69	145	25 x 1.5	M6	0.60	2	20
LGSN 112	**564521**	M8 / M10	112	132	75	157	25 x 1.5	M6	0.60	2	20
LGSN 125	**564522**	M8 / M10	125	145	81	170	25 x 1.5	M6	0.60	2	10
LGSN 140	**564523**	M8 / M10	140	160	89	185	25 x 1.5	M6	0.60	2	10
LGSN 150	**564524**	M8 / M10	150	170	94	195	25 x 1.5	M6	0.60	2	10
LGSN 160	**564525**	M8 / M10	160	180	99	205	25 x 1.5	M6	0.60	2	10
LGSN 180	**564526**	M8 / M10	180	200	109	225	25 x 1.5	M6	0.60	2	10
LGSN 200	**564527**	M8 / M10	200	220	119	245	25 x 1.5	M6	0.60	2	15
LGSN 224	**564528**	M8 / M10	224	244	131	272	25 x 1.5	M6	0.60	2	15
LGSN 250	**564529**	M8 / M10	250	270	144	298	25 x 1.5	M6	0.60	2	10
LGSN 280	**564530**	M8 / M10	280	300	159	328	25 x 1.5	M6	0.60	2	10
LGSN 300	**564531**	M8 / M10	300	320	169	348	25 x 1.5	M6	0.60	2	10
LGSN 315	**564532**	M8 / M10	315	335	176	362	25 x 1.5	M6	0.60	2	10
LGSN 355	**564533**	M8 / M10	355	375	196	402	25 x 1.5	M6	0.60	2	10
LGSN 400	**564534**	M8 / M10	400	420	219	447	25 x 1.5	M6	0.60	2	10
LGSN 450	**564535**[1)]	M8 / M10	450	472	245	502	25 x 2.5	M10	0.80	5	1
LGSN 500	**564536**[1)]	M8 / M10	500	522	270	552	25 x 2.5	M10	0.80	5	1
LGSN 560	**564537**[1)]	M8 / M10	560	582	300	612	25 x 2.5	M10	0.80	5	1
LGSN 600	**564538**[1)]	M8 / M10	600	622	320	653	25 x 2.5	M10	0.80	5	1
LGSN 630	**564539**[1)]	M8 / M10	630	652	335	683	25 x 2.5	M10	0.80	5	1
LGSN 710	**564540**[1)]	M8 / M10	710	732	375	763	25 x 2.5	M10	0.80	5	1
LGSN 800	**564541**[1)]	M8 / M10	800	823	420	853	25 x 3.0	M10	0.80	5	1
LGSN 900	**564542**[1)]	M8 / M10	900	923	470	952	25 x 3.0	M10	0.80	5	1
LGSN 1000	**564543**[1)]	M8 / M10	1,000	1,023	520	1,052	25 x 3.0	M10	0.80	5	1
LGSN 1120	**564544**[1)]	M8 / M10	1,120	1.143	580	1,175	25 x 3.0	M10	0.80	5	1
LGSN 1250	**564545**[1)]	M8 / M10	1,250	1.273	645	1,305	25 x 3.0	M10	0.80	5	1

[1)] The installation with two threaded rods allows to double the given recommended loads.

Air duct hanger L- and Z-type

Fastening components - Air duct hanger L- and Z-type.

Airduct installation on steel beam with clamp hanger and ZKH

Air duct vertical installation utilising LKHS

Applications

- Fastening component with sound-insulation for air ducts.
- For use in dry interior areas.

Advantages

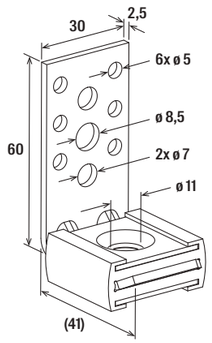
- The air duct hanger‘s sound-insulation element reduces the transfer of vibration and noise to the building.
- The multiple holes allow a quick and easy fastening with self-drilling screws or rivets.
- The center hole allows a simple alignment and height adjustment of the threaded rod.
- The LKHS enables stable vertical installation of ventilation ducts in conjunction with fischer cantilever arms FCA in riser shafts.

Properties

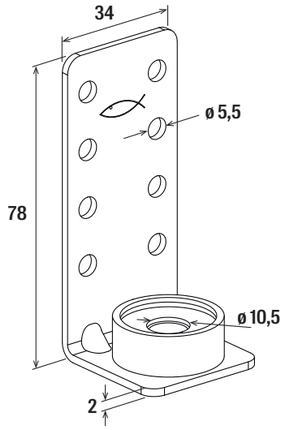
- Material LKH/ZKH: steel DD11 (material no. 1.0332)
- Material LKHN/ZKHN: steel DC01 (material no. 1.0330)
- Material LKHS: steel S235JR (material no. 1.0038)
- Zinc plating: electro zinc-plated
- Sound insulation: EPDM/SBR

See also:

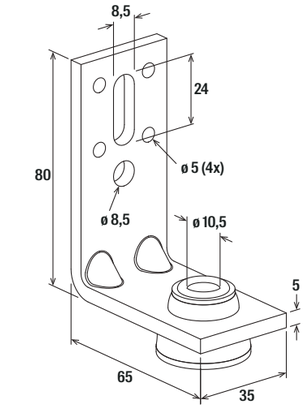
Product family Profile connecting screw
FPS-FPB Page 274



LKHN



LKH

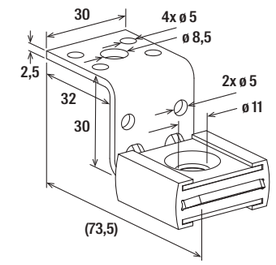


LKHS

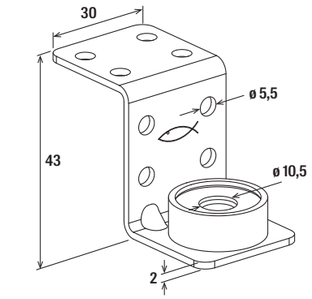
Technical data

Item	Item no.	For thread	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
LKHN	**516537**	M8, M10	0.90	50
LKH	**024671**	M8, M10	0.40	50
LKHS	**568672**	M8, M10	0.80	25

Note on LKHS: the maximum recommended load when using 4 LKHS reaches 3.20 kN.



ZKHN



ZKH

Technical data

Item	Item no.	For thread	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
ZKHN	**516540**	M8, M10	0.90	50
ZKH	**024674**	M8, M10	0.50	50

Spiral duct hanger LRB / LRBN

Fastening components - Spiral duct hanger LRB and LRBN.

Spiral duct pipe with sound insulated hanger

Applications

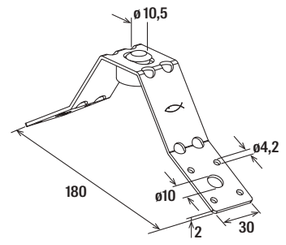
- Fastening component with sound-insulation for spiral ducts.
- For use in dry interior areas.

Advantages

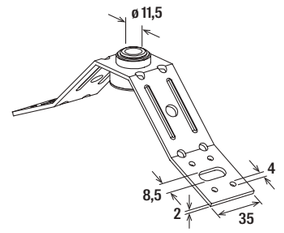
- The multiple holes on the duct hangers allow a quick and easy fastening with self-drilling screws or rivets.
- The duct hangers sound-insulation element reduces the transfer of vibration and noise.
- The center hole in the duct hangers allows the simple alignment and height adjustment of the threaded rod.
- The riveted version gives the ceiling hanger increased stability.

Properties

- Material LRB: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Material LRBN: steel S235JR (material no. 1.0038) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated
- Sound insulation: for DIN 4109
- Temperature range: -50 °C to +110 °C
- Hardness: 45 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2



LRB



LRBN

Technical data

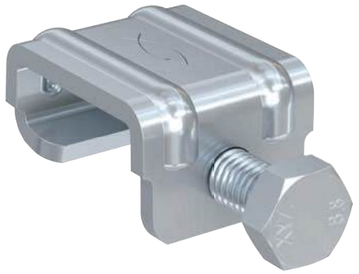
Item	Item no.	For thread	Max. recom. static load (centr. tension) [kN]	Sales unit [pcs]
LRB	**024675**	M8, M10	0.50	50
LRBN	**077613**	M8, M10	0.90	50

See also:

Product family Profile connecting screw
FPS-FPB Page 274

Ventilation duct connector VDC

Connecting elements - Ventilation duct connector VDC.



Flange connection of two rectangular ducts

Applications

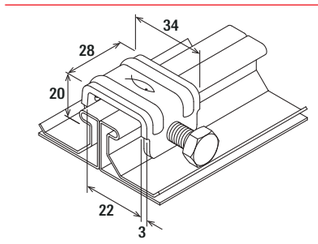
- Ventilation duct connector VDC for simple flange connection of large duct cross-sections and/or high pressure conditions.
- For use in dry interior areas.

Advantages

- Easy to use.
- No drilling.
- High clamping effect.
- Ensures a firm connection of ducts.
- Reduces pressure losses in the ventilation duct systems.
- Reduces noise in the ventilation duct system.

Properties

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



VDC

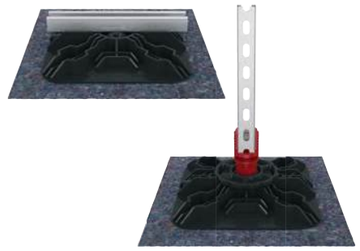
Technical data

Item	Item no.	Bolt ø x length	Rec. installation distance [mm]	Sales unit [pcs]
VDC	**568675**	M8 x 20	200 – 300	50

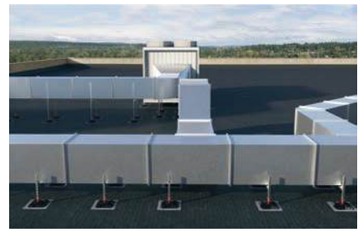
For ventilation ducts with a side length of less than 800 mm, place a connector in the middle of each side.

Flat roof base FFRB / FFRBH

Flat roof base - Secure and variable thanks to tolerance compensation.



Pipelines and pipeline routes



Ventilation systems and ventilation ducts

Applications

- Pipelines and cable trays on flat roofs
- Ventilation ducts and pipes on flat roofs
- Air conditioning systems, heat exchangers and cooling towers, etc. on flat roofs
- Maintenance platforms, walkways and bridges
- Solar thermal or photovoltaic systems
- Protecting membrane roofs
- Wind safety attachments
- Durability test for the application, tested according to EOTA TR 024: 2019-08. Test report No. 904 1349 000/STÄ

Advantages

- The fischer flat roof base ensures optimal weight distribution and reduces point loads on flat roofs, protecting against defect and recourse claims.
- The system fit with the proven FUS channel system in hot-dip galvanised steel ensures economical installation.
- The material of the base plate enables weather-resistant, durable and secure fixing of supports on flat roofs.
- The protective fibre fleece FFRP protects synthetic roofs or bitumen waterproofing membranes, and effectively prevents damage or penetration of the membrane.
- The handwheel of the flat roof base FFRBH allows for continuous adjustment of the tilt angle up to 12° and reduces the installation effort in the long term, as no further accessories are required.
- The swivel-mounted base of the flat roof base FFRBH enables a 360° rotation of the FUS channel. This allows the flat roof base to be placed in any position.

Properties

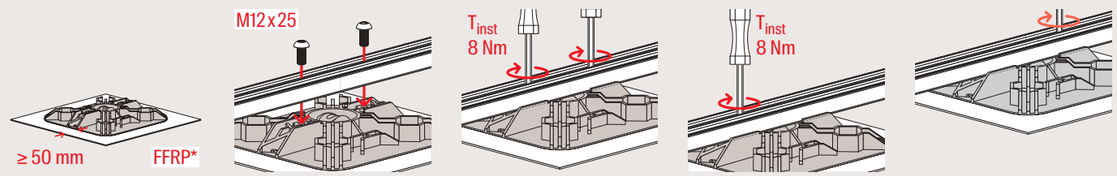
Material FFRB / FFRBH:
- PP HD GF30%
- nut stainless steel A2, DIN 6330 + DIN 934
- disc spring: stainless steel A2, DIN 2093

Material LKS:
- stainless steel A2, DIN 933

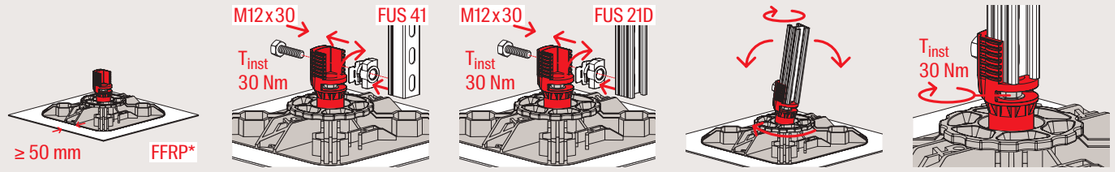
Material FFRP:
- polyester fibre fleece 300 g/m²

Material FFRBB:
- concrete

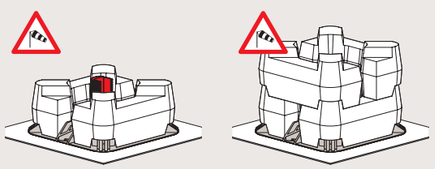
Installation FFRB

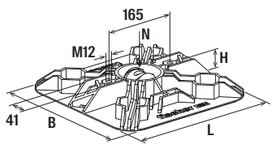


Installation FFRBH

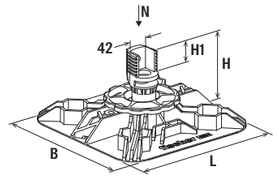


Installation FFRBB

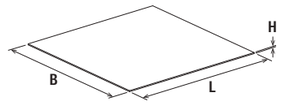




FFRB



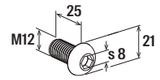
FFRBH



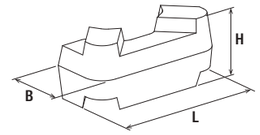
FFRP

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Height 1 H1 [mm]	Installation torque T_{inst} [Nm]	Max. recommended static load (upright) N_{rec} [kN]	Weight packaging unit [kg]	Sales unit [pcs]
FFRB Flat roof base standard	**559127**	340	340	52	–	40	20.0	3.285	2
FFRBH Flat roof base hinged	**559128**	340	340	168	50	40	20.0	4.255	2
FFRP Flat roof base protector	**559129**	450	450	3	–	–	–	0.870	10



LKS



FFRBB

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Weight packaging unit [kg]	Sales unit [pcs]
LKS M12x25 A2	**559972**	25	–	–	1.460	50
FFRBB flat roof base ballast	**559130**	330	135	150	8.000	1

Profile hanger TZ / TZA / TZH / TZB / TZR

Metal ceiling hanger - Profile hanger TZ / TZA / TZH / TZB / TZR.

Sprinkler pipe installation to trapezoidal metal sheet

Ventilation duct on trapezoidal sheet

Applications

- Fixing element for trapezoidal sheets (available in five versions).
- For application in sprinkler systems TZ, TZH and TZA need to be fastened with a hex bolt through the punched hole.
- For non sprinkler applications the hangers can be fixed to the metal sheet using self drilling screws or blind rivets
- For use in dry interior areas.

Advantages

- The VdS approval for TZ/TZH and the FM approval for the TZA guarantee independently tested safety.
- The TZH's adjustable nut allows a simple, post-installation height adjustment.
- The predetermined bending point of the TZ/TZH/TZA enables ideal adaptation to the trapezoidal sheet shape.
- The TZR reduces the noise emission in the building by using a sound insulation element.
- The TZB is a cost-effective alternative for standard non-approved applications for use with threaded rods and nuts.

Properties

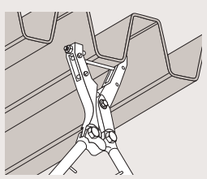
- Material TZ/TZA: steel DD11
- Material TZH: steel DX51D+Z140-275
- Material TZB/TZR: Q235B
- Zinc plating: electro zinc-plated

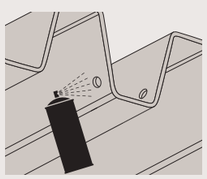
Certificates / Features

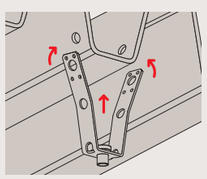
FM APPROVED

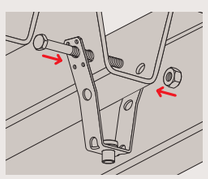
VdS

Installation TZ/TZH/TZA

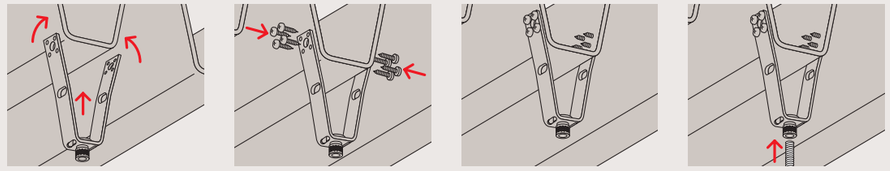


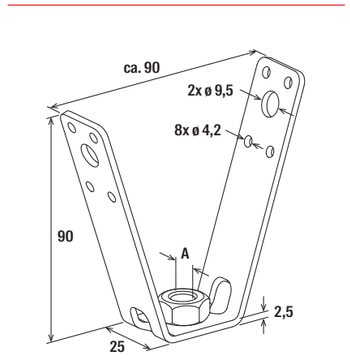




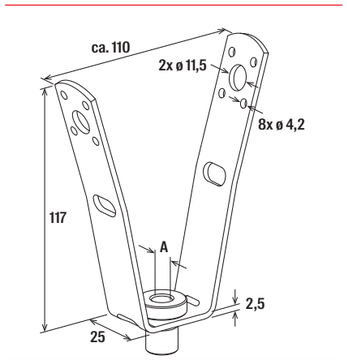


Other installations





TZ



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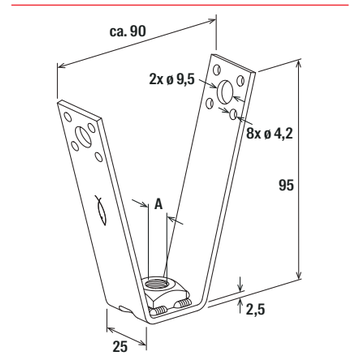

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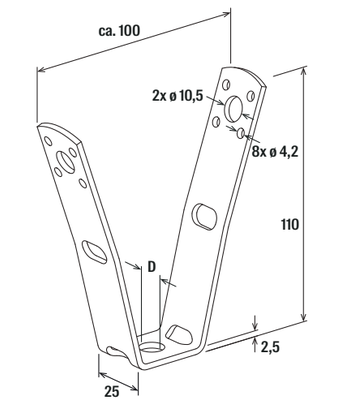

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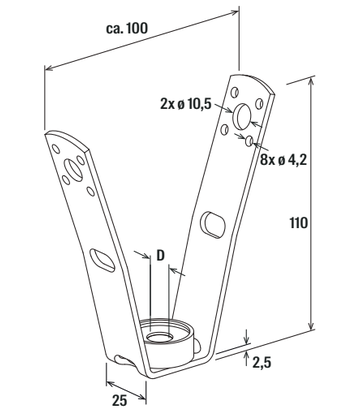


TZR

Technical data

Item	Item no.	VdS approval	FM approval	Thread A	Hole-ø D [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
TZ M8	**064094**	Yes	–	M8	–	3.00	25
TZ M10	**064095**	Yes	–	M10	–	3.00	25
TZA M10	**524047**	–	Yes	M10	–	3.00	50
TZH M8	**079825**	Yes	–	M8	–	4.00	25
TZH M10	**079826**	Yes	–	M10	–	4.00	25
TZB ø10.5	**568674**	–	–	–	10.5	3.00	50
TZR ø10.5	**568673**	–	–	–	10.5	3.00	50

The load values do not consider the maximum allowable load of the trapezoidal metal sheet.

Toggle plug KDS

Toggle plug KDS for secure fixing of pipes to trapezoidal metal sheet ceilings in stationary sprinkler systems.

Sprinkler pipe on trapezoidal sheet metal ceiling

Applications

- The completely pre-assembled toggle plug KDS is used as a fixing element on trapezoidal metal ceilings.
- Suitable e.g. for fixing pipelines, mounting channels, ventilation ducts, power lines and lighting systems.
- Attachment of sprinkler pipelines to trapezoidal metal sheets: from ¾ to 1 ½“ inch according to FM, max DN 50 (2“) according to VdS.
- The permissible tensile load per fastening point for sprinkler lines on trapezoidal sheets is 0.8 kN, for other fastenings it is 1.0 kN.
- For use in dry interior areas.

Advantages

- The entire KDS range has VdS approval. The KDS 10 also has FM approval. This means that the KDS toggle plug guarantees objectively tested functional safety for use in sprinkler systems.
- Available in lengths from 100 to 500 mm (KDS 8) and 100 to 200 mm (KDS 10).
- The rotatable threaded rod allows easy height adjustment within the trapezoidal sheet. The threaded rod is secured against unintentional unscrewing.
- Complete with threaded rod, nut, washer, sealing washer and load distribution block. The sealing washer ensures a reliable seal on the trapezoidal metal sheet.

Properties

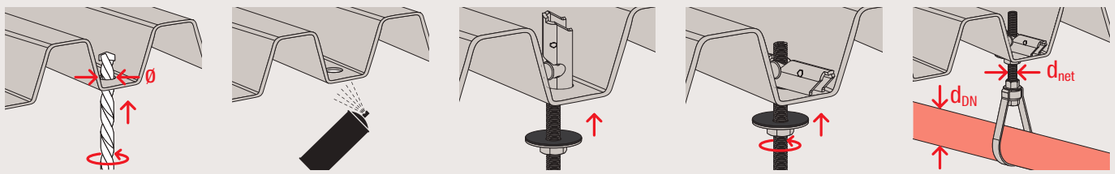
- Material: galvanised steel
- Material sealing washer: polyolefin-elastomere TPE-O
- Zinc plating: electro zinc-plated

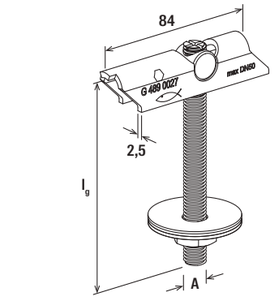
Certificates / Features

FM APPROVED

VdS

Installation KDS





KDS

Technical data

Item	Item no.	Thread A	Thread length l_g [mm]	For sprinkler pipes acc. to VdS	dnet VdS	For sprinkler pipes acc. to FM	dnet FM	Drill hole ø [mm]	Permissible tension load acc. to VdS/FM on trapezoidal metal sheet ≥ 0.63mm [kN]	Permissible tension load for non-VdS/FM rel. applications on trap. metal sheet* [kN]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
KDS 8x100	**563859**	M8	100	≤ DN 50 (2“)	M8	–	–	22	0.8	1	8.00	50
KDS 8x200	**563860**	M8	200	≤ DN 50 (2“)	M8	–	–	22	0.8	1	8.00	25
KDS 8x300	**563861**	M8	300	≤ DN 50 (2“)	M8	–	–	22	0.8	1	8.00	25
KDS 8x500	**563862**	M8	500	≤ DN 50 (2“)	M8	–	–	22	0.8	1	8.00	25
KDS 10x100	**563863**	M10	100	≤ DN 50 (2“)	M10	DN 20 to DN 40 (¾“ to 1½“)	M10	25	0.8	1	8.50	25
KDS 10x200	**563864**	M10	200	≤ DN 50 (2“)	M10	DN 20 to DN 40 (¾“ to 1½“)	M10	25	0.8	1	8.50	25

* Note on the maximal recommended static load (centric tension): Please consider the permissible load capacity of the trapezoidal metal sheet.

Hole punch LZ, hole stamp LST

Hole punch for punching trapezoidal sheet roofs.

Applications

- Tool for punching holes in trapezoidal metal sheets.

Advantages

- The hole punch LZ enables easy handling during use.
- Thanks to the long lever, only a little force is required to use it.
- The hole stamp LST can be replaced if it shows signs of wear.

Properties

- Usable for trapezoidal metal sheets with max. width of 100 mm.
- Max. sheet thickness 1,25 mm.
- Hole punch diameter 10 mm.
- Adjustable depth stop for accurate adjustment.
- Stamp with ejector springs for easy ejection of stamps from metal sheet.
- Rubber handles for better grip.
- Long lever and hinges for better power transmission.

Technical data

Item	Item no.	Max. sheet thickness [mm]	Hole punch diameter [mm]	Opening width [mm]	Sales unit [pcs]
LZ	**079830**	1.25	10	100	1

Hole stamp LST

LST

Item	Item no.	Hole punch diameter [mm]	Sales unit [pcs]
LST 10	**079829**	10	2

Rubber inlay EMS

Fastening components - Rubber inlay EMS.

Airduct with sound insulation on installation channel

Applications

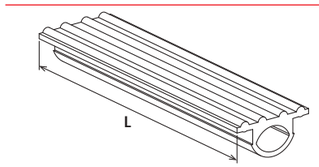
- Profile rubber to insert in channels.
- Sound insulation of large ducting.
- EMS 31 suitable for FLS channels, EMS 41 suitable for FUS channels.

Advantages

- The channel rubber EMS provides sound insulation between components.
- The design of the rubber EMS allows it to be used in channels and threaded rods.

Properties

- Material sound insulation: SBR/EPDM chlorine-free and silicone-free
- Sound insulation: special noise-absorbing lining
- Temperature range: -50 °C to +110 °C
- Hardness: 45 ± 5° Shore A
- Fire behaviour: DIN 4102: Class B2



EMS

Technical data

Item	Item no.	For profile	Length l [m]	Sales unit [pcs]
EMS 31	**538752**	all FLS channels	25	1
EMS 41	**550806**	all FUS channels	6	1

Profile connecting screw FPS-FPB · Airduct and metal roof fixings

Profile connecting screw FPS-FPB

The profile connection screw with mushroom head, drill point and PH cross drive.

Suspended pipes on trapezoid roof

7

Applications

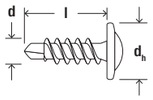
- Suitable for fastening duct hangers and spiral duct hangers to air ducts and spiral air ducts.
- For use in dry interior areas.

Advantages

- The screw is self drilling and does not require a drilling machine.

Properties

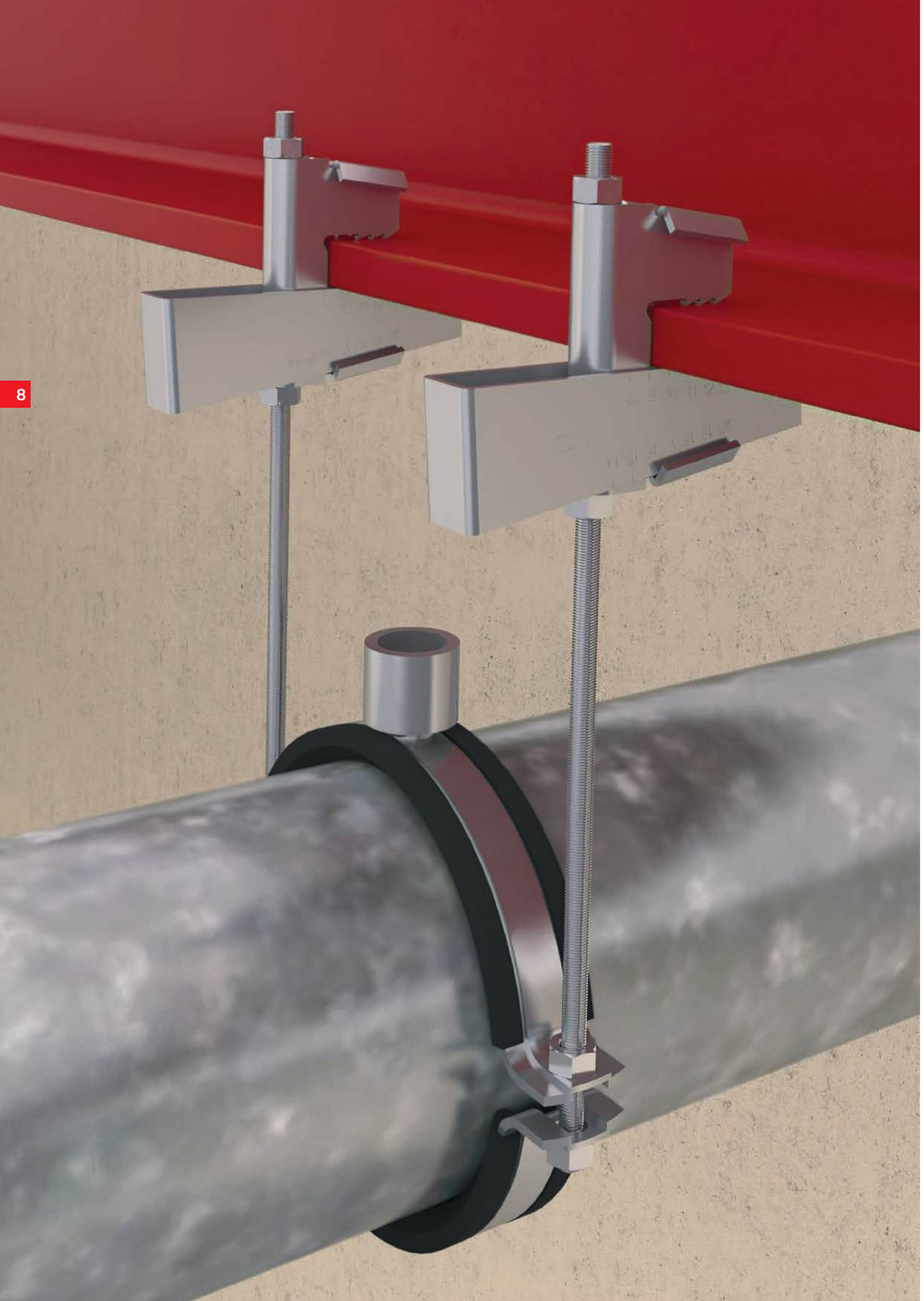
- Material: steel
- Zinc plating: electro zinc-plated



FPS-FPB

Technical data

Item	Item no.	Diameter d [mm]	Head-ø d_h [mm]	Length l [mm]	Drive	Sales unit [pcs]
FPS-FPB 4.2 x 13 ZPF 1000	**040457**	4.2	9.6	13	PH2	1,000



8
Mounting accessories

8

Beam clamp TKL

Clamp hanger TKL - the easy fixing solution without welding and drilling.

Heavy drainage pipe on beam clamp

Applications

- Clamp hangers allow for simple fixing by clamping direct to steel girders.
- Retaining straps SS-TKL are required for VdS equipment over ø 65 mm.
- TKL: for use in dry interior areas.
- TKL hdg: for indoor and outdoor application.
- TKL A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

- 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.
- VdS/FM/UL certificates guarantee independently tested safety.
- The solid TKL design guarantees a high load-bearing capacity.
- The TKL with thread mount guarantees quick and easy installation.
- The TKL with through-hole allows for height adjustment after installation.

Properties

- Material TKL: malleable cast iron GJMB-350-10 (M12: 460-6) acc. to DIN 1562
- Material bolt: steel 8.8 acc. to ISO 4017
- Material nut: steel acc. to ISO 4035, strength category 4
- Material SS-TKL: steel DX51D (material no. 1.0226) acc. to EN 10214
- Zinc plating: electro zinc-plated
- Material TKL A4: stainless steel A4 (material no. 1.4401 / AISI316) acc. to EN 10088-3
- Material bolt TKL A4: stainless steel A4 acc. to DIN 933 with cup point (CP) acc. to EN ISO 4573
- Material nut TKL A4: stainless steel A4 acc. to DIN 439

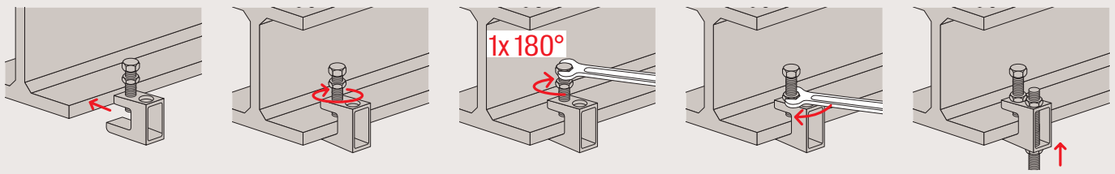
Certificates / Features

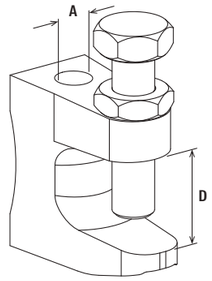
FM APPROVED

VdS

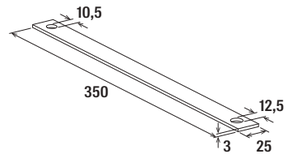
UL

Installation TKL

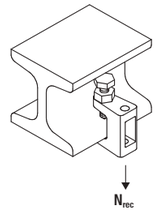




TKL



SS-TKL



Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A4 Item no. A4	VdS approval	FM approval	UL approval	Clamping range D [mm]	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
TKL M8	**079687**	**–**	**–**	Yes	–	–	0 – 23	M8	2.50	50
TKL ø 9	**–**	**–**	**564395**	–	–	–	0 – 18	ø 9	1.20	50
TKL M10	**079688**	**564393**	**–**	Yes	Yes	Yes	0 – 20	M10	2.50	50
TKL ø 11	**079689**	**–**	**–**	Yes	Yes	Yes	0 – 20	ø 11	2.50	50
TKL ø 11	**–**	**–**	**564396**	–	–	–	0 – 18	ø 11	1.80	50
TKL M12	**020949**	**564394**	**–**	Yes	Yes	Yes	0 – 26	M12	3.50	50
TKL ø 13	**043275**	**–**	**–**	Yes	Yes	Yes	0 – 26	ø 13	3.50	50
TKL ø 13	**–**	**–**	**564397**	–	–	–	0 – 18	ø 13	2.00	50
TKL L M8	**064055**	**564392**	**–**	Yes	–	–	0 – 18	M8	1.20	50
TKL L ø 9	**077605**	**–**	**–**	Yes	–	–	0 – 18	ø 9	1.20	50
SS-TKL M10/M12	**048154**	**–**	**–**	Yes	–	–	–	ø 10 / ø 12	–	25

Beam clamp TKLS

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%.
- Retaining straps SS-TKLS are required for VdS equipment over ø 65 mm.
- TKLS: for use in dry interior areas.
- TKLS A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Advantages

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

Properties

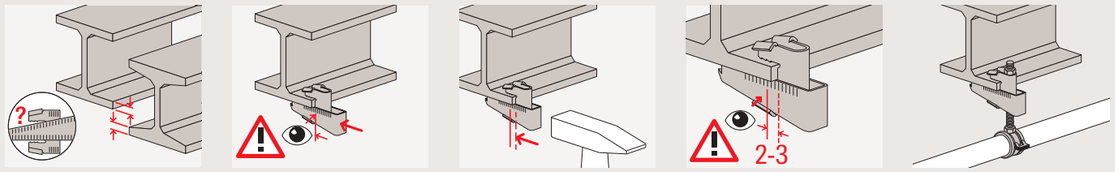
- TKLS:
- Material: steel HX420LAD+ZAD (material no. 1.0935) acc. to DIN EN 10346
- Zinc plating: electro zinc-plated
- SS-TKLS:
- Material: steel DX51D (material no.1.0226) acc. to EN 10214
- Zinc plating: electro zinc-plated
- TKLS A4:
- Material: stainless steel A4 (material no. 1.4404 / AISI316L) acc. to EN 10088-3

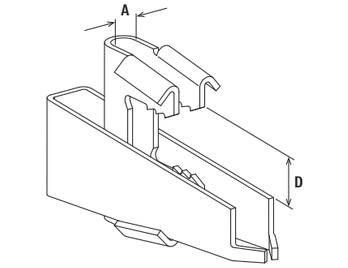
Certificates / Features

FM APPROVED

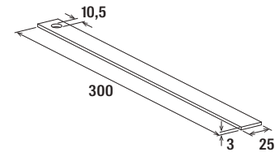
VdS

Installation TKLS





TKLS



SS-TKLS

Technical data

Item	Galvanised steel Item no. gvz	A4 Item no. A4	VdS approval	FM approval	Hole-ø A [mm]	Clamping range D [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Max. recom. pipe-ø acc. VDS CEA 4001	Sales unit [pcs]
TKLS ø 9	**531134**	**–**	Yes	–	9	8 – 20	2.00	≤ DN 50	25
TKLS ø 11	**531136**	**564391**	Yes	Yes	11	8 – 20	3.50	> DN 50 ≤ DN 100	25
TKLS ø 13	**531137**	**–**	Yes	Yes	13	8 – 20	5.00	> DN 100 ≤ DN 200	25
TKLS ø 17	**531138**	**–**	Yes	Yes	17	11 – 26	10.00	> DN 200 ≤ DN 250	16
SS-TKLS M10	**566855**	**–**	Yes	–	–	–	–	–	50
SS-TKLS M10	**–**	**564399**	Yes	–	–	–	–	–	25
SS-TKLS M12	**566856**	**–**	Yes	–	–	–	–	–	50
SS-TKLS M16	**566857**	**–**	Yes	–	–	–	–	–	50

Beam clamp TKLP

Beam clamp TKLP for fastening to steel beams without drilling and welding

Connection to girder with beam clamp TKLP and FUS channel

Connection to girder with beam clamp TKLP and steel plate

Applications

- Installation of FUS channels or saddle flanges on steel beams without drilling and welding
- Suitable for all standard steel beams up to 25 mm clamping thickness
- For use in dry indoor areas

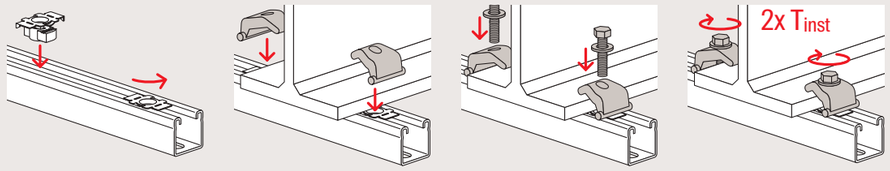
Advantages

- Attachment to steel beams without drilling and welding
- Quick installation
- Easy to adjust

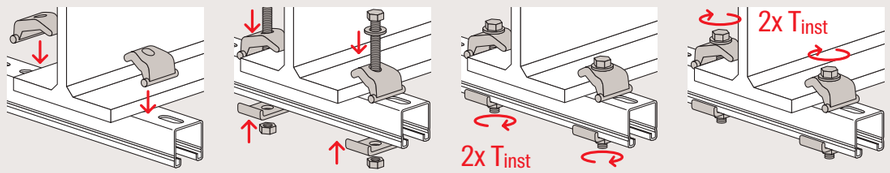
Properties

- Material: cast iron GGG-40
- Zinc plating: electro zinc-plated

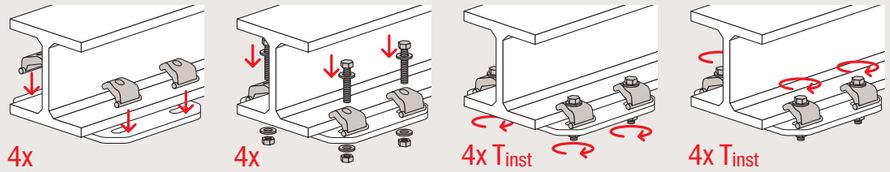
Installation Beam clamp TKLP with FUS channel opening upwards

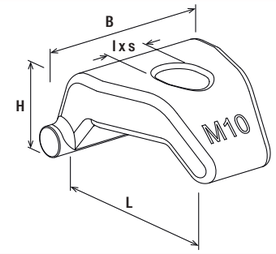


Installation Beam clamp TKLP with FUS channel opening downwards



Installation Beam clamp TKLP with plate

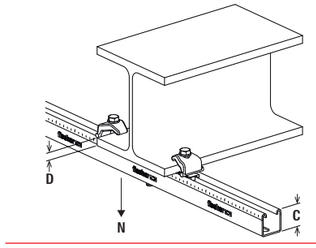




TKLP

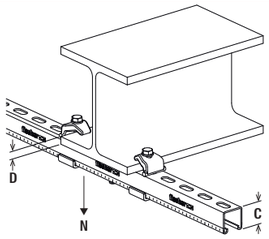
Technical data

	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Clamping range [mm]	Slot l x s [mm]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
Item								
TKLP M10	575477	49	45.5	22.5	1 – 25	11 x 14	30	20



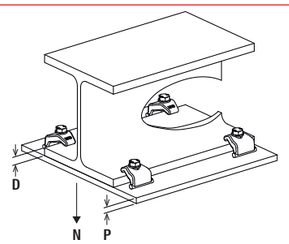
Loads - Loadcase 1

	Item no.	Max. recom. static load $N_{rec.}$ FUS channel 1.5 mm [kN]	FUS channel 2.0 mm [kN]	FUS channel 2.5 mm [kN]	Required bolt length [mm]
Item					
TKLP M10	575477	5.0	8.0	10	35 mm + D



Loads - Loadcase 2

Item	Item no.	Max. recom. static load $N_{rec.}$ FUS channel 1.5 mm [kN]	FUS channel 2.0 mm [kN]	FUS channel 2.5 mm [kN]	Required bolt length [mm]
TKLP M10	575477	10	12	12	40 mm + D + C



Loads - Loadcase 3

Item	Item no.	Max. recom. static load $N_{rec.}$ Steelplate [kN]	Required bolt length [mm]
TKLP M10	575477	24	40 mm + D + P

Swivel beam clamp TKLG

Swivel beam clamp TKLG - The articulated beam clamp for fastening to inclined steel beams.


Pipe fixing to inclined steel beam


Steel beam fixing with retaining strap

Applications

- The swivel beam clamp TKLG enables pipe and channel suspensions to be easily attached by clamping them to inclined steel supports.
- For suspending sprinkler pipes from sloped or tilted steel supports up to a deflection angle of max. 25° in accordance with FM and VdS.
- For pipes ≥ DN 65 and when installed to tilted or sloped steel beams, the TKLG support clamp must be secured to the steel support with the SS-TKLG retaining strap for VdS-compliant installation.
- Suitable for pipelines up to DN 100 according to VdS.
- Suitable for steel beams with flange thicknesses of max. 17 mm.
- For use in dry interior areas.

Advantages

- The hinged design allows installation to inclined or tilted steel beams without welding or drilling.
- The joint connection can be rotated 360° and allows angle mounting from 0-180°.
- FM and VdS approval guarantee objectively tested functional reliability.
- Suitable for use in stationary sprinkler systems.
- The solid design of the TKLG allows a high load capacity.
- The M8 or M10 threaded mount allows threaded rods to be installed quickly and easily on the TKLG.
- Suitable for steel beams with flange thicknesses up to max. 17 mm

Properties

- Material TKLG: high alloy steel S420NC
- Material screw: steel grade 8.8
- Material nut: steel acc. to DIN 267-4, grade min. 8
- Material SS-TKLG: steel DX51D+Z275
- Zinc plating: electro zinc-plated

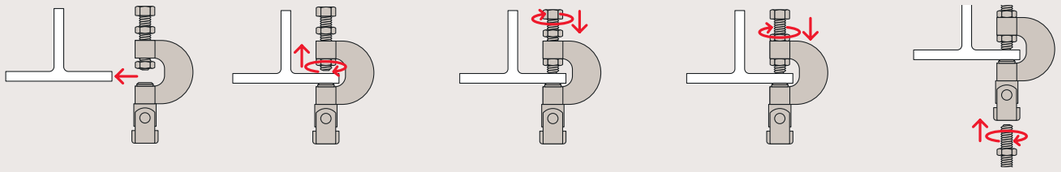
Certificates / Features

FM APPROVED

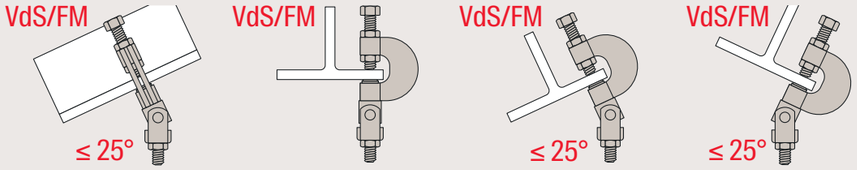
VdS

G 423024

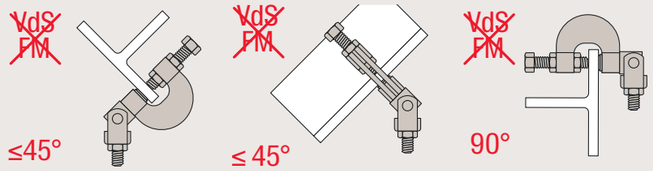
Installation TKLG

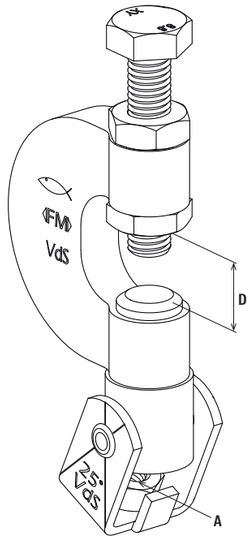


FM/VdS-approved installation

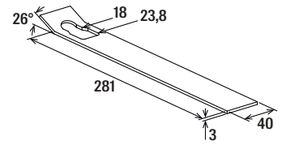


Other installations

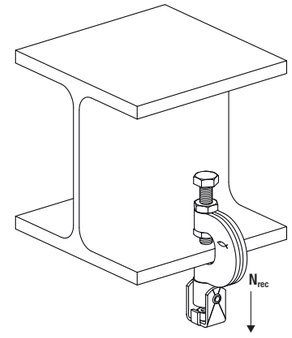




TKLG



SS-TKLG



Technical data

Item	Item no.	VdS approval	FM approval	Clamping range D [mm]	Thread A	Max. recom. static load at 0-25° N_{rec} [kN]	Max. recom. static load at 25-45° N_{rec} [kN]	Sales unit [pcs]
TKLG M8	**570846**	Yes	–	3 – 17	M8	2.50	1.50	25
TKLG M10	**570847**	Yes	Yes	3 – 17	M10	2.50	1.50	25
SS-TKLG	**573820**	Yes	–	–	–	–	–	10

Threaded rod G

Universal threaded rod for fixing pipes and channels.

Applications

- G: for use in dry interior areas.
- G hdg: for indoor and outdoor application.
- G A2/A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion. (A2: not suitable for use in environments containing chlorine.)

Certificates / Features

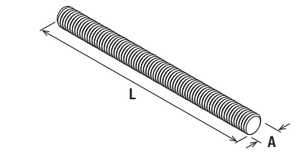
Properties

- Material threaded rod G (G6 - G24): DIN 976 steel 4.8, acc. to DIN EN ISO 898-1
- Material threaded pipe G (G½“ - G¾“): steel S235JR (material no. 1.0037), acc. to DIN EN 10025
- Zinc plating: electro zinc-plated
- Material hot-dip galvanised versions: DIN 976 steel 4.8 acc. to DIN EN ISO 989-1
- Zinc plating: zinclamella coated. Zinc plating M10-M16: hot-dip galvanised
- Material A2: stainless steel A2 (material no. 1.4301)
- Material A4: stainless steel A4 (material no. 1.4401)

G

Technical data

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A2 Item no. A2	A4 Item no. A4	Approval ETA	Length L [mm]	Thread A	Sales unit [pcs]
G M6 x 1000	020956	–	–	–	–	1,000	M6	50
G M8 x 1000	079740	537691	–	–	–	1,000	M8	25
G M8 x 1000	–	–	077644	077645	–	1,000	M8	5
G M8 x 2000	079741	–	–	–	–	2,000	M8	25



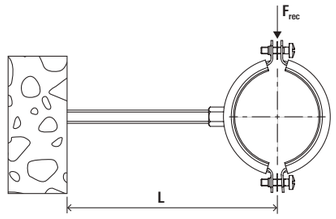
G

Technical data

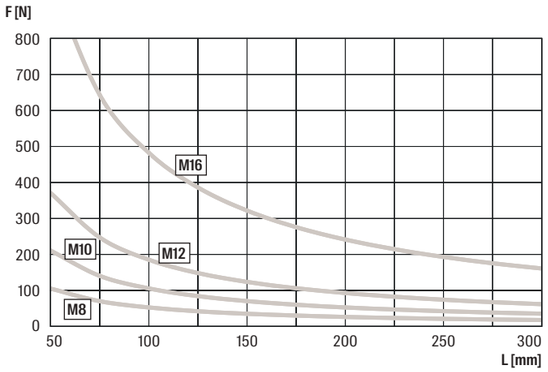
Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A2 Item no. A2	A4 Item no. A4	Approval ETA	Length L [mm]	Thread A	Sales unit [pcs]
G M8 x 2000	–	574754	–	–	–	2,000	M8	20
G M10 x 1000	079744	537694	–	–	●	1,000	M10	25
G M10 x 1000	–	–	065173	065174	–	1,000	M10	5
G M10 x 2000	079745	–	–	–	●	2,000	M10	25
G M10 x 2000	–	574755	–	–	–	2,000	M10	20
G M10 x 3000	557092	574756	–	–	●	3,000	M10	5
G M12 x 1000	020957	537695	–	–	●	1,000	M12	20
G M12 x 2000	579746	–	–	–	●	2,000	M12	25
G M12 x 2000	–	574757	–	–	–	2,000	M12	20
G M12 x 2000	–	–	–	563016	–	2,000	M12	5
G M12 x 3000	064056	574758	–	–	●	3,000	M12	5
G M16 x 1000	020958	537696	–	–	●	1,000	M16	10
G M16 x 2000	–	–	–	563017	–	2,000	M16	5
G M16 x 3000	568434	574759	–	–	–	3,000	M16	5
G M20 x 1000	557295	–	–	–	–	1,000	M20	5
G M24 x 1000	557270	–	–	–	–	1,000	M24	5
G 1“ x 2000	568435	–	–	–	–	2,000	1“	5
G 1/2“ x 2000	064093	–	–	–	–	2,000	1/2“	10
G 3/4“ x 2000	077580	–	–	–	–	2,000	3/4“	5

ETA approval only for galvanized steel variants.

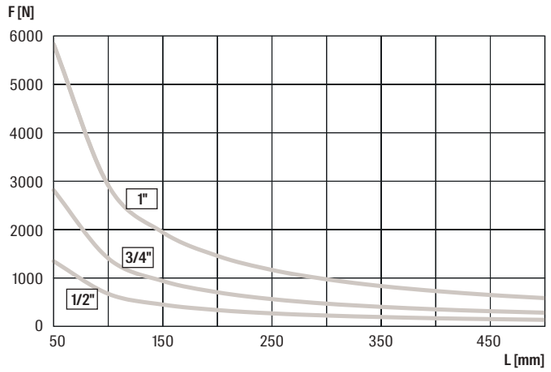
Loads



Threaded rods (4.8)



Threaded pipes



Threaded stud GS

Universal threaded stud for mounting pipes.

Applications

- GS: for use in dry interior areas.
- GS A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Properties

- Material GS: DIN 976 steel 4.6 acc. to DIN EN ISO 898-1
- Zinc plating: electro zinc-plated
- Material GS A4: stainless steel A4 (material no.1.4401) acc. to DIN EN 10088-1

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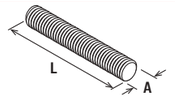
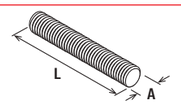


GS

Technical data

Item	Galvanised steel Item no. gvz	A4 Item no. A4	Length L [mm]	Thread A	Sales unit [pcs]
GS M6 x 25	**544589**	**–**	25	M6	100
GS M6 x 40	**544590**	**–**	40	M6	100
GS M6 x 50	**544591**	**–**	50	M6	100
GS M6 x 70	**544592**	**–**	70	M6	100
GS M6 x 80	**544593**	**–**	80	M6	100
GS M6 x 100	**544594**	**–**	100	M6	100
GS M8 x 25	**079750**	**–**	25	M8	100
GS M8 x 40	**079751**	**–**	40	M8	100
GS M8 x 40	**–**	**559698**	40	M8	50
GS M8 x 50	**079752**	**–**	50	M8	100
GS M8 x 60	**079753**	**–**	60	M8	100
GS M8 x 60	**–**	**559699**	60	M8	50
GS M8 x 70	**079754**	**–**	70	M8	100
GS M8 x 80	**079755**	**–**	80	M8	100
GS M8 x 100	**079757**	**–**	100	M8	100

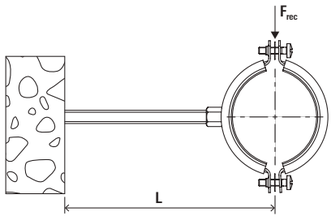


GS

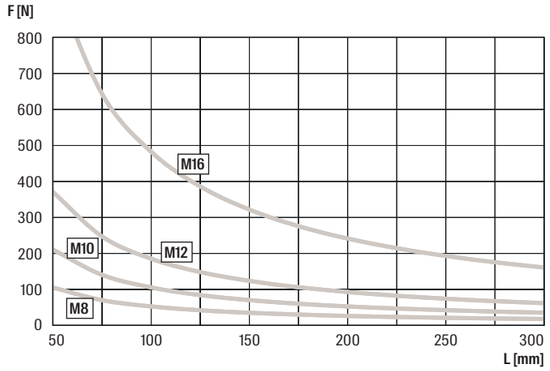
Technical data

Item	Galvanised steel Item no. gvz	A4 Item no. A4	Length L [mm]	Thread A	Sales unit [pcs]
GS M8 x 120	535535	–	120	M8	50
GS M8 x 150	079758	–	150	M8	50
GS M8 x 180	535536	–	180	M8	50
GS M8 x 200	079759	–	200	M8	50
GS M10 x 25	079765	–	25	M10	100
GS M10 x 40	079766	–	40	M10	100
GS M10 x 40	–	559700	40	M10	50
GS M10 x 60	079767	–	60	M10	100
GS M10 x 60	–	559701	60	M10	50
GS M10 x 80	079768	–	80	M10	100
GS M12 x 40	091442	–	40	M12	100
GS M12 x 60	091443	–	60	M12	100
GS M12 x 80	091444	–	80	M12	100
GS M10 x 100	079769	–	100	M10	100
GS M10 x 120	079770	–	120	M10	50
GS M10 x 150	079771	–	150	M10	50
GS M10 x 200	079772	–	200	M10	50
GS M12 x 100	091461	–	100	M12	100
GS M12 x 120	091462	–	120	M12	50
GS M12 x 150	091463	–	150	M12	50
GS M12 x 200	091464	–	200	M12	50
GS M16 x 40	570691	–	40	M16	50

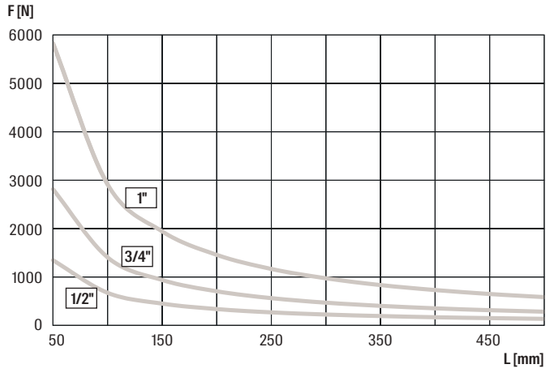
Loads



Threaded rods (4.8)



Threaded pipes



Hexagonal connector VM

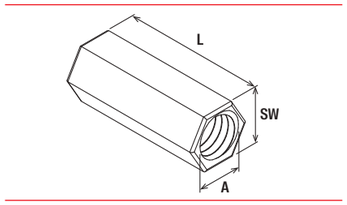
Extension connector for connecting threaded rods.

Applications

- VM: for use in dry interior areas.
- VM hdg: for indoor and outdoor application.
- VM A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Properties

- Material VM: C8C (material no. 1.0213) acc. to DIN EN 10263-2
- Zinc plating: electro zinc-plated
- Material VM A4: stainless steel A4 (material no. 1.4404)



VM

Hexagonal connector VM

	Galvanised steel	A4	Length	Thread	Width across nut	Sales unit
			L	A	SW	
	Item no.	Item no.	[mm]		[mm]	[pcs]
Item	gvz	A4				
VM M6	014319	–	25	M6	10	100
VM M8	079690	–	30	M8	11	100
VM M8	–	559706	30	M8	–	50
VM M10	079691	–	30	M10	13	100
VM M10	–	559707	30	M10	–	50
VM M12	020971	–	40	M12	17	100
VM M16	508833	–	40	M16	24	50

Base plates GP

Base plates GPL / GPS / GPSR / GPR / GPMR for dimensionally stable connections between the substrate and pipeline.

Plastic pipe with double clamp installation

Baseplate on installation channel

Applications

- Creation of dimensionally stable connections between the substrate and pipeline.
- For use in dry interior areas.

Certificates / Features

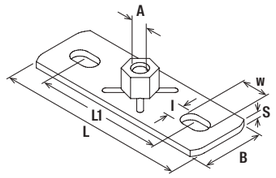
BZS S 25-315

Advantages

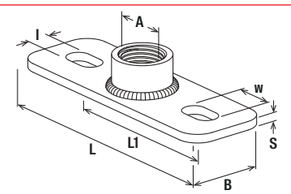
- The base plate´s slots allow easy alignment.
- GPSR and GPMR with round welded nut for rigid connection of threaded rods to the substrate.

Properties

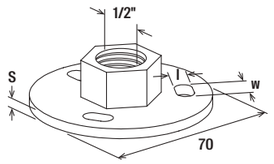
- Material: steel DD11 (material no. 1.0332) acc. to DIN EN 10111
- Zinc plating: electro zinc-plated



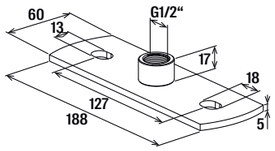
GPL/GPS



GPSR



GPR



GPMR

8

Technical data

Item	Item no.	Welding type	Thread A	Length L [mm]	Width B [mm]	Hole spacing L1 [mm]	Slot l x w [mm]	Thickness S [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
GPL M8	**079665**	spot welded	M8	80	30	54	9 x 16	3.0	2.40	25
GPL M10	**079666**	spot welded	M10	80	30	54	9 x 16	3.0	2.40	25
GPL M8/M10	**553637**	spot welded	M8 / M10	80	30	54	9 x 18	3.0	2.40	25
GPL 1/2“	**079667**	spot welded	1/2“	80	30	54	9 x 16	3.0	2.40	25
GPS M10	**079671**	spot welded	M10	120	40	79	11 x 19	4.0	6.00	25
GPS M12	**040398**	spot welded	M12	120	40	79	11 x 19	4.0	6.00	25
GPS 1/2“	**079672**	spot welded	1/2“	120	40	79	11 x 19	4.0	8.00	25
GPSR M10	**570927**	round welded	M10	120	40	79	11 x 19	4.0	6.00	25
GPSR M12	**570928**	round welded	M12	120	40	79	11 x 19	4.0	7.50	25
GPSR M16	**504408**	round welded	M16	120	40	79	11 x 19	4.0	8.00	25
GPSR 1/2“	**570929**	round welded	1/2“	120	40	79	11 x 19	4.0	8.00	25
GPSR 3/4“	**020968**	round welded	3/4“	120	40	79	11 x 19	4.0	8.00	25
GPSR 1“	**570930**	round welded	1“	120	40	79	13 x 19	4.0	10.00	25
GPR 1/2“	**037289**	spot welded	1/2“	–	–	–	11 x 7	4.0	4.00	25
GPMR 1/2“	**577199**	round welded	1/2“	188	60	127	18 x 13	5.0	7.50	10

Stud screw STST with TX star recess

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

8

Applications

- Stud screw for easy attachment of pipe clamps directly to the substrate using plugs with TX drive.
- Direct connection to wooden surfaces without plugs using a wooden thread.
- For use in dry indoor areas.

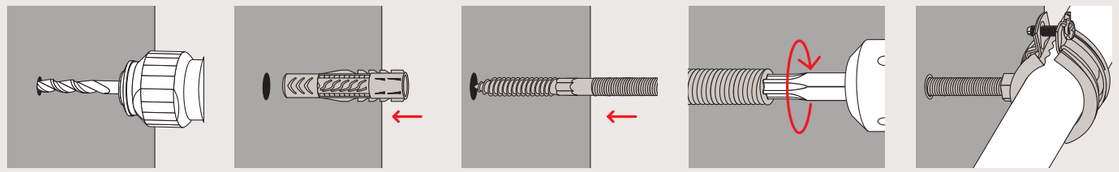
Advantages

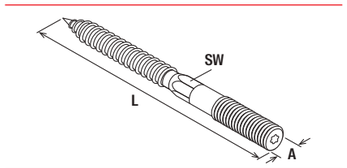
- Fixing with a nylon plug to brick or direct into timber construction is simple with the torx drive or the integrated hexagon.
- Different thread lengths and diameters allow a wide range of applications.

Properties

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

Installation STST





STST

Technical data

Item	Item no.	Length L [mm]	Thread A	Drive	Width across nut SW [mm]	Sales unit [pcs]
STST 6 x 60	**504400**[1]	60	M6	TX15	–	100
STST 6 x 80	**077714**[1]	80	M6	TX15	–	100
STST 8 x 50	**079780**[1]	50	M8	TX25	–	100
STST 8 x 60	**079781**	60	M8	TX25	6	100
STST 8 x 80	**079782**	80	M8	TX25	6	100
STST 8 x 100	**079783**	100	M8	TX25	6	100
STST 8 x 120	**079784**	120	M8	TX25	6	100
STST 8 x 140	**079785**	140	M8	TX25	6	50
STST 8 x 180	**079786**	180	M8	TX25	6	50
STST 10 x 60	**077689**	60	M10	TX25	8	100
STST 10 x 80	**077707**	80	M10	TX25	8	100
STST 10 x 100	**077708**	100	M10	TX25	8	100
STST 10 x 120	**077709**	120	M10	TX25	8	100
STST 10 x 140	**077711**	140	M10	TX25	8	50
STST 10 x 180	**077712**	180	M10	TX25	8	50
STST 12 x 100	**535541**	100	M12	TX30	10	100
STST 12 x 160	**535542**	160	M12	TX30	10	50

[1] without hex drive

Stud screw STS A2/A4

Stud screw STS for the direct mounting of pipe clamps to the substrate.

Applications

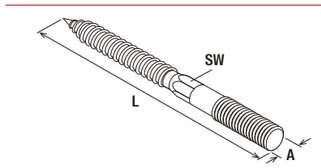
- Stud screw for easy fastening of pipe clamps directly to the substrate by adding an adequate plug.
- Direct connection to wooden substrates without dowels by means of wooden thread.
- For indoor and outdoor applications and in environments with high stress to components due to corrosion.
- STS A2: not suitable for use in environments containing chlorine.

Advantages

- Fixing with a Nylon plug to brick or direct into timber construction is simple with the integrated hexagon.
- Different thread lengths and diameters allow a wide range of applications.

Properties

- Material: stainless steel A2 (material no 1.4301), acc. to DIN EN 10088-1
- Material: stainless steel A4 (material no 1.4401), acc. to DIN EN 10088-1



STS

Technical data

Item	A2 Item no.	A4 Item no.	Thread A	Length L [mm]	Width across nut SW [mm]	Sales unit [pcs]
STS 8 x 80	**065132**	**–**	M8	80	6	100
STS 8 x 100	**077643**	**077715**	M8	100	6	100
STS 8 x 120	**065169**	**–**	M8	120	6	100
STS 10 x 100	**065153**	**077716**	M10	100	8	100

Support hanger AHB

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

Height adjustable pipe installation

Applications

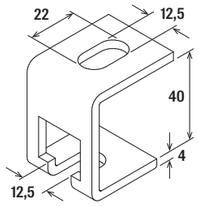
- Component for height adjustment.
- A washer should be used when using size M8 threaded rods.
- For use in dry interior areas.

Advantages

- 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.
- Suitable for threaded rods M8, M10 and M12.

Properties

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



AHB

Technical data

Item	Item no.	For thread	Max. recom. static load (centr. tension) N_{rec} [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

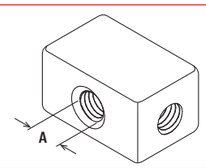
- Cube with four threaded drill holes for simple connection.
- Ideal for connecting threaded rods and bolts at 90°.
- For use in dry interior areas.

Advantages

- Flexible connection of pipe clamps.
- Fixing of up to three pipes.
- Made of high-strength die-cast.
- Suitable for M8 threaded studs.

Properties

- Material: zinc die-casting



MW

Technical data

Item	Item no.	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
MW M8	**079717**	M8	2.50	50

Parallel connector PV

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

Longitudinal channel connection

Applications

- Simple, quick-mount connector for extending and connecting threaded rods.
- Parallel connector for extending threaded rods.
- Secure using locking nut.
- For use in dry interior areas.

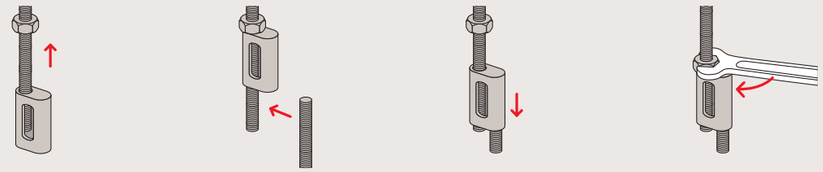
Advantages

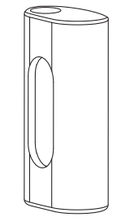
- The parallel connector‘s design allows the threaded rods to be installed quickly.
- Designed for simple and fast height adjustment.
- The PV allows the height to be adjusted during installation.

Properties

- Material: zinc die-casting

Installation PV





PV

Technical data

Item	Item no.	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
PV M6	**020947**	M6	0.30	100
PV M8	**079678**	M8	2.00	100

Double connector plate DPP, DPF

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

Applications

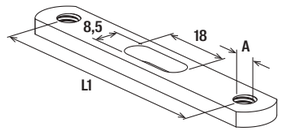
- Fixing element for the installation of two parallel pipelines with just one fixing point.
- For use in dry interior areas.

Advantages

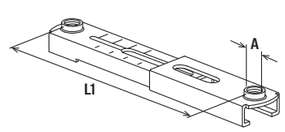
- The double connector plate design saves a fixing point for the fixing of two pipelines.
- The two-part double connector plate DPF is suitable for variable pipe spacing.
- The base plate's long slots allow the double connector plate to be easily aligned.
- The rounded design of the connector plate is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



DPP



DPF

Technical data

Item	Item no.	Thread distance L1 [mm]	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
DPP 65	**079702**	65	M8	1.50	50
DPP 85	**079703**	85	M8	1.00	50
DPP 105	**079704**	105	M8	0.75	50
DPF 60 - 105	**024648**	60 – 105	M8	0.50	50

Bolt connector SBB

The threaded pin with shaft and double thread.

Applications

- For use in dry interior areas.

Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated

Bolt connector SBB

Item	Item no.	Length L [mm]	Thread A	Sales unit [pcs]
SBB 35	**079705**	35	M8	100
SBB 45	**079706**	45	M8	100
SBB 55	**079707**	55	M8	100

Turnbuckle SPS, Bolt left-/right-hand BLR

Turnbuckle SPS and bolt BLR with left/right thread for anchoring, height regulation and fixing.

Applications

- For use in dry interior areas.

Properties

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

Turnbuckle SPS, Bolt BLR

Item	Item no.	Length L [mm]	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
SPS M10	537211	125	M10	10.00	25
BLR 100 M10	537210	100	M10	10.00	25
SPS M12	064090	125	M12	15.00	25
BLR 100 M12	064091	100	M12	15.00	25

Hexagonal screw SKS

The universal hexagonal screw.

Applications

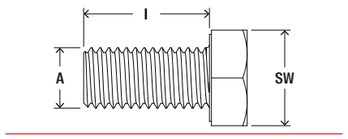
- SKS: for use in dry interior areas.
- SKS hdg: for indoor and outdoor application.
- SKS A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Properties

- Material SKS and SKS hdg: steel acc. to DIN EN ISO 4017, steel 8.8
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material SKS A4: stainless steel A4 (material no. 1.4401). Property class: min. 70

Certificates / Features

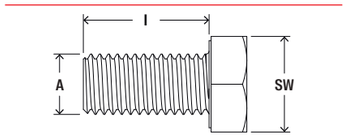
BZS S 25-315



SKS

Hexagonal screw SKS

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A4 Item no. A4	Thread A	Length l [mm]	Width across nut SW [mm]	Sales unit [pcs]
SKS M6 x 20	079711	–	–	M6	20	10	100
SKS M8 x 16	079415	–	–	M8	16	13	100
SKS M8 x 20	570677	–	–	M8	20	13	200
SKS M8 x 30	079713	–	–	M8	30	13	100
SKS M8 x 45	079714	–	–	M8	45	13	100
SKS M8 x 55	079715	–	–	M8	55	13	100
SKS M8 x 100	079827	–	–	M8	100	13	100



SKS

Hexagonal screw SKS

Item	Galvanised steel Item no. gvz	Hot-dip galvanised steel Item no. hdg	A4 Item no. A4	Thread A	Length l [mm]	Width across nut SW [mm]	Sales unit [pcs]
SKS M10 x 16	**570678**	**571694**	**570686**	M10	16	17	200
SKS M10 x 20	**079416**	**–**	**–**	M10	20	17	100
SKS M10 x 25	**570679**	**–**	**570687**	M10	25	17	200
SKS M10 x 25	**–**	**537681**	**–**	M10	25	17	100
SKS M10 x 30	**079417**	**–**	**–**	M10	30	17	100
SKS M10 x 30	**–**	**–**	**559704**	M10	30	17	50
SKS M10 x 55	**079721**	**–**	**–**	M10	55	17	100
SKS M10 x 65	**535537**	**–**	**–**	M10	65	17	50
SKS M10 x 85	**505552**	**–**	**–**	M10	85	17	100
SKS M12 x 20	**570680**	**570683**	**570688**	M12	20	19	100
SKS M12 x 25	**535538**	**537680**	**–**	M12	25	19	100
SKS M12 x 25	**–**	**–**	**570689**	M12	25	19	50
SKS M12 x 30	**570681**	**570684**	**–**	M12	30	19	100
SKS M12 x 30	**–**	**–**	**559705**	M12	30	19	50
SKS M12 x 35	**570682**	**–**	**–**	M12	35	19	100
SKS M12 x 55	**077611**	**–**	**–**	M12	55	19	100
SKS M12 x 65	**535539**	**–**	**–**	M12	65	19	50
SKS M12 x 70	**–**	**570685**	**–**	M12	70	19	50
SKS M12 x 85	**505553**	**–**	**–**	M12	85	19	100

Cylindrical head screw ZKS

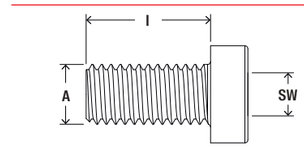
The universal cylindrical head screw.

Applications

- For use in dry interior areas.
- Fits best for FASC sliding element to fix the sliding element to the FUS channel using a FCN Clix P M8

Properties

- Material: steel 8.8
- Zinc plating: electro zinc-plated



ZKS

Technical data

Item	Item no.	Thread A	Length l [mm]	Width across nut (hexagon socket) SW [mm]	Sales unit [pcs]
ZKS M8 x 20	**570690**	M8	20	5	200

Washer U

Washer for fischer installation system.

Applications

- U: for use in dry interior areas.
- U hdg: for indoor and outdoor application.
- U A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Properties

- Material U and U hdg: steel acc. to DIN 10139
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material U A4: stainless steel A4 (material no. 1.4401, alternatively 1.4571) acc. to DIN EN 10028-7

Washer U

	Galvanised steel	Hot-dip galvanised steel	A4	Thickness	Internal diameter	External-ø	Sales unit
	Item no.	Item no.	Item no.	S [mm]	D [mm]	d [mm]	[pcs]
Item	gvz	hdg	A4				
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	537682	505542	2.0	8.4	28	100
U 8 x 40	079729	–	505543	3.0	8.4	40	100
U 10 x 21	091478	537683	–	2.0	10.5	21	100
U 10 x 28	079726	–	–	2.0	10.5	28	100
U 10 x 30	–	–	505544	2.0	10.5	30	100
U 10 x 40	079730	537684	505545	3.0	10.5	40	100
U 12 x 24	557301	–	–	2.5	12.5	24	100
U 12 x 24	–	537685	505546	2.5	13	24	100
U 12 x 40	024649	–	–	3.0	12.5	40	100
U 12 x 40	–	537686	–	3.0	13	40	100
U 12 x 40	–	–	563020	3.0	13	40	50
U 16 x 30	557303	–	–	3.0	16.5	30	50
U 16 x 30	–	–	563021	3.0	17	30	50
U 16 x 40	535540	–	563022	3.0	17	40	50

Hexagonal nut MU

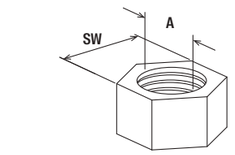
Hexagonal nut for fischer installation system.

Applications

- MU: for use in dry interior areas.
- MU hdg: for indoor and outdoor application.
- MU A4: for indoor and outdoor applications and in environments with high stress to components due to corrosion.

Properties

- Material MU and MU hdg: steel acc. to DIN 934, resistance class 8
- Zinc plating: electro zinc-plated or hot-dip galvanised
- Material MU A4: stainless steel A4 acc. to DIN EN ISO 3506-2, resistance class min. 50



MU

Hexagonal nut MU

	Galvanised steel	Hot-dip galvanised steel	A4	Thread	Width across nut	Sales unit
	Item no.	Item no.	Item no.	A	SW [mm]	[pcs]
Item	gvz	hdg	A4			
MU M6	079733	–	–	M6	10	100
MU M8	079734	537687	–	M8	13	100
MU M8	–	–	559702	M8	13	50
MU M10	079735	537688	–	M10	17	100
MU M10	–	–	559703	M10	17	50
MU M12	024650	537689	–	M12	19	100
MU M12	–	–	563018	M12	19	50
MU M16	557297	537690	563019	M16	24	50
MU M20	535532	–	–	M20	30	15
MU M24	535534	–	–	M24	36	15

Eyebolt AG

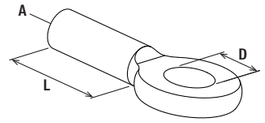
The eyebolt with M8/M10 thread.

Applications

- For use in dry interior areas.

Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated



AG

Eyebolt AG

Item	Item no.	Length L [mm]	Thread A	Hole-ø D [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
AG 8 x 25	**079696**	25	M8	8.5	5.00	100
AG 10 x 25	**079697**	25	M10	12	8.00	100

Thread hanger RAH

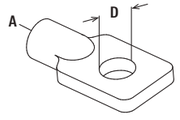
Universal thread hanger with internal thread connection.

Applications

- For use in dry interior areas.

Properties

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



RAH

Thread hanger RAH

Item	Item no.	Thread A	Hole-ø D [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
RAH M8	**079698**	M8	12	4.00	50
RAH M10	**079699**	M10	12	4.00	50

Reduction piece RD

Universal reduction piece for metric thread.

Applications

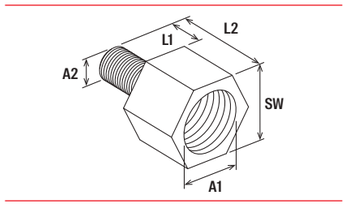
- For use in dry interior areas.

Certificates / Features

BZS S 25-315

Properties

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



RD

Reduction piece RD

Item	Item no.	Internal thread A1	External thread A2	Length L_1 [mm]	Length L_2 [mm]	Width across nut SW [mm]	Sales unit [pcs]
RD M6/M8	**079694**	M6	M8	8.5	20.5	13	100
RD M8/M6	**020936**	M8	M6	7	19	13	100
RD M10/M8	**079692**	M10	M8	8	22	13	50
RD M12/M10	**079693**	M12	M10	10	25	17	100
RD M12/M16	**504397**	M12	M16	14	32	19	50
RD M16/M12	**504399**	M16	M12	10	32	24	50
RD 1/2“/M10	**079695**	1/2“	M10	10	29	24	10
RD M16/M12 long	**538080**	M16	M12	25	46.5	24	10
RD 1/2“/M10 long	**537215**	1/2“	M10	20	39	24	10
RD 3/4“/M12 long	**537213**	3/4“	M12	25	46.5	30	10
RD 3/4“/M16 long	**537214**	3/4“	M16	25	46.5	30	10

Reduction socket RDM and GRD

Universal reduction socket.

Applications

- For use in dry interior areas.

Properties

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

Reduction socket RDM and GRD

Item	Item no.	Thread A	Thread A2	Sales unit [pcs]
RDM M10/M8	**079413**	M8	M10	50
RDM M12/M10	**079414**	M10	M12	100
GRD 1/2“ / M10	**077609**	1/2“	M10	100
GRD 1/2“ / M12	**077608**	1/2“	M12	100
GRD 3/4“ / M10	**077607**	3/4“	M10	100
GRD 3/4“ / M12	**077606**	3/4“	M12	100

Flat eye screw LLS

The flat eye screw with wood type thread.

Applications

- For use in dry interior areas.

Properties

- Material: steel S235JR (material no. 1.0037) acc. to DIN EN 10025
- Zinc plating: electro zinc-plated

Flat eye screw LLS

Item	Item no.	Length l [mm]	Hole-ø D [mm]	Sales unit [pcs]
LLS 6 x 50	079700	50	8.5	100
LLS 8 x 50	079701	50	10.5	100

Textile web strapping GWB

Textile web strapping GWB for cost-effective, easy pipe fixings.

Flexible and rigid plastic insulation pipes

Applications

- Pipe fixing to the substrate e.g. to the raw floor.

Advantages

- Pipe fixing 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.

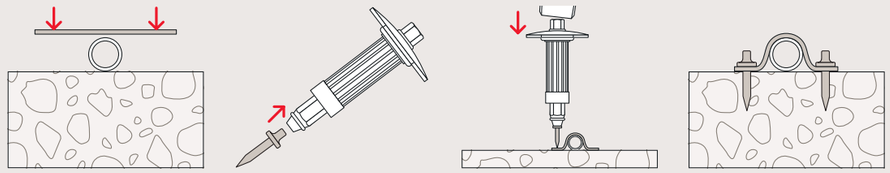
Properties

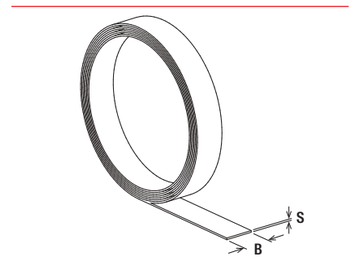
- Material: polypropylene
- Length: 10 m

Building materials

- Concrete

Installation GWB





Technical data

Item	Item no.	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
GWB	020959	15	1.1	10

Perforated steel banding LBV/LBK/LBW

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

Plastic pipes

Applications

- Steel tape with stamped holes for simple installation of pipes on the substrate, e.g. on unfinished floor.
- Available as zinc-plated LBV/LBW or plastic-covered LBK.
- The fischer nail anchor FNA II is suitable for ceiling fixing in concrete.
- Use fischer thread hanger RAH for fastening to threaded rods.
- For use in dry interior areas.

Advantages

- The perforated tape's material thicknesses and plastic covering allow 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

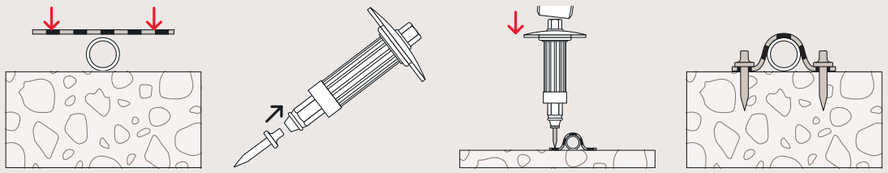
- Material: DX51D+Z100 (material no. 1.0917) acc. to DIN EN 10.346 / For type LBW 17: Q235
- Zinc plating: electro zinc-plated
- Protective coating LBK: PE

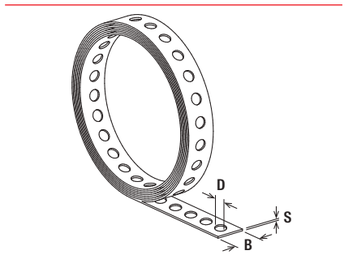
Building materials

When using impact nail ED:

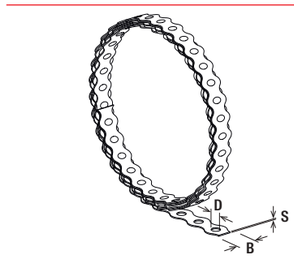
- Concrete

Installation LBV, LBK, LBW





LBV / LBK



LBW

Technical data

Item	Item no.	Total length [mm]	Width B [mm]	Thickness S [mm]	Hole-ø D [mm]	Sales unit [pcs]
LBV 12	**079549**	10,000	12	0.8	5.0	10
LBV 17	**079550**	10,000	17	0.8	6.5	10
LBV 25	**079551**	10,000	25	0.9	8.5	8
LBK 14	**079553**	10,000	14	2.6	5.0	10
LBK 19	**079554**	10,000	19	2.4	6.5	8
LBK 27	**079555**	10,000	27	2.4	8.5	5
LBW 17	**507435**	10,000	17	0.8	6.5	10

Impact nail ED

Fixing in concrete without pre-drilling.

Fixing armoured conduits

Fixing perforated tapes

Applications

- 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.

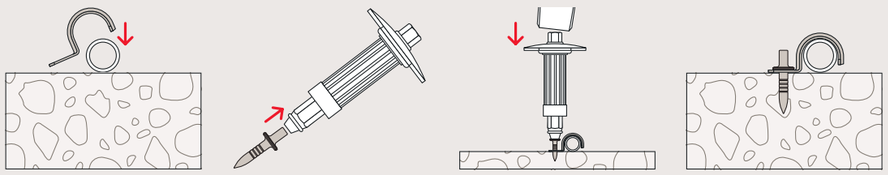
Functioning

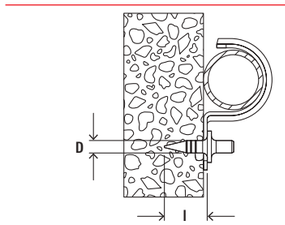
- The impact nail ED is set in the setting tool SZE.
- The bracket in the setting tool holds the nail securely in place during the installation procedure.
- Pre-positioning of the element to be fixed.
- The nail can be hammered through the fixing element directly into the concrete.

Building materials

- Concrete

Installation ED





Technical data

ED 15

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

Setting tool SZE

SZE Toolset for SZE

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

Label holder FBSH · Accessories

Label holder FBSH

One Solution for three different applications.

8

Applications

- For attaching labels to pipes, insulation, channels, etc.
- Use in dry indoor areas
- fischer LBV12 perforated tape is required for mounting FBSH universal holders.

Advantages

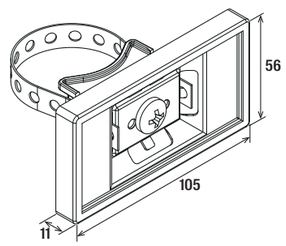
- One Solution for three different applications.
- Suitable for uniform standard sign sizes for all applications.
- The Sign can be printed on or labelled for high flexibility.

Properties

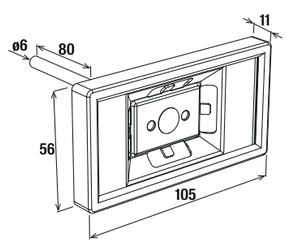
- Material metall parts: DX54D+Z140 NA-C (material no. 1.0952)
- Material Cover: Polystyrene (DIN EN 13163-PS)
- Material Label: Polypropylene (EN ISO 4577-PP)

Building materials

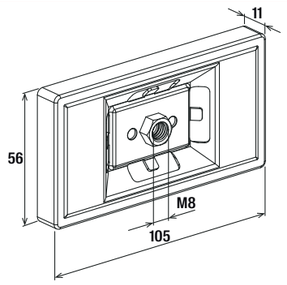
- Pipes for plumbing/heating/air conditioning



FBSH Universal Holder



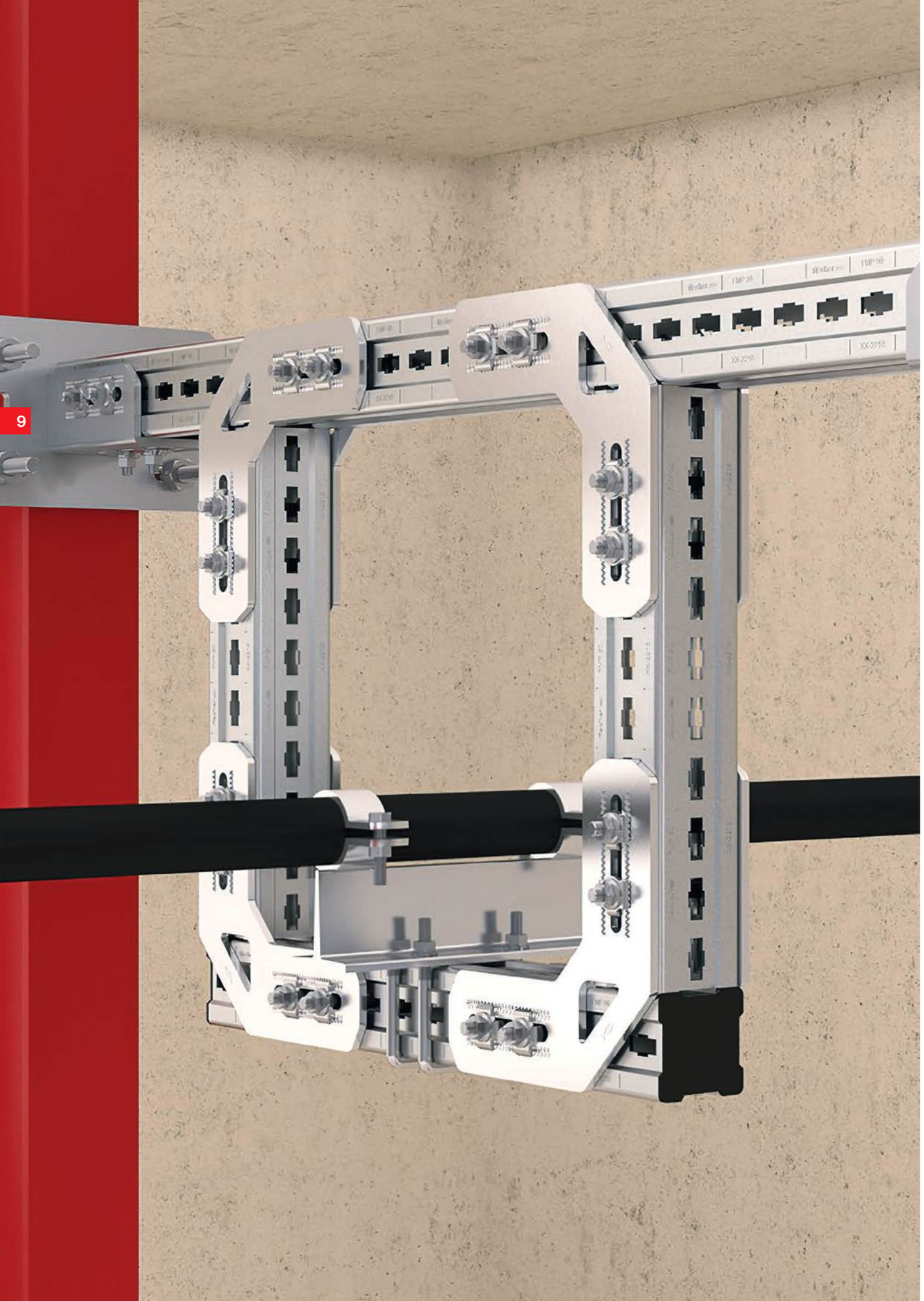
FBSH Welding Holder



FBSH Screw Holder

Technical data

Item	Item no.	Description	Sales unit [pcs]
Label Holder Universal FBSH	**575605**	For pipes from 3/8“ to 6“	25
Label Holder Welding holder FBSH	**575606**	For welding onto black pipes (up to 80 mm insulation thickness)	25
Label Holder Screw holder FBSH	**575607**	For screwing onto insulation for example, or mounting to FUS channel with FCN Clix S M8	25
Label Holder Plastic cover FBSH	**575608**	Plastic cover, replacement item	25
Label Holder Shield FBSH	**575609**	Plastic sign, white, 100 x 50 mm, for printing and sticking	25
LBV 12	**079549**	–	10



9
Massive channel system FMS

Massive profile FMP

The efficient fixing solution for heavy-duty installations.

Frame construction

Applications

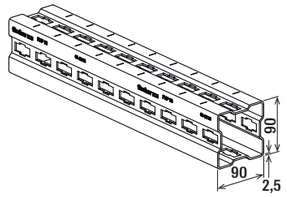
- Secure fastening of heavy duty pipelines.
- Safe construction of solid supporting structures.
- For indoor and outdoor application.

Advantages

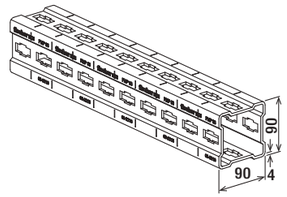
- The clearly arranged product range of profiles and construction elements enables on-site assembly without prefabrication and thus considerably reduces costs and time.
- The fischer massive profiles can be processed exclusively by cutting at right angles, thus reducing waste and material costs.
- The construction with the fischer massive channel 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.
- The stamped scaling simplifies the cutting to length of the massive profile FMP and ensures the correct installation of the construction elements.

Properties

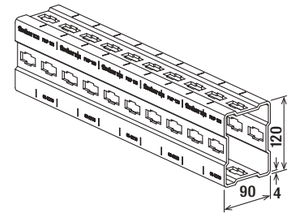
- Material: steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Zinc plating: hot-dip galvanised



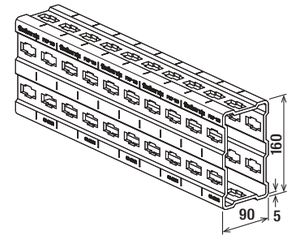
FMP 90/2.5



FMP 90



FMP 120

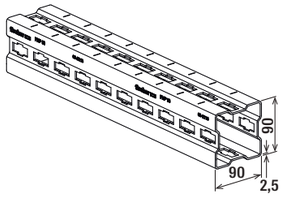


FMP 160

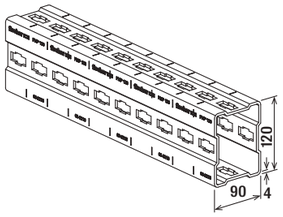
Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Profile weight [kg/m]	Channel cross section [cm²]	Thickness S [mm]	Sales unit [pcs]
FMP 90/2.5 - 3 m	**560562**[1)]	3,000	90	90	6.33	7.18	2.5	1
FMP 90/2.5 - 6 m	**560563**	6,000	90	90	6.33	7.18	2.5	1
FMP 90 - 3 m	**547795**[1)]	3,000	90	90	9.68	10.97	4.0	1
FMP 90 - 6 m	**547796**	6,000	90	90	9.68	10.97	4.0	1
FMP 120 - 3 m	**547797**[1)]	3,000	90	120	11.85	13.37	4.0	1
FMP 120 - 6 m	**547798**	6,000	90	120	11.85	13.37	4.0	1
FMP 160 - 6 m	**547799**	6,000	90	160	16.86	18.91	5.0	1
FMP 160 - 8 m	**547800**[1)]	8,000	90	160	16.86	18.91	5.0	1

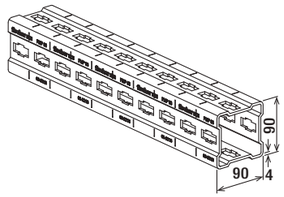
[1)] Delivery time on request.



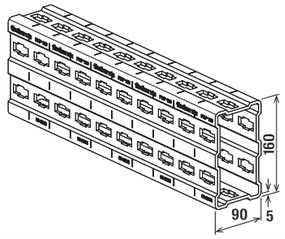
FMP 90/2.5



FMP 120



FMP 90



FMP 160

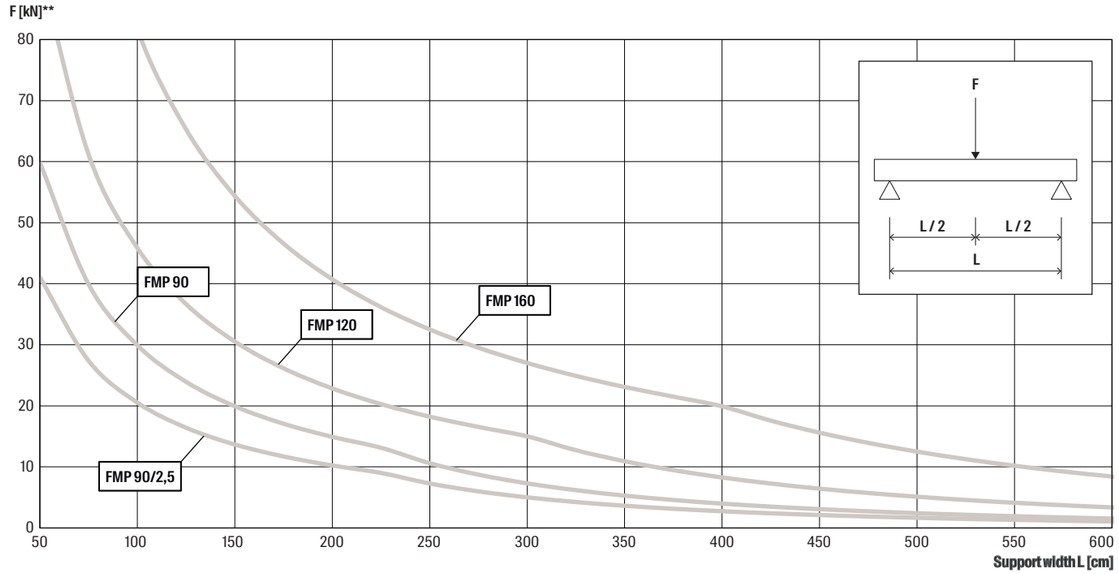
Loads

		Yield strength	Rec. tensile stress	Rec. shear stress	Moment of inertia	Moment of inertia	Section modulus	Section modulus	Radius of gyration	Radius of gyration	Torsional moment of inertia	Torsional moment of resistance	Sales unit
	Item no.	f_{yk} [kN/cm²]	σ_{rec}* [kN/cm²]	τ_{rec}* [kN/cm²]	I_y [cm⁴]	I_z [cm⁴]	W_y [cm³]	W_z [cm³]	i_y [cm]	i_z [cm]	I_t [cm⁴]	W_t [cm³]	[pcs]
Item													
FMP 90/2.5 - 3 m	**560562**[1)]	35.5	25.36	14.64	91.28	91.28	20.28	20.28	3.57	3.57	131.71	34.45	1
FMP 90/2.5 - 6 m	**560563**	35.5	25.36	14.64	91.28	91.28	20.28	20.28	3.57	3.57	131.71	34.45	1
FMP 90 - 3 m	**547795**[1)]	35.5	25.36	14.64	133.07	133.07	29.57	29.57	3.48	3.48	198.86	52.55	1
FMP 90 - 6 m	**547796**	35.5	25.36	14.64	133.07	133.07	29.57	29.57	3.48	3.48	198.86	52.55	1
FMP 120 - 3 m	**547797**[1)]	35.5	25.36	14.64	271.97	177.46	45.33	39.44	4.51	3.64	328.80	73.19	1
FMP 120 - 6 m	**547798**	35.5	25.36	14.64	271.97	177.46	45.33	39.44	4.51	3.64	328.80	73.19	1
FMP 160 - 6 m	**547799**	35.5	25.36	14.64	645.39	247.28	80.67	54.94	5.84	3.62	583.59	119.31	1
FMP 160 - 8 m	**547800**[1)]	35.5	25.36	14.64	645.39	247.28	80.67	54.94	5.84	3.62	583.59	119.31	1

[1)] Delivery time on request.

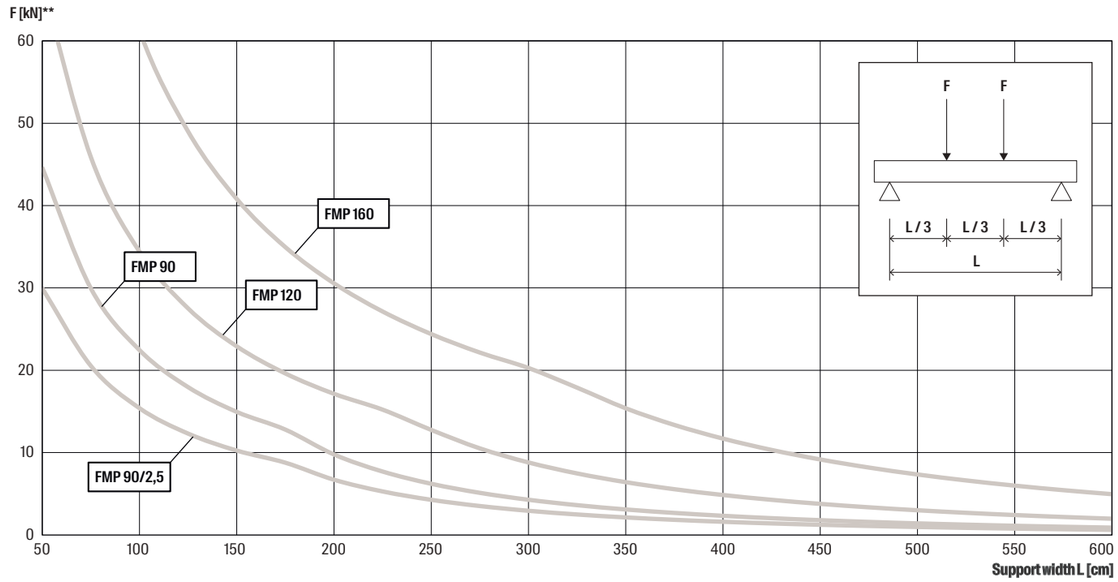
The recommended stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with γ_L=1.4 and γ_{M0}=1.0.

Simply supported beam with single load at L/2



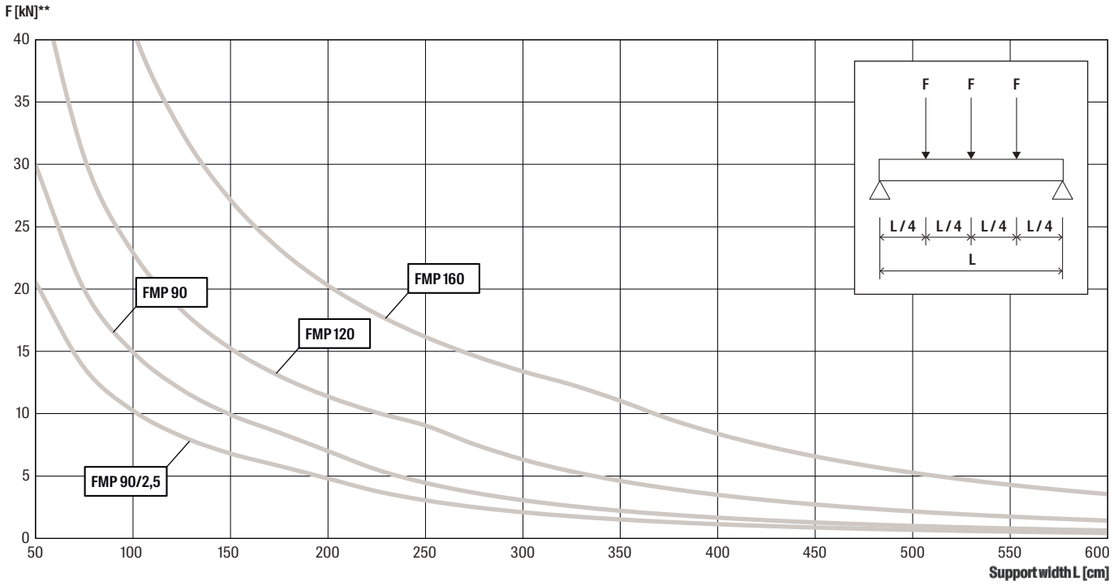
** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with γ_L=1,4 and γ_{M0}=1,0. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Simply supported beam with two single loads at L/3



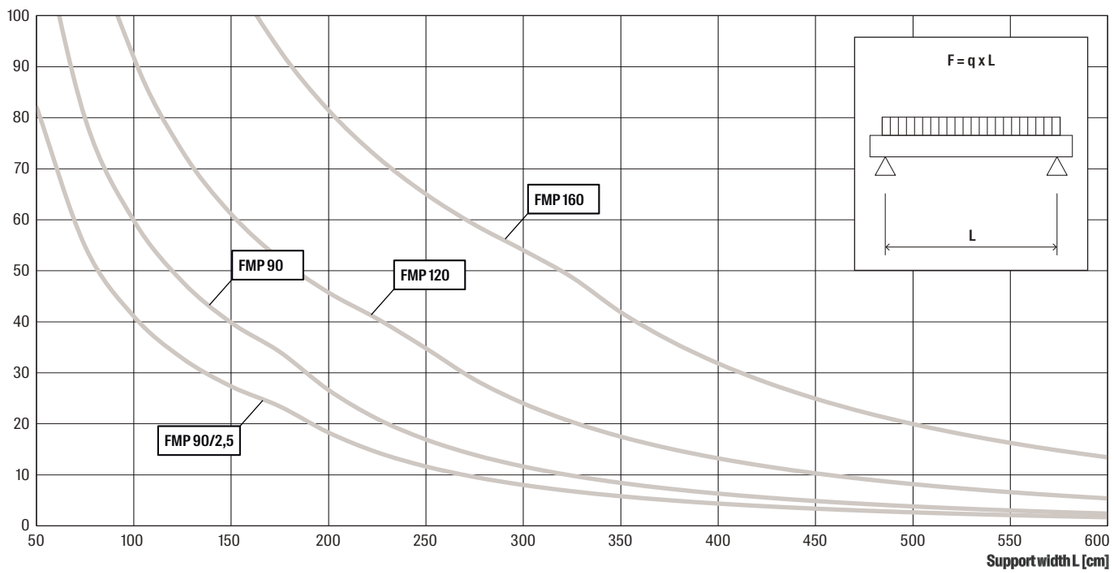
** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with γ_L=1,4 and γ_{M0}=1,0. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/200) is decisive

Simply supported beam with three single loads at L/4



** 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 over the span $F_{rec} = q_{rec} \times L$



** 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 90/2,5.
- FPMC 90, 120 and 160 usable for FMP 90, FMP 120 and FMP 160.
- For indoor and outdoor application.

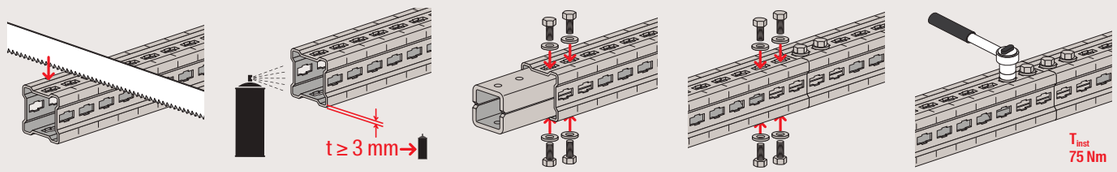
Advantages

- The FMPC channel connector enables the connection 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 profile connectors allow a stiff connection of profiles and high load possibilites.

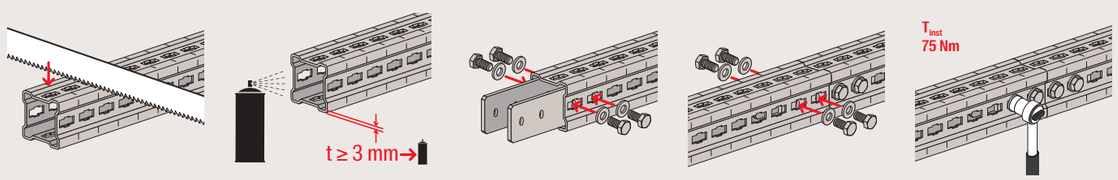
Properties

- Material FMPC: steel S420MC (material no. 1.0980) acc. to DIN EN 10149-2
- Material FMPC 90, 120, 160: steel S355JR (material no. 1.0045) acc. to EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

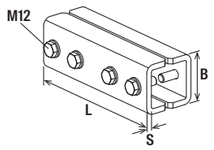
Installation FMPC



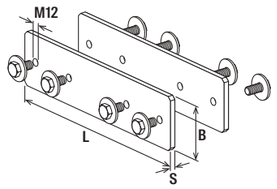
Installation FMPC 90/120/160



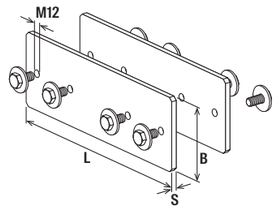
* For optimum protection, we always recommend using fischer zinc sprays (FTC-ZS or FTC-ZA). This is essential for profiles with a thickness of ≥ 3 mm.



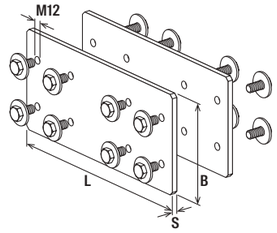
FMPC



FMPC 90



FMPC 120



FMPC 160

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Thickness S [mm]	For profile	Sales unit [pcs]
FMPC	**547801**	220	72	8.0	FMP 90/2.5	2
FMPC 90	**554236**	320	81	8.0	FMP 90/4.0	5
FMPC 120	**554237**	320	111	8.0	FMP 120/4.0	2
FMPC 160	**554238**	320	150	8.0	FMP 160/5.0	2

Cantilever FMC

Mounting profiles with welded base plate for fastening heavy duty pipelines.

Profile traverse to steel structure

Supported cantilever

Applications

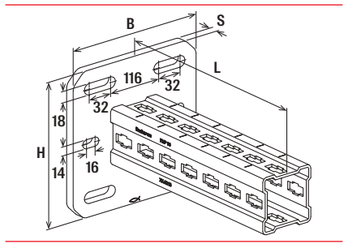
- Simple and safe fixing of heavy duty pipelines along the wall.
- For indoor and outdoor application.

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

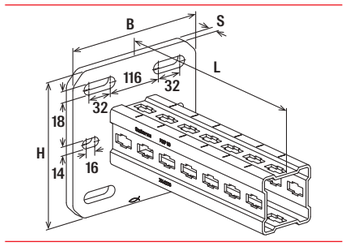
- Material base plate: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Material profile: steel S355MC (material no. 1.0976) acc. to DIN EN 10149-2
- Zinc plating: hot-dip galvanised



FMC

Technical data

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	15.0	1
FMC 90 - 750	**547803**	750	230	230	15.0	1
FMC 90 - 1000	**547804**	1,000	230	230	15.0	1
FMC 90 - 1500	**547805**	1,500	230	230	15.0	1

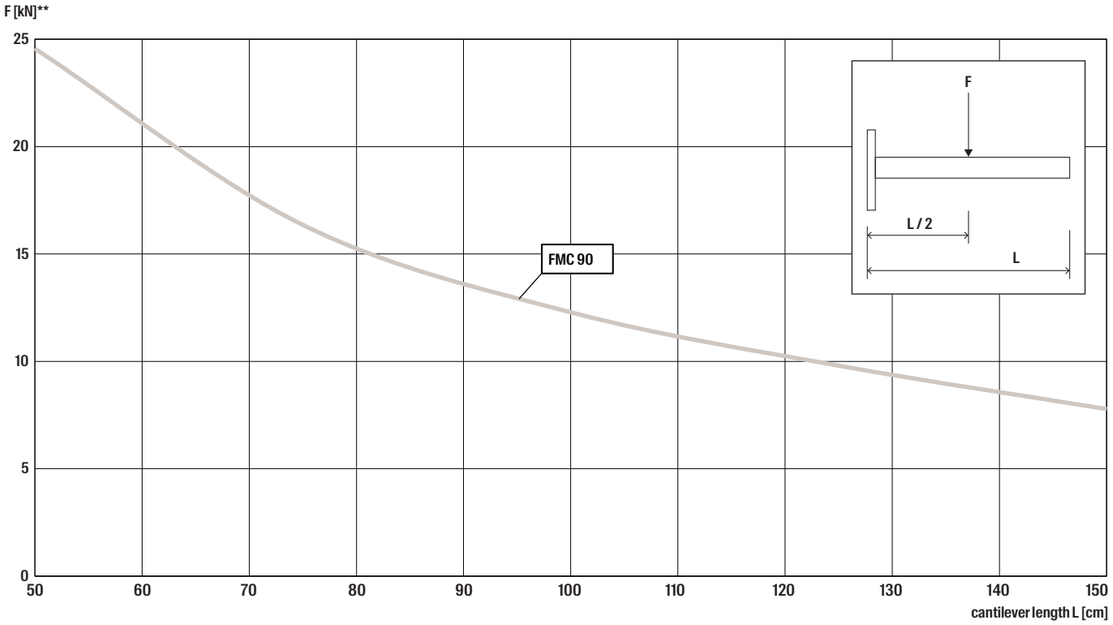


FMC

Loads

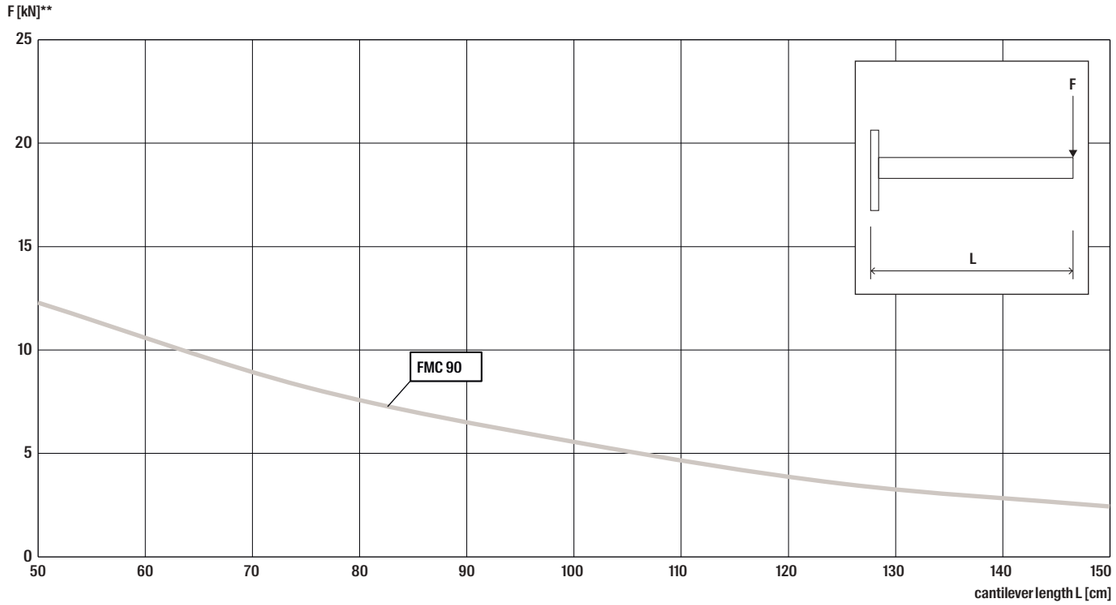
Item	Item no.	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Max. recommended static load load case 3 F_{rec} [kN]	Sales unit [pcs]
FMC 90 - 500	**547802**	24.60	12.30	24.60	1
FMC 90 - 750	**547803**	16.40	8.20	16.40	1
FMC 90 - 1000	**547804**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

Load case 1



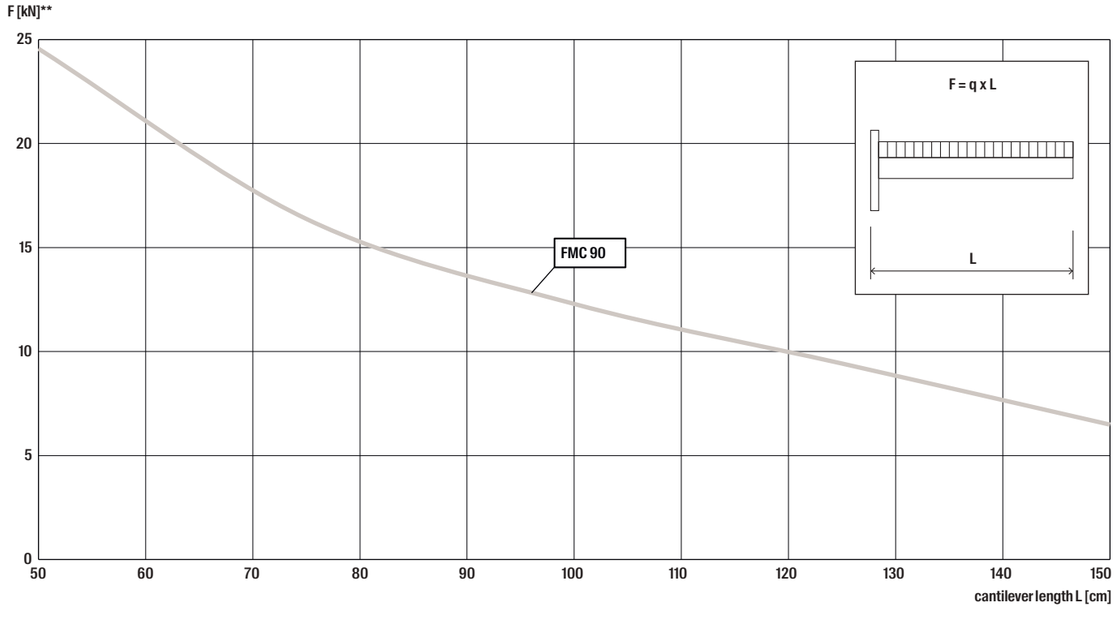
** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with γ_L=1,4 and γ_{M0}=1,0. Lower value of permissible stress (shear, bending or combined) or max. defelection (L/150) is decisive

Load case 2



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

Load case 3



** The permissible stress is calculated acc. EN 1993; $\sigma_{rec}=f_{yk}/(\gamma_L * \gamma_{M0})$ with γ_L=1,4 and γ_{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 mounting profile FMP.

U-rack construction with flat fittings

Applications

- Closing of profile end.

Advantages

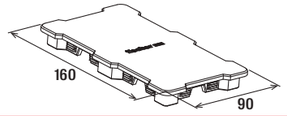
- Suitable for FMP 90, 120 and 160 mounting profiles and cantilever arms FMC.

Properties

- Material: PP polypropylene, colour black

FMEC 90

FMEC 120



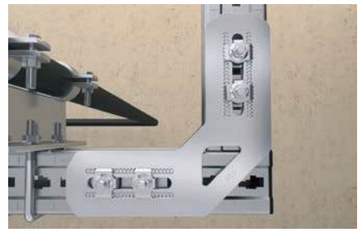
FMEC 160

Technical data

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 profiles and construction elements.



U-rack construction

Applications

- Connecting construction elements and FMP profiles by means of plug-in connectors.
- Fastening of cables by means of threaded rods or threaded pins to the FMP profiles.
- For indoor and outdoor application.
- The flexible hammer head push connector in combination with the solid construction elements allow easy adjustment during installation and make 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.

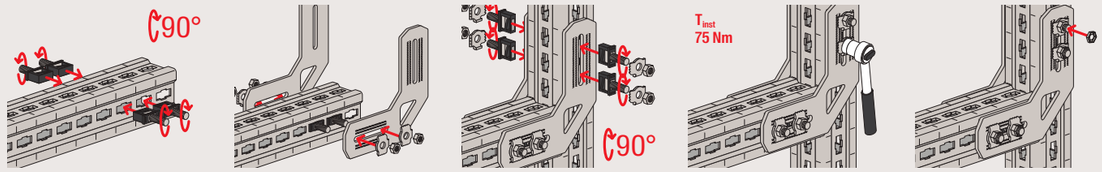
Advantages

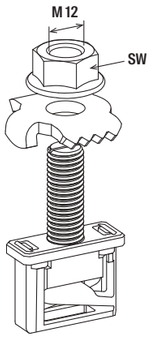
- The unique hammer head push connector allows easy modification of the construction and thus ensures fast design changes.
- The special design of the hammer-head push connector allows simple retrofitting to existing structures.

Properties

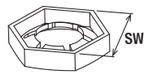
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised, acc. to DIN EN ISO 1461
- Material for hammer-head bolt: steel 8.8, similar to 1.0503 C45
- Material plastic cage: polypropylene PP, colour black
- Material safety nut: GB/T 805-1988 acc. to DIN 7967

Installation FMHB





FMHB



FMSB MU M12

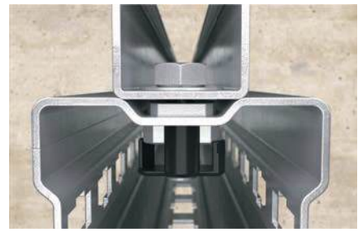
Technical data

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

Internal thread connector FMHI

The internal thread connector is the connector for all external thread elements on the FMP profiles.

Installation of pipe clamps



FUS channel connection

Applications

- Connecting construction elements and FMP profiles by means of plug-in connectors.
- Fastening of cables by means of threaded rods or threaded pins to the FMP profiles.
- For indoor and outdoor application.

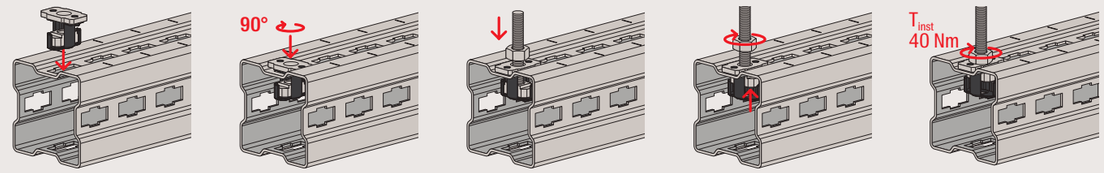
Advantages

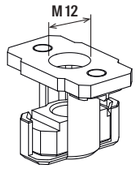
- The unique hammerhead internal thread connector makes it easy to connect different elements with base plates or FUS channels using an M12 screw.
- The special design of the hammer-head internal thread connector enables retrofitting on existing superstructures made of FMP mounting profiles and permanently simplifies the attachment of brackets and pipe clamps.
- The flexible hammerhead internal thread connector additionally enables through-hole assembly by a screw in M12 with various construction elements.

Properties

- Material of the plate: steel S355MC (material no. 1.0037) acc. to DIN EN 10149-2
- Zinc plating: hot-dip galvanised
- Material for hammer-head bolt: steel 8.8, similar to 1.0503 C45
- Material plastic cage: polypropylene PP, colour black

Installation FMHI





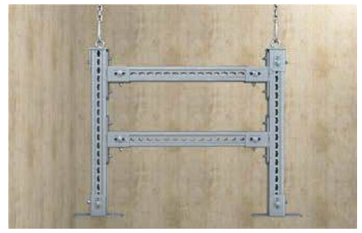
FMHI

Technical data

Item	Item no.	Thread A	Max. recom. static load (centr. tension) N_{rec} [kN]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FMHI M12	**563108**	M12	10.00	40	100

Transportation connector FMTC 90

The reusable connector for the transport of FMP mounting profiles.



Transportation of profile structures

Applications

- Temporary use for the transportation of profile structures.
- For indoor and outdoor application.

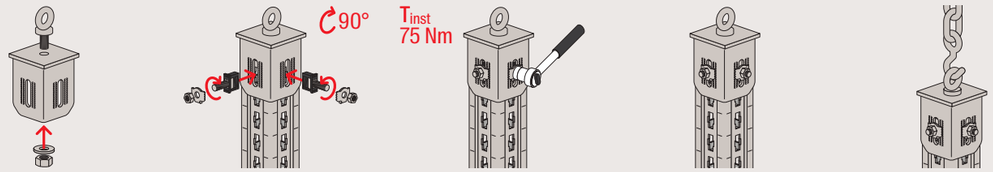
Advantages

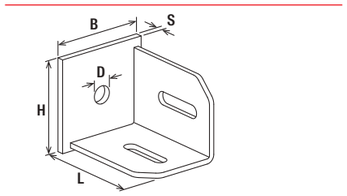
- The FMTC 90 transportation connector can be easily and securely mounted on the ends of the FMP 90 massive profile using two FMHB hammer-head push connectors and can also be dismantled again.
- The opening in the cover plate allows connection with threaded bolts or with eyebolts and nuts ≤ ø 21 mm as a mounting for transporting pre-assembled frame constructions.
- The robust construction of the FMTC 90 ensures long-lasting reusability as a transportation connector.

Properties

- Base plate: steel S355 (material no. 1.0976) acc. to DIN EN 10149-2
- Profile mount: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

FMTC 90





FMTC 90

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Hole-ø D [mm]	Sales unit [pcs]
FMTC 90	**568825**	110	110	130	8.0	21	2

Connecting element FMCE

Tailor-made fixing massive profiles FMP.

Pipe clamp connection to profile

Applications

- Fixing of pipes using threaded rods.
- For indoor and outdoor application.

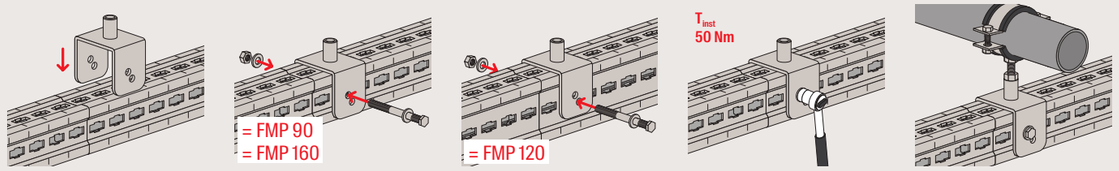
Advantages

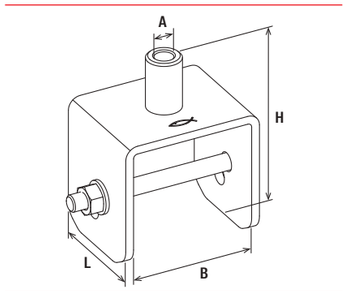
- The U-shaped connecting elements allow an easy connection of pipe clamps.
- Supplying the connecting element as a set with the necessary screw, hexagonal nut and washer ensures error-free installation.

Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMCE





FMCE

Technical data

Item	Item no.	Thread A	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

Connecting element FMCE-L

Tailor-made fixing of massive profiles FMP.

Profile traverse to steel structure

Applications

- Fixing of pipes using threaded rods or set screws.
- For indoor and outdoor application.

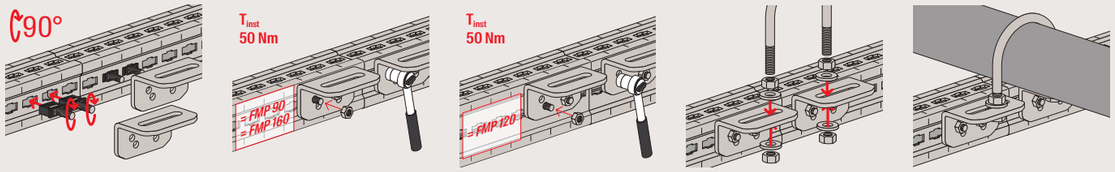
Advantages

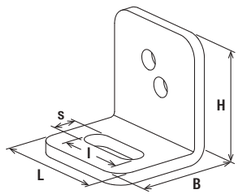
- The L-shaped connecting elements allow pipe clamps, U-bolts and elements with base plates to be easily connected.
- The L-connector FMCE-L can easily be attached to all 3 sizes of the FMP mounting profile after the FMHB hammer-head connector has been pre-positioned.

Properties

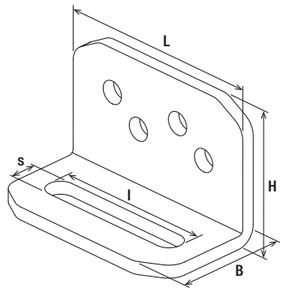
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

Installation FMCE-L





FMCE-L short



FMCE-L

Technical data

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**[1)]	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**[1)]	100 x 22	130	71	84	10

[1)] Delivery time on request.

Saddle flange FMSF

Optimum connection and fastening of FMP massive profiles.

U-rack at profile traverse

Applications

- For solid connections between the massive profile and building structures.
- For indoor and outdoor application.

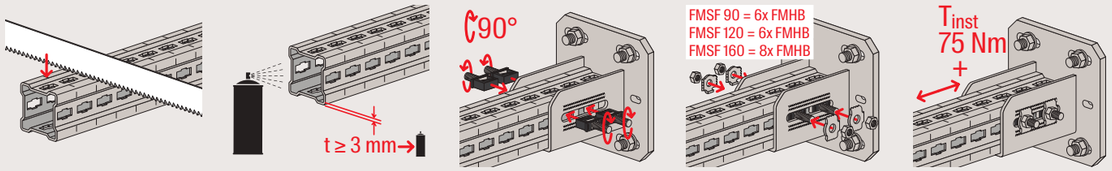
Advantages

- The design of the saddle flange FMSF 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.

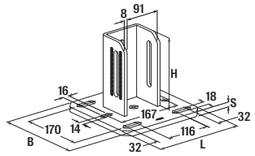
Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

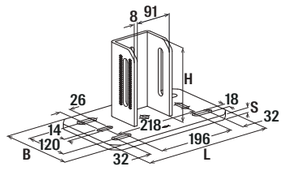
Installation FMSF



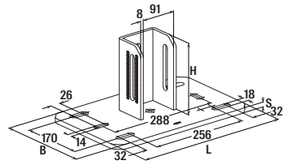
* For optimum protection, we always recommend using fischer zinc sprays (FTC-ZS or FTC-ZA). This is essential for profiles with a thickness of ≥ 3 mm.



FMSF 90S



FMSF 90M



FMSF 90L

Technical data

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	12.0	1
FMSF 90M	**547822**	FMP 90	180 – 240	330	200	180	12.0	1
FMSF 90L	**547823**	FMP 90	240 – 300	400	250	180	12.0	1
FMSF 120S	**547824**	FMP 120	100 – 160	230	230	180	12.0	1
FMSF 120M	**547825**	FMP 120	180 – 240	330	200	180	12.0	1
FMSF 120L	**547826**	FMP 120	240 – 300	400	250	180	12.0	1
FMSF 160M	**547827**	FMP 160	180 – 240	330	200	180	12.0	1
FMSF 160L	**547828**	FMP 160	240 – 300	400	250	180	12.0	1

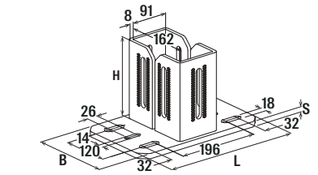
FMSF 120S

FMSF 120M

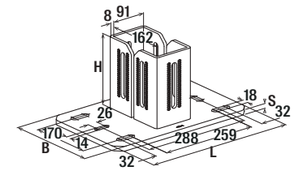
FMSF 120L

Technical data

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	12.0	1
FMSF 120M	**547825**	FMP 120	180 – 240	330	200	180	12.0	1
FMSF 120L	**547826**	FMP 120	240 – 300	400	250	180	12.0	1
FMSF 160M	**547827**	FMP 160	180 – 240	330	200	180	12.0	1
FMSF 160L	**547828**	FMP 160	240 – 300	400	250	180	12.0	1
FMSF 90S	**547821**	FMP 90	100 – 160	230	230	180	12.0	1
FMSF 90M	**547822**	FMP 90	180 – 240	330	200	180	12.0	1
FMSF 90L	**547823**	FMP 90	240 – 300	400	250	180	12.0	1



FMSF 160M



FMSF 160L

Technical data

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	12.0	1
FMSF 160L	**547828**	FMP 160	240 – 300	400	250	180	12.0	1
FMSF 120S	**547824**	FMP 120	100 – 160	230	230	180	12.0	1
FMSF 120M	**547825**	FMP 120	180 – 240	330	200	180	12.0	1
FMSF 120L	**547826**	FMP 120	240 – 300	400	250	180	12.0	1
FMSF 90S	**547821**	FMP 90	100 – 160	230	230	180	12.0	1
FMSF 90M	**547822**	FMP 90	180 – 240	330	200	180	12.0	1
FMSF 90L	**547823**	FMP 90	240 – 300	400	250	180	12.0	1

Base plate FMSF BP

Optimum connection and fastening saddle flanges and cantilevers to steel- and concrete beams.

Connection to steel support

Applications

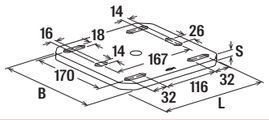
- For solid connections between the massive profile and building structures.
- For indoor and outdoor application.

Advantages

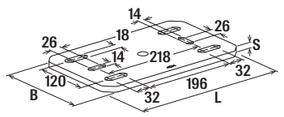
- The stable design and size graduations of the FMSF BP base plates offer optimum fixing ensuring and secure hold.
- The FMSF BP base plate is identical in construction to the base plates of the FMSF saddle flanges and enables simple connection by means of threaded rods for secure mounting on steel beams.

Properties

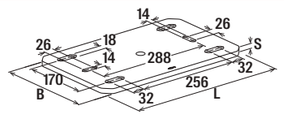
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised



FMSF BP S



FMSF BP M



FMSF BP L

Technical data

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	12.0	1
FMSF BP M	**547830**	180 – 240	330	200	12.0	1
FMSF BP L	**547831**	240 – 300	400	250	12.0	1

Angle bracket FMASF 90

The strong connection of FMP massive profiles for frame racks.

Profile structures

Applications

- Construction of multidimensional profile structures.
- Constructing variable supporting structures from profiles.
- For indoor and outdoor application.

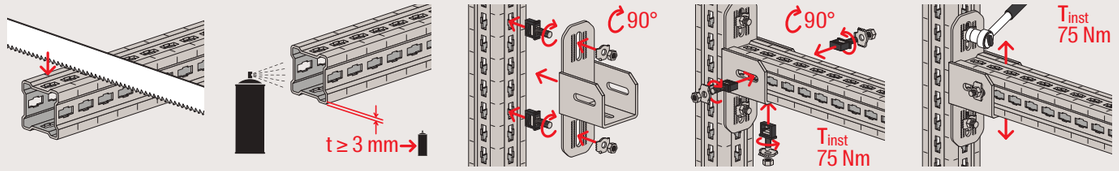
Advantages

- The installation heights of the angle bracket FMASF 90 enable a connection matching the installation heights of the FMP 90 massive profile, thus allowing even more versatile constructions.
- The design of the angle bracket FMASF 90 with long slots and grating to match the FMHB hammer-head push connector enables optimum adjustment of the structure and simplifies the assembly process.
- The strong construction of the angle bracket FMASF 90 allows the transmission of high loads in the application as an angle or saddle flange.

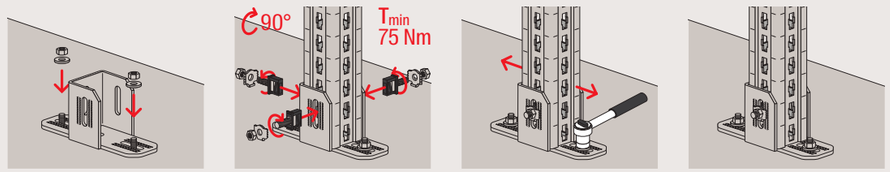
Properties

- Base plate: steel S355 (material no. 1.0976) acc. to DIN EN 10149-2
- Profile mount: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

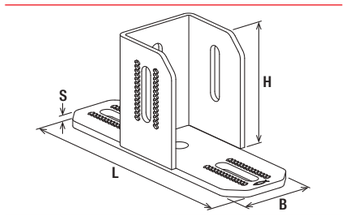
FMASF 90 - channel connection



FMASF 90 - floor or wall mounting



* For optimum protection, we always recommend using fischer zinc sprays (FTC-ZS or FTC-ZA). This is essential for profiles with a thickness of ≥ 3 mm.



FMASF 90

Technical data

	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
Item						
FMASF 90	**568823**	300	90	130	8.0	4

Variable bracket FMVB

Variable connection of FMP massive profiles to each other and to the substrate.

Supported cantilever

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.
- For indoor and outdoor application.

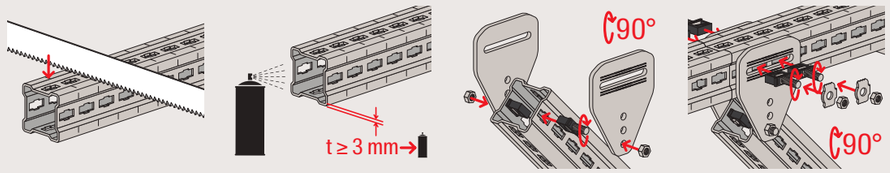
Advantages

- 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

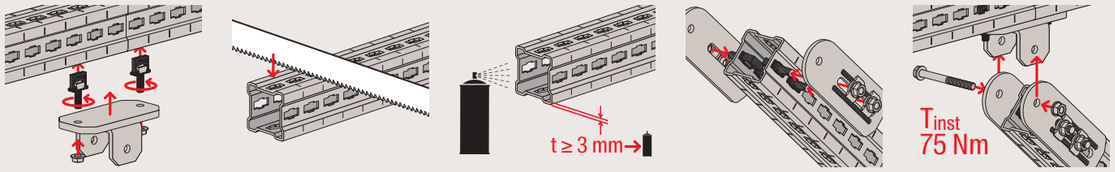
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material: steel grade 8.8

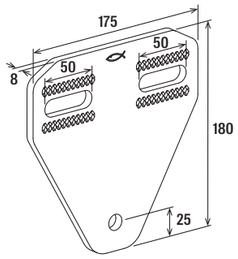
Installation FMVB P



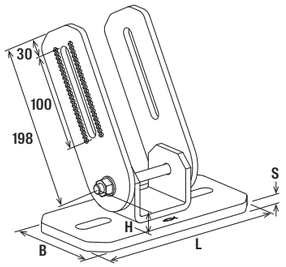
* For optimum protection, we always recommend using fischer zinc sprays (FTC-ZS or FTC-ZA). This is essential for profiles with a thickness of ≥ 3 mm.

Installation FMVB P II

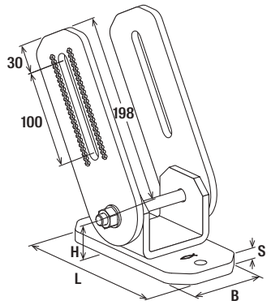




FMVB P



FMVB BP



FMVB P II

Technical data

	Item no.	Length L [mm]	For steel beam width [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
Item							
FMVB-P	**547832**	175	–	–	180	8.0	4
FMVB BP S	**547833**	250	100 – 160	125	40.5	12.0	2
FMVB BP M	**547834**	330	180 – 240	125	40.5	15.0	2
FMVB BP L	**547835**	400	240 – 300	125	40.5	15.0	2
FMVB P II	**554242**	190	–	90	67	12.0	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.
- For indoor and outdoor application.

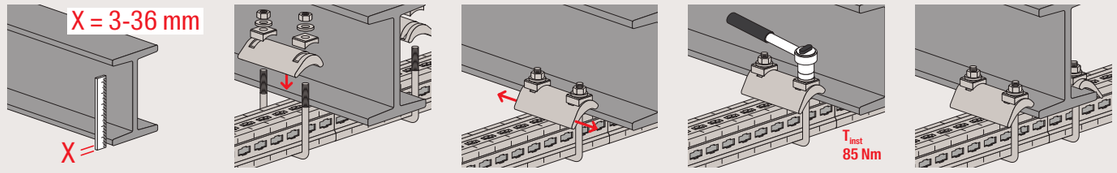
Advantages

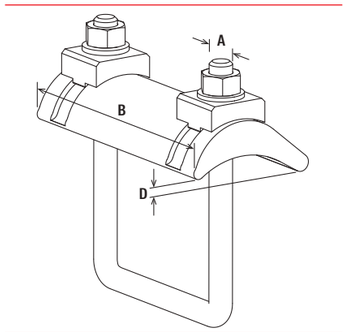
- The design of the beam clamp FMBC makes it possible to fasten to steel beams without drilling or welding.
- The large clamping range of the beam clamp FMBC allows it to be attached to all common beam flanges.
- The design of the beam clamp FMBC in the 3 matching bracket heights for the FMP massive 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
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material hexagon nut: steel resistance class 8

Installation FMBC





FMBC

Technical data

Item	Item no.	For profile	Thread A	Width B [mm]	Clamping range D [mm]	Sales unit [pcs]
FMBC 90	**547836**	FMP 90	M12	140	3 – 36	4
FMBC 120	**547837**	FMP 120	M12	140	3 – 36	4
FMBC 160	**547838**	FMP 160	M12	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.
- For indoor and outdoor application.

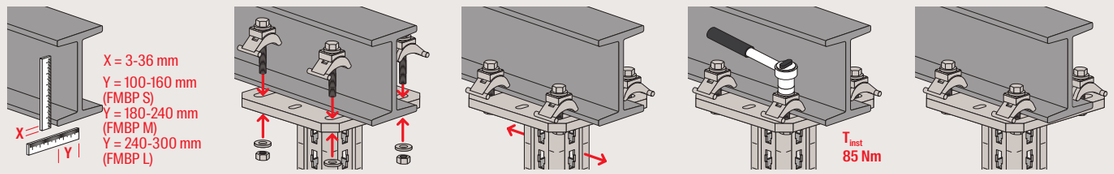
Advantages

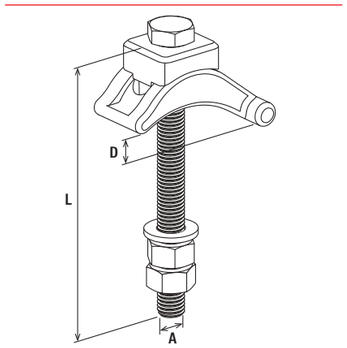
- The design of the beam clamp FMBC M12 and M16 makes it possible to fix to steel beams without drilling or welding.
- The large clamping range of the FMBC M12 and M16 allows it to be attached to all common beam flanges.
- The design of the FMBC beam clamp M12 and M16 in the 3 matching bracket heights 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
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMBC M





FMBC M

Technical data

9

Item	Item no.	Thread A	Length L [mm]	Clamping range D [mm]	Sales unit [pcs]
FMBC M12	**547839**	M12	130	3 – 36	16
FMBC M16	**547840**	M16	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

9

Applications

- Element for stable right-angled connection of massive profiles with 2 flat connectors on each.
- For indoor and outdoor application.

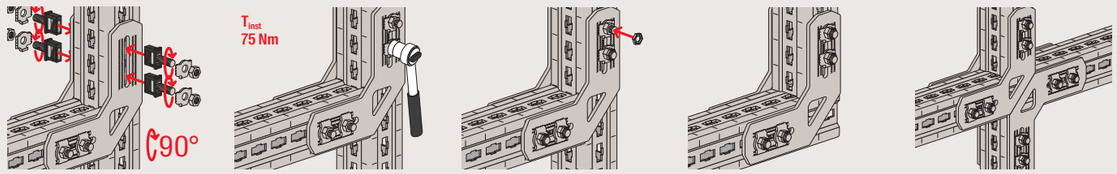
Advantages

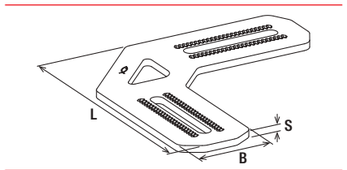
- The flat angle FMFF 90° is used in pairs and offers a high load capacity when connecting the FMP mounting profiles for the construction of massive applications.
- The design of the 90° flat angle FMFF with slotted holes and grating to accommodate the toothed plate of the FMHB hammer head connector 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
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

Installation FMFF





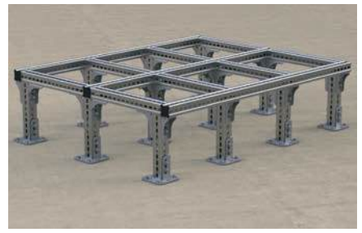
FMFF

Technical data

	Item no.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
Item					
FMFF 90°	**547841**	282	90	8.0	1

Mounting angle FMA 3 and FMA 4

The application-oriented connection of FMP mounting profiles with each other.



3D frame construction

9

Applications

- Connecting elements for multi-dimensional channel constructions.
- For indoor and outdoor application.

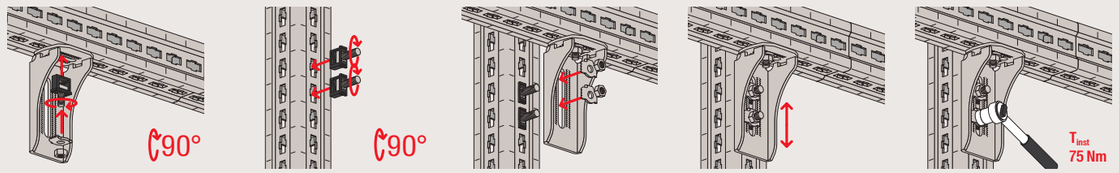
Advantages

- 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.

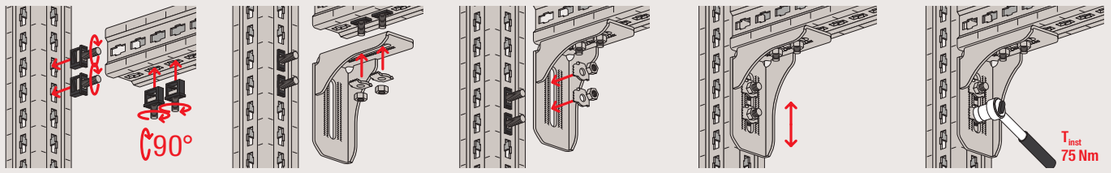
Properties

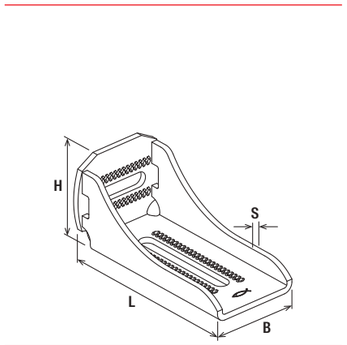
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461

Installation FMA 3

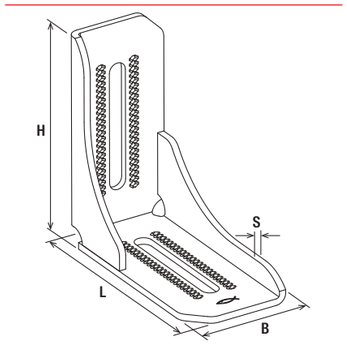


Installation FMA 4





FMA 3



FMA 4

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMA 3	**547842**	190	90	90	6.0	10
FMA 4	**547843**	190	90	190	6.0	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.
- For indoor and outdoor application.

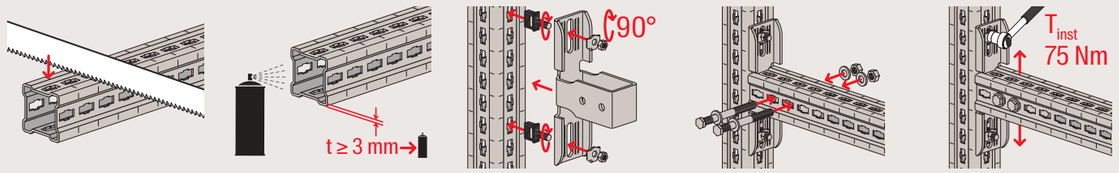
Advantages

- 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 construction and simplifies the mounting process.
- Supplying the FMA articles as a set with the necessary screws, hexagonal nuts and washers ensures error-free installation.

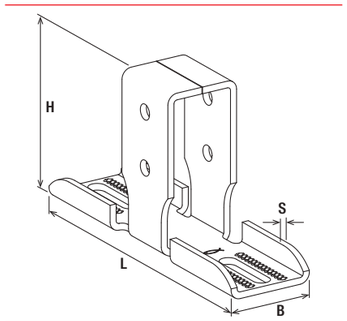
Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised
- Material screw: steel grade 8.8

Installation FMA



* For optimum protection, we always recommend using fischer zinc sprays (FTC-ZS or FTC-ZA). This is essential for profiles with a thickness of ≥ 3 mm.



FMA 90

Technical data

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	6.0	4
FMA 120	**547845**	277.5	77.5	148	6.0	4
FMA 160	**547846**	350	77.5	148	6.0	4

System connector FMA-FUS

The system connection of FMP massive profiles and FUS mounting channels.

Multidimensional channel structures

Applications

- Construction of multidimensional profile structures.
- Constructing variable supporting structures from profiles.
- For indoor and outdoor application.

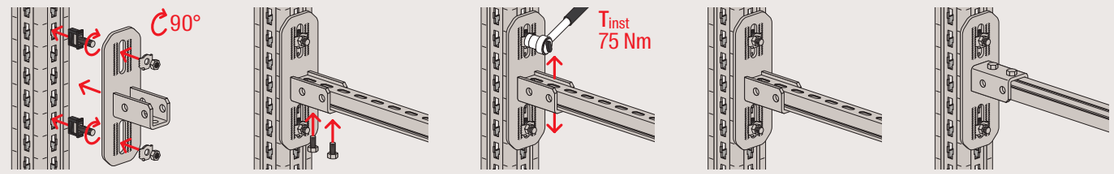
Advantages

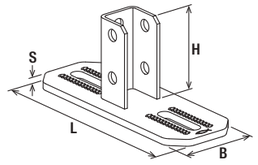
- The FMA-FUS system connector, when used as a saddle flange, allows the mounting of FUS mounting channels in various heights by means of screw connections with the FCN Clix P channel nut.
- The design of the FMA-FUS system connector with long slots and grating to match the FMHB hammer-head push connector enables optimum adjustment of the structure and simplifies the assembly process.
- The strong construction of the FMA-FUS system connector allows optimum transmission of the applied loads in the application as an angle.

Properties

- Base plate: steel S355 (material no. 1.0976) acc. to DIN EN 10149-2
- Profile mount: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised

Installation FMA-FUS





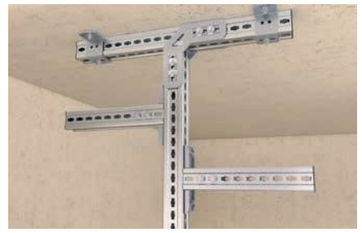
FMA-FUS

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMA-FUS	**568824**	250	90	95	8.0	6

Connecting element FMUF

Simple bracket connection of FMP massive profiles to each other and to the substrate.



Pendant cantilever fixed to travere profil

9

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 M12x130 bolts with M12 nuts can be used alternative, which are pushed through the round openings, whereby each bolt is guided through the adjacent openings.
- For indoor and outdoor application.

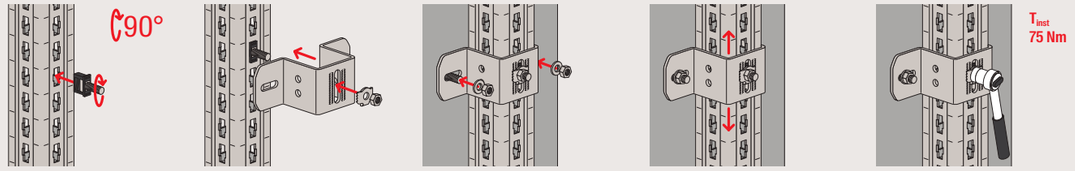
Advantages

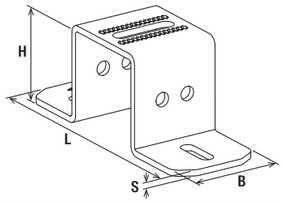
- The design of the FMUF connecting element ensures that the FMP massive profiles can be fastened to each other and to the substrate and makes it easy to fasten.
- The version of the FMUF connecting element with slot and grating to accommodate the toothed plate of the FMHB hammer-head push connector allows optimum adjustment of the supported profile for simple and safe installation.

Properties

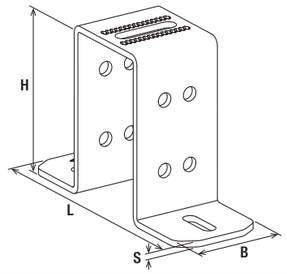
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material hexagon nut: steel resistance class 8

Installation FMUF





FMUF 90/120



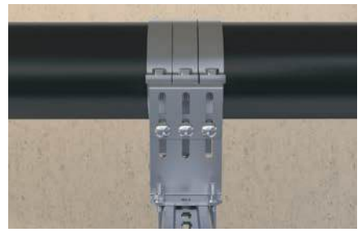
FMUF 160

Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Height H [mm]	Thickness S [mm]	Sales unit [pcs]
FMUF 90	**547847**	250	90	91	6.0	8
FMUF 120	**547848**	250	90	121	6.0	8
FMUF 160	**547849**	250	90	161	6.0	8

Fixed point U-bolt FMFS UB

Element for fixing FMPS pipe shoes and FMFS fixed point saddles.



Fix-point construction with saddle

9

Applications

- Fixing the fixed point and sliding elements onto the massive profile FMP.
- For indoor and outdoor application.

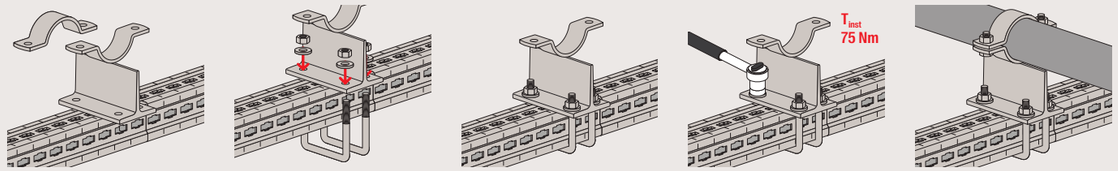
Advantages

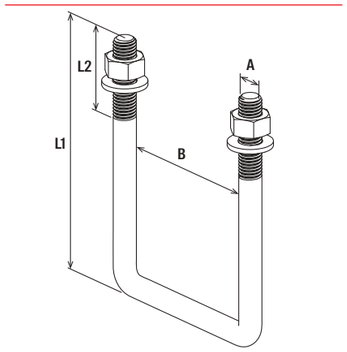
- The FMFS UB fix point U-bolt is the precisely fitting element for quick and easy fastening of fixed points or sliding elements to the massive profile FMP.
- The FMFS UB fixed point U-bolt is available in 3 sizes and is the perfect fit for fastening for the 3 sizes of massive profiles FMP.

Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material nut: steel grade 8.8

Installation FMFS UB





FMFS UB

Technical data

9

Item	Item no.	Thread A	Length L_1 [mm]	Length L_2 [mm]	Width B [mm]	Sales unit [pcs]
FMFS UB 90	**547850**	M12	130	45	91	50
FMFS UB 120	**547851**	M12	160	45	91	40
FMFS UB 160	**547852**	M12	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

9

Applications

- Fixation of pipelines for thermal expansions.
- For indoor and outdoor application.

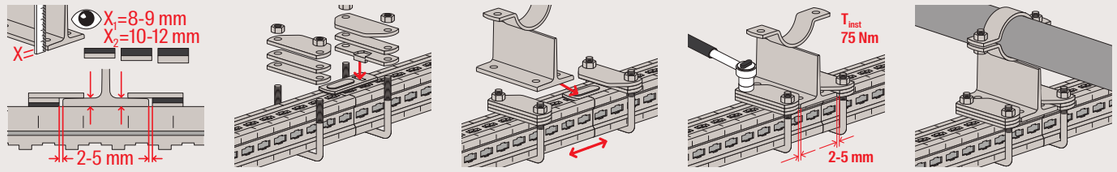
Advantages

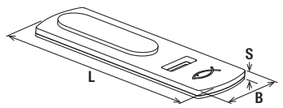
- The sliding element FMFS can be attached to the pipe shoes FMPS to provide axial guidance and lifting for safe guidance in the moment of pipe expansion.
- The sliding element FMFS fits to all base plates of the pipe shoes FMPS due to the variably applicable distance plates and is easy to install.

Properties

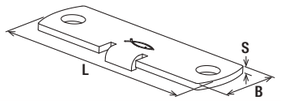
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- FMFS SP: material plastic inlay: PTFE polytetrafluorethylene, colour white

Installation FMFS

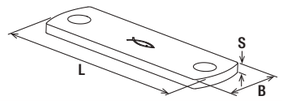




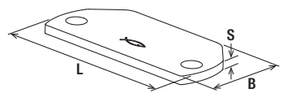
FMFS SP



FMFS SH



FMFS DP

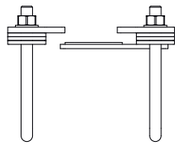


FMFS LL

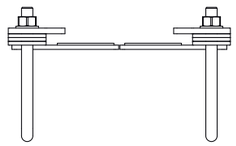
Technical data

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	4.0	10
FMFS DP4	**547855**	130	35	4.0	20
FMFS DP6	**547856**	130	35	6.0	20
FMFS LL	**547857**	130	60	6.0	20

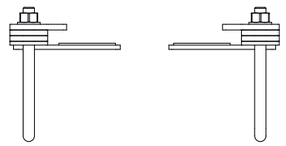
Technical information



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.
X1 and X2 is the measurement for the flange thickness of the steel beam, s. Installation instruction.

Fixed point FMFS S and M

Supporting element for fixing in case of thermal expansion.

Fixed point construction to profile

9

Applications

- Fixation of pipelines for thermal expansions.
- To use with the pipe clamp FMFSC as fixed point. Up to 3 pipe clamps in row possible.
- For indoor and outdoor application.

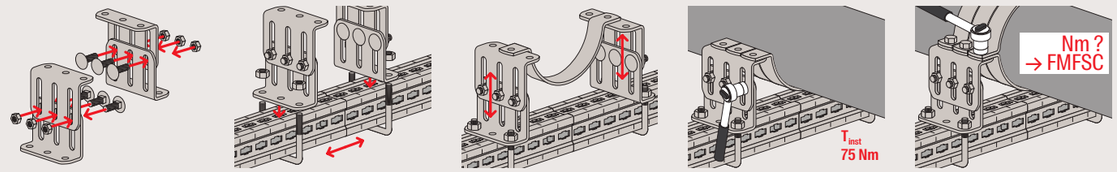
Advantages

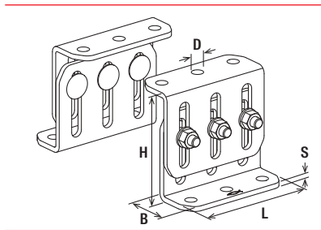
- The modular design of the fixed point saddle in 2 heights allows for optimum adaptation to the load level and pipe dimensions.
- The fixed point saddle allows for good and simple height and inclination adjustment due to the slotted hole connections.

Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Material hexagon nut: steel resistance class 8
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8

Installation FMFS





FMFS

Technical data

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	6.0	2
FMFS M	**547861**	> DN 100	140	54	175 – 240	17	6.0	2

Pipe shoes FMPS

Prefabricated elements for fixing of pipes and massive profiles FMP.

Frame construction

Applications

- Fixing of heavy duty pipelines up to DN 600
- Can be used as sliding point.
- Can be used as fixed point.
- For indoor and outdoor application.

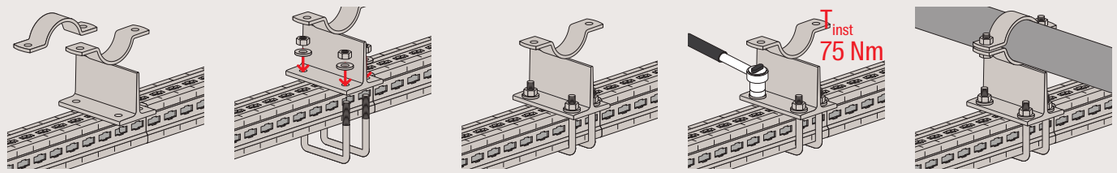
Advantages

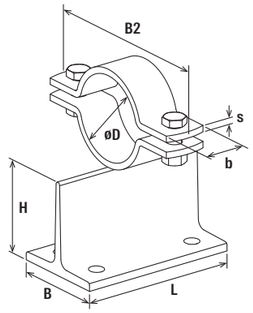
- The designs of the pipe shoes with one or two pipe clamps in standard and solid version allow for fixing of heavy duty pipes.
- Due to the additional perforation, the pipe shoes FMPS can be used as fixed points to attach with the FMFS UB fixed point U-bolt to the FMP massive profile.
- The pipe shoes 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
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMPS



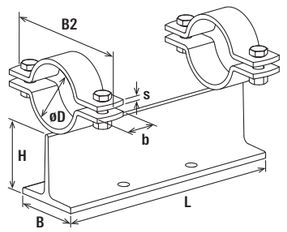


FMPS 1/1

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Width B2 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Assembly group BG	Sales unit [pcs]
FMPS 25 1/1 - 80	**547862**[1)]	1	34	150	90	102	87.5	30 x 5	M10	1	1
FMPS 40 1/1 - 80	**547863**[1)]	1 1/2	49	150	90	118	87.5	30 x 5	M10	1	1
FMPS 50 1/1 - 80	**547864**[1)]	2	61	150	90	144	87.5	40 x 6	M12	1	1
FMPS 65 1/1 - 80	**547865**[1)]	2 1/2	77	150	90	158	87.5	40 x 6	M12	1	1
FMPS 80 1/1 - 80	**547866**[1)]	3	89	150	90	172	87.5	40 x 6	M12	1	1
FMPS 25 1/1 - 150	**548410**[1)]	1	34	150	150	150	150	30 x 5	M10	2	1
FMPS 40 1/1 - 150	**547867**[1)]	1 1/2	49	150	150	102	150	30 x 5	M10	2	1
FMPS 50 1/1 - 150	**547868**[1)]	2	61	150	150	118	150	30 x 5	M12	2	1
FMPS 65 1/1 - 150	**547869**[1)]	2 1/2	77	150	150	144	150	40 x 6	M12	2	1
FMPS 80 1/1 - 150	**547870**[1)]	3	89	150	150	158	150	40 x 6	M12	2	1
FMPS 100 1/1 - 150	**547871**[1)]	3	115	150	150	172	150	40 x 6	M12	2	1
FMPS 125 1/1 - 150	**547872**[1)]	4	140	150	150	220	150	50 x 8	M16	2	1
FMPS 150 1/1 - 150	**547873**[1)]	6	169	150	150	280	150	50 x 8	M16	2	1
FMPS 200 1/1 - 150	**547874**[1)]	8	220	150	150	332	150	50 x 8	M16	2	1

[1)] Delivery time on request.

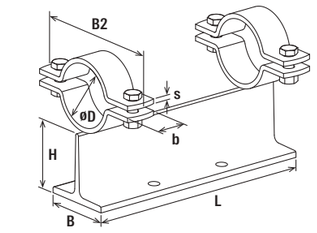


FMPS 1/2

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Width B2 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Assembly group BG	Sales unit [pcs]
FMPS 25 1/2 - 80	**547875**[1)]	1	34	300	90	102	87.5	30 x 5	M10	1	1
FMPS 40 1/2 - 80	**547877**[1)]	1 1/2	49	300	90	118	87.5	30 x 5	M10	1	1
FMPS 50 1/2 - 80	**547879**[1)]	2	61	300	90	144	87.5	40 x 6	M12	1	1
FMPS 65 1/2 - 80	**547881**[1)]	2 1/2	77	300	90	158	87.5	40 x 6	M12	1	1

[1)] Delivery time on request.

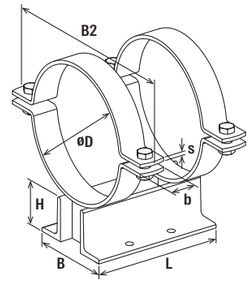


FMPS 1/2

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Width B2 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Assembly group BG	Sales unit [pcs]
FMPS 80 1/2 - 80	**547883**[1)]	3	89	300	90	172	87.5	40 x 6	M12	1	1
FMPS 100 1/2 - 110	**547885**	4	115	300	125	220	125	50 x 8	M16	1	1
FMPS 125 1/2 - 110	**547887**	5	140	300	125	252	125	50 x 8	M16	1	1
FMPS 150 1/2 - 110	**547889**	6	169	300	125	280	125	50 x 8	M16	1	1
FMPS 200 1/2 - 110	**547891**	8	220	300	125	332	125	50 x 8	M16	1	1
FMPS 25 1/2 - 150	**547876**[1)]	1	34	300	150	102	150	30 x 5	M10	2	1
FMPS 40 1/2 - 150	**547878**[1)]	1 1/2	49	300	150	118	150	30 x 5	M10	2	1
FMPS 50 1/2 - 150	**547880**[1)]	2	61	300	150	144	150	40 x 6	M12	2	1
FMPS 65 1/2 - 150	**547882**[1)]	2 1/2	77	300	150	158	150	40 x 6	M12	2	1
FMPS 80 1/2 - 150	**547884**[1)]	3	89	300	150	172	150	40 x 6	M12	2	1
FMPS 100 1/2 - 150	**547886**[1)]	4	115	300	150	220	150	50 x 8	M16	2	1
FMPS 125 1/2 - 150	**547888**[1)]	5	140	300	150	252	150	50 x 8	M16	2	1
FMPS 150 1/2 - 150	**547890**[1)]	6	169	300	150	280	150	50 x 8	M16	2	1
FMPS 200 1/2 - 150	**547892**	8	220	300	150	332	150	50 x 8	M16	2	1

[1)] Delivery time on request.

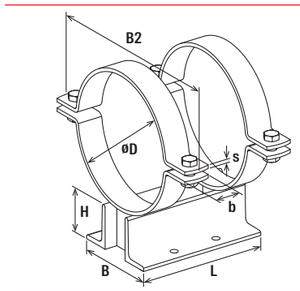


FMPS 2/2

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Width B2 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Assembly group BG	Sales unit [pcs]
FMPS 250 2/2 - 110	**547893**	10	273	300	200	396	100	50 x 8	M16	3	1
FMPS 300 2/2 - 110	**547894**	12	324	300	200	458	100	60 x 8	M20	3	1
FMPS 350 2/2 - 110	**547895**	14	356	300	200	504	100	60 x 8	M20	3	1
FMPS 400 2/2 - 110	**547896**	16	407	300	200	582	100	70 x 10	M24	3	1
FMPS 500 2/2 - 110	**547897**	20	508	300	250	672	100	70 x 10	M24	3	1

[1)] Delivery time on request.



FMPS 2/2

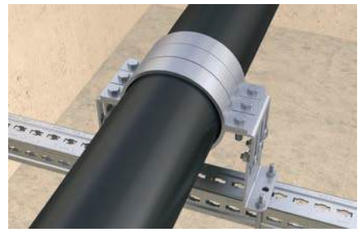
Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L [mm]	Width B [mm]	Width B2 [mm]	Height H [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Assembly group BG	Sales unit [pcs]
FMPS 600 2/2 - 110	**547898**	24	610	300	250	814	100	90 x 15	M30	3	1
FMPS 250 2/2 - 150	**547899**[1)]	10	273	300	200	814	140	90 x 15	M16	3	1
FMPS 300 2/2 - 150	**547900**[1)]	12	324	300	200	396	140	60 x 8	M20	3	1
FMPS 350 2/2 - 150	**547901**[1)]	14	356	300	200	458	140	60 x 8	M20	3	1
FMPS 400 2/2 - 150	**547902**[1)]	16	407	300	200	504	140	70 x 10	M24	3	1
FMPS 500 2/2 - 150	**547903**[1)]	20	508	300	250	582	140	70 x 10	M24	3	1
FMPS 600 2/2 - 150	**547904**[1)]	24	610	300	250	672	140	90 x 15	M30	3	1

[1)] Delivery time on request.

Massive pipe clamp FMFSC

Element for stable fixing of pipes and massive profiles FMP.



Fixed point clamp construction

Applications

- Fixing of heavy duty pipelines up to DN 250.
- Can be used as a fixed point in combination with the FMFS saddle.
- For indoor and outdoor application.

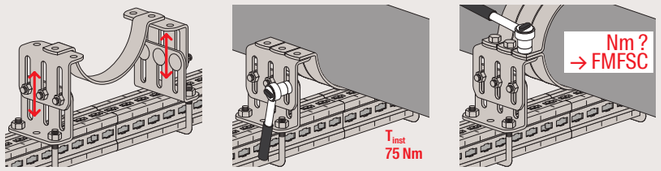
Advantages

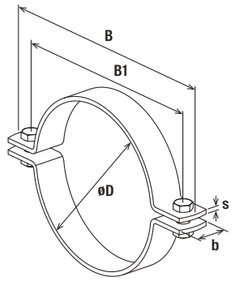
- The fischer massive pipe clamps FMFSC without rubber insert for fixing pipelines up to DN 250 can reliably fix heavy duty pipelines and can be used in many applications.

Properties

- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised acc. to DIN EN ISO 1461
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMFSC





FMFSC

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Width B [mm]	Width B1 B1 [mm]	Width x thickness clamp band b x s [mm]	Locking screw	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FMFSC 25	547905	1	34	102	72	30 x 5	M10	30	1
FMFSC 32	547906	1 1/4	43	112	82	30 x 5	M10	30	1
FMFSC 40	547907	1 1/2	49	118	88	30 x 5	M10	30	1
FMFSC 50	547909	2	61	144	108	40 x 6	M12	50	1
FMFSC 65	547910	2 1/2	77	158	122	40 x 6	M12	50	1
FMFSC 80	547911	3	89	172	136	40 x 6	M12	50	1
FMFSC 100	547913	4	115	220	172	50 x 8	M16	100	1
FMFSC 125	547915	5	140	252	204	50 x 8	M16	100	1
FMFSC 150	547918	6	169	280	232	50 x 8	M16	100	1
FMFSC 200	547919	8	220	332	284	50 x 8	M16	100	1
FMFSC 250/50	547921	10	273	396	348	50 x 8	M16	100	1

Massive U-bolt FMPSU

Simple element for fixing of pipes and massive profile FMP.

Profile traverse to steel structure

9

Applications

- Fixing of heavy duty pipelines up to DN 250.
- For indoor and outdoor application.

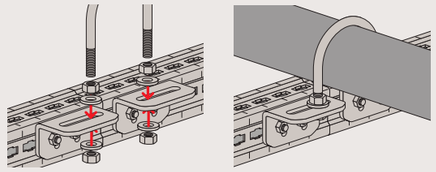
Advantages

- 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

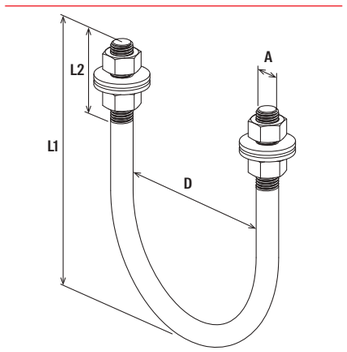
- Material: steel S235JR (material no. 1.0038) acc. to DIN EN 10025-2
- Zinc plating: hot-dip galvanised
- Material screw: steel grade 8.8
- Material hexagon nut: steel resistance class 8

Installation FMPSU



See also:

Product family Connecting element
FMCE-L Page 348



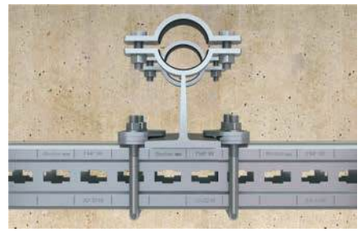
FMPSU

Technical data

Item	Item no.	Size [in]	Clamping range D [mm]	Length L_1 [mm]	Length L_2 [mm]	Thread A	Sales unit [pcs]
FMPSU 25	**547929**	1	38	70	40	M10	50
FMPSU 32	**547930**	1 1/4	46	76	50	M10	50
FMPSU 40	**547931**	1 1/2	52	86	50	M10	50
FMPSU 50	**547933**	2	64	109	50	M12	50
FMPSU 65	**547934**	2 1/2	82	125	50	M12	50
FMPSU 80	**547935**	3	94	138	50	M12	50
FMPSU 100	**547937**	4	120	171	60	M16	25
FMPSU 125	**547939**	5	148	191	60	M16	20
FMPSU 150	**547941**	6	176	217	60	M16	15
FMPSU 200	**547942**	8	228	283	70	M20	8
FMPSU 250	**547943**	10	282	334	70	M20	8

Self-adhesive inlay FESK-EPDM

Insert for galvanic separation and sound insulation.



Pipe shoe on sliding element

Applications

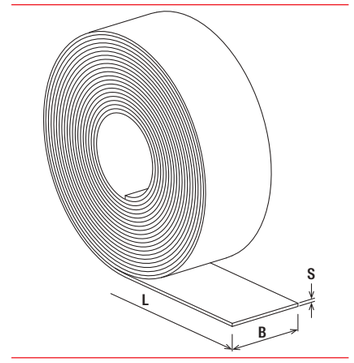
- Used as an insert strip between the pipe and pipe clamp to reduce temperature transfer.
- To ensure contact separation between the pipe and pipe clamp with different materials.

Advantages

- The galvanic separation of the insert allows the FMPS pipe shoes, FMFSC and FFPC fixed point clamps to be used with different pipe materials.
- The different widths of the insert, individually or in combination, enable use with all pipe clamp widths of the FMPS pipe shoes.
- The insert also reduces sound transmission from the pipe to the pipe clamp.

Properties

- Material: EPDM rubber, black, self-adhesive on one side
- Hardness: 70±5 Shore A
- Tensile strength: 6 MPa (>4MPA, ISO 37)
- Temperature range: -35 to 90°C (110°C for short periods)
- Fire behaviour: FMVSS302 compliant (flammable)

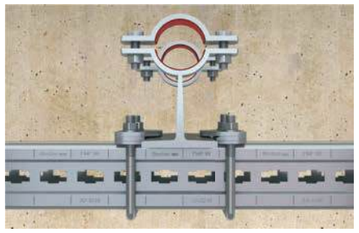


Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FESK-EPDM 30/2	**575363**	10,000	30	2.0	1
FESK-EPDM 40/2	**575364**	10,000	40	2.0	1
FESK-EPDM 50/2	**575365**	10,000	50	2.0	1
FESK-EPDM 60/2	**575366**	10,000	60	2.0	1

Self-adhesive inlay FESK-Silicone

Insert for galvanic separation and sound insulation.



Pipe shoe on sliding element

Applications

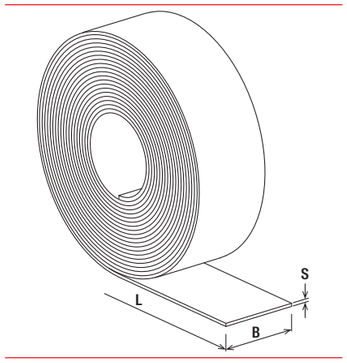
- Used as an insert strip between the pipe and pipe clamp to reduce temperature transfer.
- To ensure contact separation between the pipe and pipe clamp with different materials.

Advantages

- The galvanic separation of the insert allows the FMPS pipe shoes, FMFSC and FFPC fixed point clamps to be used with different pipe materials.
- The different widths of the insert, individually or in combination, enable use with all pipe clamp widths of the FMPS pipe shoes.
- The insert also reduces sound transmission from the pipe to the pipe clamp.

Properties

- Material: Silicone, fire red similar to RAL 3000, self-adhesive on one side
- Hardness: 70±5 Shore A
- Temperature range: -20 to 200°C (max. 300°C for short periods)
- Fire behaviour: DIN 4102 B1

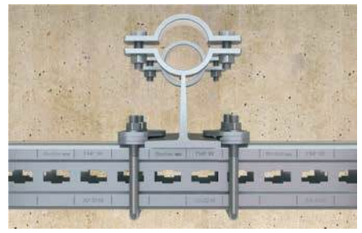


Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FESK-Silicone 30/2	575371	10,000	30	2.0	1
FESK-Silicone 40/2	575372	10,000	40	2.0	1
FESK-Silicone 50/2	575373	25,000	50	2.0	1
FESK-Silicone 60/2	575374	25,000	60	2.0	1

Self-adhesive inlay FESK-Glass fibre

Insert for galvanic separation and sound insulation.



Pipe shoe on sliding element

Applications

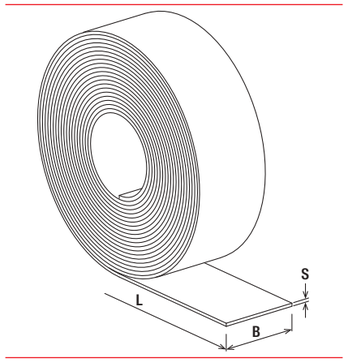
- Used as an insert strip between the pipe and pipe clamp to reduce temperature transfer.
- To ensure contact separation between the pipe and pipe clamp with different materials.
- Usable for fixed-point applications.

Advantages

- The galvanic separation of the insert allows the FMPS pipe shoes, FMFSC and FFPC fixed point clamps to be used with different pipe materials.
- The different widths of the insert, individually or in combination, enable use with all pipe clamp widths of the FMPS pipe shoes.
- The insert also reduces sound transmission from the pipe to the pipe clamp.

Properties

- Material: E-glass fibre, textured, white, self-adhesive on one side
- Temperature range: -20 to 500°C (max. 550°C for short periods)
- Fire behaviour: non-flammable



Technical data

Item	Item no.	Length L [mm]	Width B [mm]	Thickness S [mm]	Sales unit [pcs]
FESK-Glass fibre 30/2	575367	10,000	30	2.0	1
FESK-Glass fibre 40/2	575368	10,000	40	2.0	1
FESK-Glass fibre 50/2	575369	25,000	50	2.0	1
FESK-Glass fibre 60/2	575370	25,000	60	2.0	1

10
Air conditioner fixings

10

Air conditioner fixing MCE

The complete kit for air conditioner fixing on walls.

Air conditioner 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

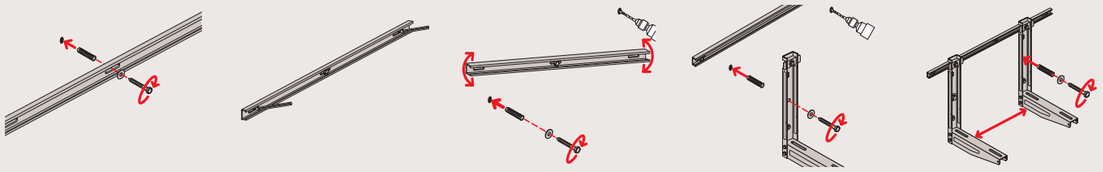
Advantages

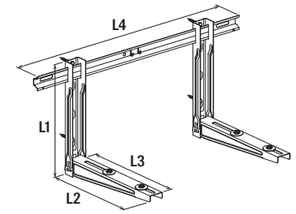
- The complete kit including anti vibration damper, plugs and screws offers an optimised installation security.
- The bracket with quick snap (Klik) simplifies and shortens the installation.
- The horizontal channel of the MCE Klima Klik allows a flexible adjustment of the brackets and simplifies the installation additionally.
- The MCE Klima Klik horizontal channel with included horizontal level tool enables the adjustment without additional tools.

Properties

- Material: steel
- Coating: powder coating
- Colour: RAL 9002

Installation Klima Klik 420





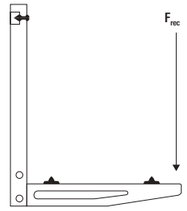
Klima Klik 420

Technical data

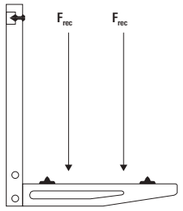
	Item no.	Length L_1 [mm]	Length L_2 [mm]	Length L_3 [mm]	Length L_4 [mm]	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Sales unit [pcs]
Item								
Klima Klik 420	**521761**	400	420	380	780	1.00	1.00	1

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

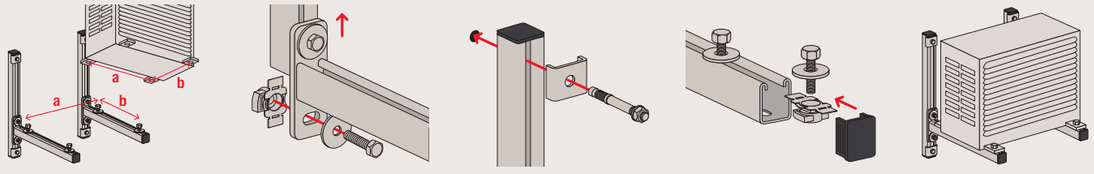
Advantages

- The KSU Kits are available in two different versions: KSU without noise reduction dampers and the KSU S with noise reduction dampers.
- The horizontal cantilevers with different lengths and the sliding nut FCN Clix P allow a flexible adjustment of the noise protection dampers to simplify the installation.
- The included sliding nut FCN Clix P with screws for the fixing of the cantilevers offers the possibility of an easy adjustment and a time saving installation.
- The KSU Kit is a pre-assembled kit that includes pre-cut channels and all necessary accessories for easy setup.

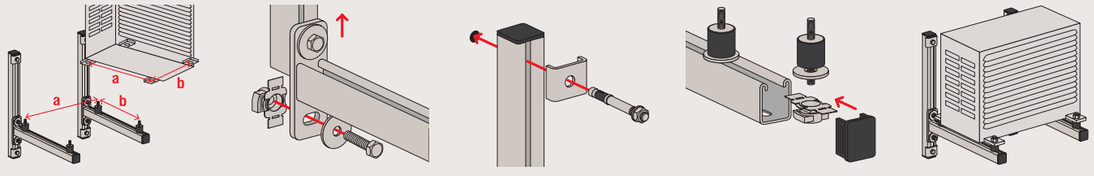
Properties

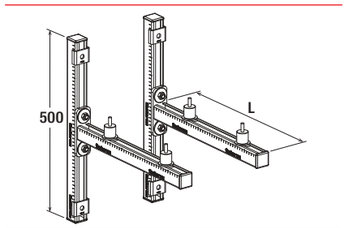
- Material channels: steel S250GD+Z275 (material no. 1.0242)
- Material cantilever arms: steel S235JR (material no. 1.0037)
- Zinc plating channels: electro zinc-plated
- Zinc plating cantilever arms: electro zinc-plated

Installation KSU

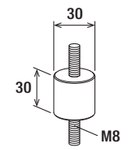


Installation KSU S





KSU



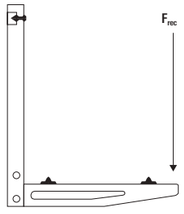
PA 30x30

Technical data

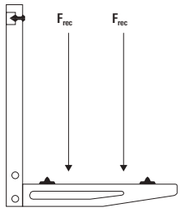
Item	Item no.	Length L [mm]	Max. recommended static load load case 1 F_{rec} [kN]	Max. recommended static load load case 2 F_{rec} [kN]	Sales unit [pcs]
KSU 450	**553733**	450	1.00	1.00	1
KSU 500	**553734**	500	0.90	0.90	1
KSU 600	**553735**	600	0.75	0.75	1
KSU S 450	**553736**	450	1.00	1.00	1
KSU S 500	**553737**	500	0.90	0.90	1
KSU S 600	**553738**	600	0.75	0.75	1
PA 30x30	**512715**	–	–	–	4

The loads are valid for the use in pairs (two consoles).

Load case 1



Load case 2



11
Plugs and anchors

Bolt anchor FAZ II Plus

For highest demands. Powerful and flexible.

Balcony railings

Conveyor belt

Applications

- Steel constructions
- Guard rails
- Consoles
- Lifts
- Lifting platforms
- Conveyor belts
- Pumps
- Cable trays
- Façades
- Timber constructions

Advantages

- Quick and easier assembly without the need for drill hole cleaning (M8-M24).
- Through the tensile strengths increased decisively, fewer fixing points and anchors are required.
- The ETA confirms the use of the FAZ II Plus for dynamic loads for diameters M16-M24.
- An external independent assessment confirms the service life of anchorages up to 120 years. Thus, the FAZ II Plus outlasts a whole century and is perfectly suited for large, long-lasting construction projects (M10-M16).
- The FAZ II Plus allows the absorption of high seismic loads of performance category C1 from M8 and C2 for diameters M10-M24.
- The first bolt anchor M6 with ETA evaluation option 1 ensures a safe and approved anchorage.

Certificates / Features

CE · ETA · ICC ES ESR-2948 See ICC-ES Evaluation Report at www.icc-es.org

aBG Z-21.1-2152 · FM APPROVED

from M10

RWS 1350° · R 120 · ZTV 1200°

BZS D 24-601

Building materials

Approved for:

- Concrete C20/25 to C50/60, cracked and non-cracked
- Steel fiber concrete (classification available)

Suitable for dynamic loads:

- Concrete C12/15 - C80/95 (classification available)
- Solid sand-lime brick (classification available)

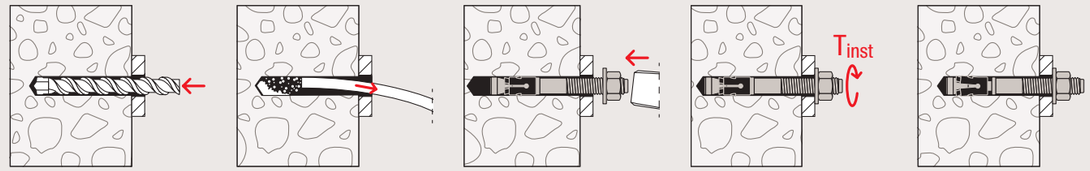
Versions

- Galvanised steel
- Stainless steel R
- Highly corrosion-resistant steel HCR

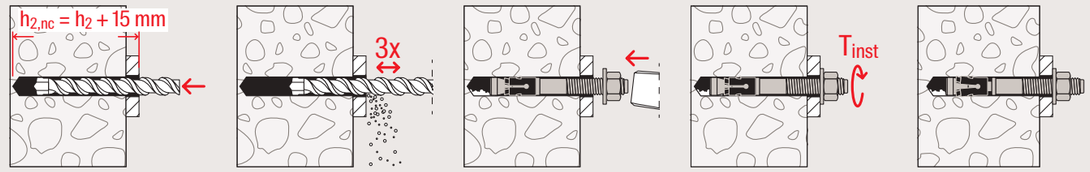
Functioning

- The FAZ II Plus is suitable for pre-positioned and push-through installation and is also ideal for stand-off installation thanks to the long thread.
- The anchor is set in line with the approval once the preset installation torque is achieved.
- In the case of series installation, we recommend using the FABS or FA-ST II anchor bolt setting tools.
- In case of seismic demands or to minimise the hole clearance, the annular gap can be filled using the filling disc FFD.
- For dynamic loads, an additional „dynamic set“ is used, which is filled with injection mortar (compressive strength ≥ 50 N/mm² e.g.: FIS V Plus, FIS EM Plus, FIS HB or FIS SB) after installation.

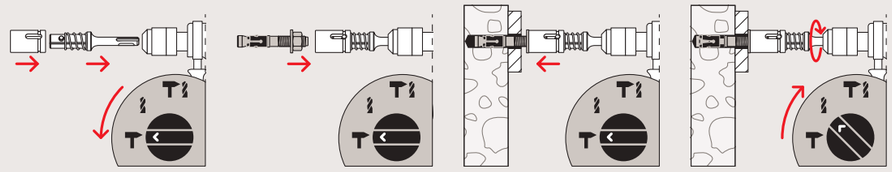
Push-through installation with hexagon nut

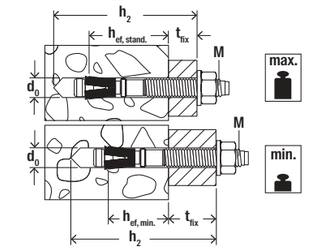


Without borehole cleaning



Installation with setting tool





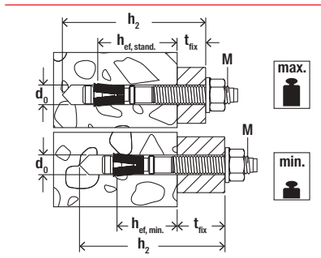
Technical data

Bolt anchor FAZ II Plus

FAZ II Plus FAZ II Plus R

Item	Galvanised steel Item no. gvz	Stainless steel Item no. R	Approval ETA	DIBt	ICC	Seismic-Approval	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Anchoring depth $h_{ef,max}$/$h_{ef,min}$ [mm]	Max. usable length $h_{ef,stand.}$/$h_{ef,min.}$ t_{fix} [mm]	Anchor length l [mm]	Thread ø x length [mm]	Width across nut SW [mm]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FAZ II Plus 6/10	**564572**	**564607**	●	●	–	–	6	60	40 / -	10 / -	65	M6 x 25	10	8	50
FAZ II Plus 6/20	**564573**	**564608**	●	●	–	–	6	70	40 / -	20 / -	75	M6 x 35	10	8	50
FAZ II Plus 8/10	**564574**[1)]	**564609**[1)]	●	●	●	C1	8	65	45 / 35	10 / 20	75	M8 x 38	13	20	50
FAZ II Plus 8/30	**564575**[1)]	**564610**[1)]	●	●	●	C1	8	85	45 / 35	30 / 40	95	M8 x 58	13	20	50
FAZ II Plus 8/50	**564576**[1)]	**564611**[1)]	●	●	●	C1	8	105	45 / 35	50 / 60	115	M8 x 78	13	20	50

[1)] With minimum embedment depth only for statically interderminate systems.



Technical data

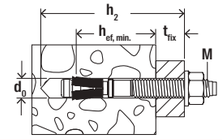
Bolt anchor FAZ II Plus

FAZ II Plus FAZ II Plus R

Item	Galvanised steel Item no. gvz	Stainless steel Item no. R	Approval ETA	DIBt	ICC	Seismic-Approval	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Anchoring depth hef,max/ hef,min h_{ef} [mm]	Max. usable length hef,stand./ hef,min. t_{fix} [mm]	Anchor length l [mm]	Thread ø x length [mm]	Width across nut SW [mm]	Installation torque T_{inst} [Nm]	Sales unit [pcs]
FAZ II Plus 10/10	**564579**	**564612**	●	●	●	C1 / C2	10	85	60 / 40	10 / 30	95	M10 x 53	17	45	50
FAZ II Plus 10/20	**564580**	**–**	●	●	●	C1 / C2	10	95	60 / 40	20 / 40	105	M10 x 63	17	45	25
FAZ II Plus 10/20	**–**	**564613**	●	●	●	C1 / C2	10	95	60 / 40	20 / 40	105	M10 x 63	17	45	50
FAZ II Plus 10/30	**564581**	**–**	●	●	●	C1 / C2	10	105	60 / 40	30 / 50	115	M10 x 73	17	45	25
FAZ II Plus 10/30	**–**	**564614**	●	●	●	C1 / C2	10	105	60 / 40	30 / 50	115	M10 x 73	17	45	50
FAZ II Plus 10/50	**564582**	**564615**	●	●	●	C1 / C2	10	125	60 / 40	50 / 70	135	M10 x 93	17	45	20
FAZ II Plus 12/10	**564586**	**564619**	●	●	●	C1 / C2	12	100	70 / 50	10 / 30	110	M12 x 61	19	60	20
FAZ II Plus 12/20	**564587**	**564620**	●	●	●	C1 / C2	12	110	70 / 50	20 / 40	120	M12 x 71	19	60	20
FAZ II Plus 12/30	**564588**	**564621**	●	●	●	C1 / C2	12	120	70 / 50	30 / 50	130	M12 x 81	19	60	20
FAZ II Plus 12/50	**564589**	**564622**	●	●	●	C1 / C2	12	140	70 / 50	50 / 70	150	M12 x 101	19	60	20
FAZ II Plus 16/5	**564594**	**–**	●	●	●	C1 / C2	16	115	85 / 65	5 / 25	128	M16 x 64	24	110	10
FAZ II Plus 16/5	**–**	**564626**	●	●	●	C1 / C2	16	115	85 / 65	5 / 25	128	M16 x 64	24	110	20
FAZ II Plus 16/25	**564595**	**–**	●	●	●	C1 / C2	16	135	85 / 65	25 / 45	148	M16 x 84	24	110	10
FAZ II Plus 16/25	**–**	**564627**	●	●	●	C1 / C2	16	135	85 / 65	25 / 45	148	M16 x 84	24	110	20
FAZ II Plus 16/50	**564596**	**–**	●	●	●	C1 / C2	16	160	85 / 65	50 / 70	173	M16 x 109	24	110	10
FAZ II Plus 16/50	**–**	**564628**	●	●	●	C1 / C2	16	160	85 / 65	50 / 70	173	M16 x 109	24	110	20

[1] With minimum embedment depth only for statically interderminate systems.

C1/C2: Only with maximum embedment depth.



Technical data

Bolt anchor FAZ II Plus K / Bolt anchor FAZ II Plus K GS (short version)

FAZ II Plus K FAZ II Plus K R

Item	Galvanised steel Item no. gvz	Stainless steel Item no. R	Approval ETA	DIBt	Seismic-Approval	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Max. fixture thickness t_{fix} [mm]	Anchor length l [mm]	Thread ø x length [mm]	Width across nut SW [mm]	Sales unit [pcs]
FAZ II Plus 8/5 K	**564671**	**564676**	●	●	C1	8	45	5	60	M8 x 23	13	50
FAZ II Plus 10/10 K	**564672**	**564677**	●	●	C1 / C2	10	65	10	75	M10 x 33	17	50
FAZ II Plus 10/20 K	**564673**	**–**	●	●	C1 / C2	10	75	20	85	M10 x 43	17	25
FAZ II Plus 10/20 K	**–**	**564678**	●	●	C1 / C2	10	75	20	85	M10 x 43	17	50
FAZ II Plus 12/10 K	**564674**	**564679**	●	●	C1 / C2	12	80	10	90	M12 x 41	19	20
FAZ II Plus 12/20 K	**564675**	**564680**	●	●	C1 / C2	12	90	20	100	M12 x 51	19	20

Accessories

Accessories

FABS FA-ST II FA-ST II Set Replacement spring

Item	Item no.	Match	Contents	Sales unit [pcs]
FABS	**077937**	Bolt anchor M6-M12		1
FA-ST II M10	**558790**	Bolt anchor M10	1 x SDS Adapter 1 x Socket SW17	1
FA-ST II M12	**558791**	Bolt anchor M12	1 x SDS Adapter 1 x Socket SW19	1
FA-ST II M16	**558792**	Bolt anchor M16	1 x SDS Adapter 1 x Socket SW24	1
FA-ST II Set	**558789**	Bolt anchor M10-M16	1 x SDS Adapter 1 x Socket SW17, SW19, SW24	1
FA-ST II Spring	**558793**	FA-ST II M10/M12/M16	5 x Replacement spring	1

Loads

Bolt anchor FAZ II Plus

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-19/0520 of 24.05.2023 has to be considered.

					Cracked concrete				Non-cracked concrete			
					Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type	Material/ surface[2]	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Instal-lation torque T_{inst} [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FAZ II Plus 6	gvz	40	80	8	0.7	4.3	35	40	5.0	4.3	35	40
	gvz	80	120	8	0.7	4.3	35	40	5.0	4.3	35	40
	R	40	80	8	0.7	5.0	35	40	5.0	5.0	35	40
	R	80	120	8	0.7	5.0	35	40	5.0	5.0	35	40
FAZ II Plus 8	gvz	35	80	20	2.6	8.5	35	40	4.8	9.3	40	40
	gvz	90	140	20	3.8	9.3	35	40	6.7	9.3	40	40
	R	35	80	20	2.6	8.5	35	40	4.8	10.1	40	40
	R	90	140	20	3.8	10.1	35	40	6.7	10.1	40	40
FAZ II Plus 10	gvz	40	80	45	4.1	10.8	40	45	5.9	15.0	40	45
	gvz	100	150	45	6.2	15.0	40	45	9.5	15.0	40	45
	R	40	80	45	4.1	10.8	40	45	5.9	15.1	40	45
	R	100	150	45	6.2	15.1	40	45	9.5	15.1	40	45
FAZ II Plus 12	gvz	50	100	60	5.8	18.0	50	55	8.3	21.1	50	55
	gvz	125	190	60	9.5	21.1	50	55	10.5	21.1	50	55
	R	50	100	60	5.8	18.0	50	55	8.3	24.1	50	55
	R	125	190	60	9.5	24.1	50	55	10.5	24.1	50	55
FAZ II Plus 16	gvz	65	140	110	8.6	27.5	65	65	12.3	39.1	65	65
	gvz	160	240	110	12.9	39.1	65	65	18.4	39.1	65	65
	R	65	140	110	8.6	27.5	65	65	12.3	39.3	65	65
	R	160	240	110	12.9	40.6	65	65	18.4	40.6	65	65
FAZ II Plus 20	gvz	100	160	200	16.4	47.4	95	85	23.4	47.4	95	95
	gvz	180	270	200	16.4	47.4	95	85	23.4	47.4	95	95
	R	100	160	200	16.4	52.5	95	85	23.4	61.7	95	95
	R	180	270	200	16.4	61.7	95	85	23.4	61.7	95	95
FAZ II Plus 24	gvz	125	200	270	22.9	73.3	100	100	32.7	73.3	100	135
	R	125	200	270	22.9	73.3	100	100	32.7	90.3	100	135

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x h_{ef}. Accurate data see ETA.
[2] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).
[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Bolt anchor FAZ II Plus dynamic

Design values for cyclic fatigue loading[1] of a single anchor in cracked or non-cracked normal concrete of strength class C20/25[2].
For the design the complete current assessment ETA-20/0897 of 22.05.2023 has to be considered.

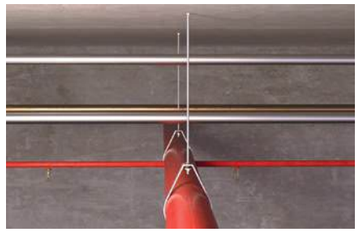
					Cracked concrete				Non-cracked concrete			
					Design values of tension ($\Delta N_{Ed,max}$) and shear loads ($\Delta V_{Ed,max}$); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Design values of tension ($\Delta N_{Ed,max}$) and shear loads ($\Delta V_{Ed,max}$); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type	Material/ surface	Effective ancho-rage depth h_{ef} [mm]	Mini-mum member thick-ness h_{min} [mm]	Instal-lation torque T_{inst} [Nm]	$\Delta N_{Ed,max}$[3] [kN]	$\Delta V_{Ed,max}$[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	$\Delta N_{Ed,max}$[3] [kN]	$\Delta V_{Ed,max}$[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FAZ II Plus 16	gvz	65	140	110	6.0	4.7	65	65	6.4	4.7	65	65
	gvz	85	140	110	6.4	4.7	65	65	6.4	4.7	65	65
	gvz	160	240	110	6.4	4.7	65	65	6.4	4.7	65	65
	R	65	140	110	3.1	6.0	65	65	3.1	6.0	65	65
	R	85	140	110	3.1	6.0	65	65	3.1	6.0	65	65
	R	160	240	110	3.1	6.0	65	65	3.1	6.0	65	65
FAZ II Plus 20	gvz	100	160	200	8.8	6.1	95	85	8.8	6.1	95	95
	gvz	180	270	200	8.8	6.1	95	85	8.8	6.1	95	95
	R	100	160	200	4.7	9.4	95	85	4.7	9.4	95	95
	R	180	270	200	4.7	9.4	95	85	4.7	9.4	95	95
FAZ II Plus 24	gvz	125	200	270	14.7	9.5	100	100	14.7	9.5	100	135
	R	125	200	270	6.9	13.6	100	100	6.9	13.6	100	135

[1] The design values of the cyclic fatigue loading apply for load cycles > 10^8 in accordance with design method I acc. to TR061 – for unknown static lower load. If the static lower load is known and / or for lower number of load cycles higher load values are possible. The partial safety factors as regulated in the design standard are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef}. Drill hole cleaning acc. to assessment.
[2] For higher concrete strength classes up to C50/60 higher permissible loads may be possible. - see assessment. The concrete is assumed to be standard-reinforced.
[3] In the case of combinations of tensile loads and shear loads, with reduced or minimum spacing and edge distances (anchor groups) the design must be carried out in accordance with the provisions of the complete assessment.

Hammerset anchor EA II

The cost-effective hammerset anchor with a rim for quick and easy installation.

Pipelines



Sprinklers

Applications

- Pipelines and ventilation ducts
- Sprinkler systems
- Cable conduits and wires
- Gratings
- Steel constructions
- Machines
- Consoles
- Shuttering props
- Diamond or core drilling devices (EA II M12 D)

Advantages

- The embossed rim prevents the anchor sleeve from slipping, thus ensuring a trouble-free hammerset installation.
- The metric internal thread means that it is possible to use standard screws or threaded rods for the ideal adaptation to suit the intended use.
- The EMS machine setting tool allows for effortless installation, particularly in the case of series installations.
- The embossing that is applied when expanding with the EHS Plus setting tool offers a simple control of the anchoring and provides increased safety.
- The fixing point at the EA II versions with 25 mm anchoring depth prevents anchor of falling out of the drill hole before being expanded during overhead installation.

Certificates / Features

CE ETA

R 120

FM APPROVED

from M10

Inox Stainless Steel

from M8

Building materials

Approved for:

- Concrete C20/25 to C50/60, cracked, for the multiple fixings of non-load-bearing systems
- Concrete C20/25 to C50/60, non-cracked

Suitable for:

- Concrete C12/15
- Natural stone with dense structure

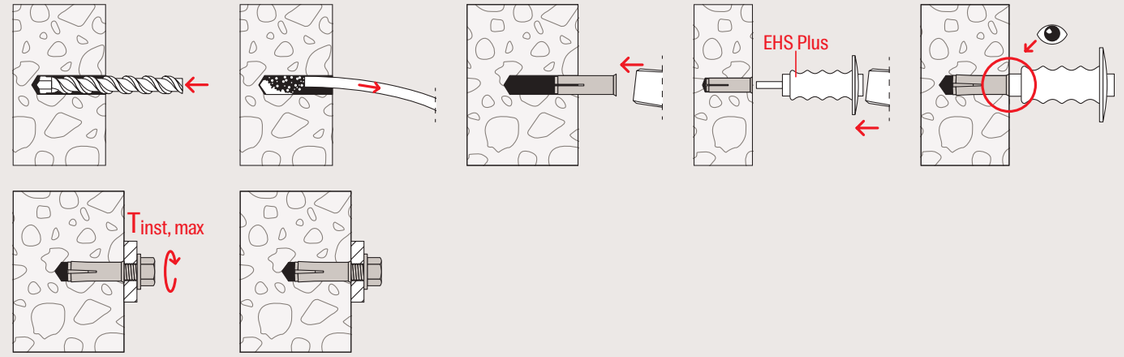
Versions

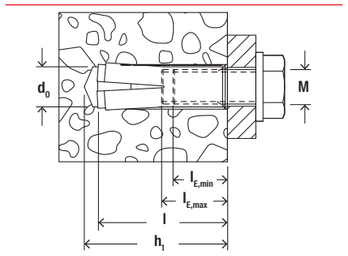
- Galvanised steel
- Stainless steel R

Functioning

- The EA II is suitable for pre-positioned installation.
- Position the hammerset anchor in the drill hole and drive in flush to the surface of the anchor base using the hammer.
- The sleeve is then expanded by driving in the internal bolt with the EHS Plus setting tool (alternative: EMS machine setting tool), and expanded against the drill hole wall.
- The setting tools must sit on the rim of the anchor to ensure correct expansion.
- Use the special EA II M12 x 50 D / EA M 12 x 50 N D with thicker sleeve for fixing diamond and core drilling devices.

Installation EA II





Technical data

EA II h_{ef} = 25 mm EA II

Item	Galvanised steel Item no. gvz	Stainless steel Item no. R	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Max. bolt penetration $l_{E,max}$ [mm]	Anchor length l [mm]	Internal thread M	Sales unit [pcs]
EA II M 6 x 25	**532230**	**–**	●	8	27	6	14	25	M6	100
EA II M 6 x 30	**048264**	**048410**	●	8	32	6	14	30	M6	100
EA II M 8 x 25	**532231**	**–**	●	10	27	8	14	25	M8	100
EA II M 8 x 30	**048284**	**048411**	●	10	33	8	14	30	M8	100
EA II M 8 x 40	**048323**	**048412**	●	10	43	8	14	40	M8	50
EA II M 10 x 25	**532232**	**–**	●	12	27	10	14	25	M10	50
EA II M 10 x 30	**048332**	**–**	●	12	33	10	14	30	M10	50
EA II M 10 x 40	**048339**	**048414**	●	12	43	10	17	40	M10	50
EA II M 12 x 25	**532233**	**–**	●	15	27	12	14	25	M12	25
EA II M 12 x 50	**048406**	**048415**	●	15	54	12	22	50	M12	25
EA II M 16 x 65	**048408**	**048416**	●	20	70	16	28	65	M16	20

Technical data

Hammerset anchor EA II D

EA II M12 x 50 D

EA M12 x 50 N D

Item	Galvanised steel Item no.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Max. bolt penetration $l_{E,max}$ [mm]	Anchor length l [mm]	Internal thread M	Sales unit [pcs]
EA M12 x 50 N D gvz	**500872**	–	16	54	12	22	50	M12	50
EA II M12 x 50 D	**048407**	●	16	54	12	22	50	M12	25

Technical data

Stop drill EBB

EBB

Item	Item no.	Drill diameter d_0 [mm]	Drill hole depth h_0 [mm]	Match	Sales unit [pcs]
EBB 8 x 25	**532607**	8	27	EA II M 6 x 25	1
EBB 10 x 25	**532608**	10	27	EA II M 8 x 25	1
EBB 12 x 25	**532609**	12	27	EA II M 10 x 25	1
EBB 15 x 25	**532610**	15	27	EA II M 12 x 25	1

Technical data

Machine setting tool EMS

EMS

Item	Item no.	Tool holder	Match	Sales unit [pcs]
EMS M 6 x 25/30	**048065**	SDS-plus	EA II M 6 x 25, EA II M 6 x 30	1
EMS M 8 x 25/30	**048066**	SDS-plus	EA II M 8 x 25, EA II M 8 x 30	1
EMS M 8 x 40	**048067**	SDS-plus	EA II M 8 x 40	1
EMS M10 x 25/30	**048068**	SDS-plus	EA II M 10 x 25, EA II M 10 x 30	1
EMS M10 x 40	**048070**	SDS-plus	EA II M 10 x 40	1
EMS M12 x 50	**048071**	SDS-plus	EA II M 12 x 50 D, EA II M 12 x 50, EA M 12 x 50 N D	1
EMS M16 x 65	**048072**	SDS-max	EA II M 16 x 65	1

Technical data

Setting tool EMS Plus

EHS Plus

EA-ST

Item	Item no.	Match	Sales unit [pcs]
EHS M 6 x 25/30 Plus	**044630**	EA II M 6 x 25, EA II M 6 x 30	1
EHS M 8 x 25/30 Plus	**044631**	EA II M 8 x 25, EA II M 8 x 30	1
EHS M 8 x 40 Plus	**044632**	EA II M 8 x 40	1
EHS M10 x 40 Plus	**044633**	EA II M 10 x 40	1

Technical data

Setting tool EMS Plus

EHS Plus

EA-ST

Item	Item no.	Match	Sales unit [pcs]
EHS M12 x 50 Plus	**044634**	EA II M 12 x 50, EA II M 12 x 50 D	1
EHS M16 x 65 Plus	**044635**	EA II M 16 x 65	1
EHS M10 x 25/30 Plus	**048487**	EA II M 10 x 25, EA II M 10 x 30	1
EA-ST 12	**504585**	EA N M12, EA IM 1/2 N, EA I 1/2 N	1
EHS M12 x 25 Plus	**532568**	EA II M 12 x 25	1

Loads

Hammerset anchor EA II

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-07/0135 has to be considered.

Type	Material/surface[2]	Screw material	Effective anchorage depth h_{ef} [mm]	Member thickness h_{req} [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	Non-cracked concrete Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
EA II M8 x 40	gvz	5.8	40	100	8	5.9	4.9	70	115
	gvz	8.8	40	100	8	5.9	4.9	70	115
	R	A4-70	40	100	8	5.9	5.6	70	115
EA II M10 x 40	gvz	5.8	40	120	15	5.9	6.2	95	150
	gvz	8.8	40	120	15	5.9	6.2	95	150
	R	A4-70	40	120	15	5.9	7.1	95	150
EA II M12 x 50	gvz	5.8	50	120	35	8.3	11.3	145	200
	gvz	8.8	50	120	35	8.3	11.3	145	200
	R	A4-70	50	120	35	8.3	12.9	145	200
EA II M16 x 65	gvz	5.8	65	160	60	12.3	18.3	180	240
	gvz	8.8	65	160	60	12.3	18.3	180	240
	R	A4-70	65	160	60	12.3	21.1	180	240
EA II M20 x 80	gvz	5.8	80	200	120	16.8	29.1	190	280
	gvz	8.8	80	200	120	16.8	29.1	190	280
	R	A4-70	80	200	120	16.8	33.5	190	280

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.
[2] For technical data on steel grade and variants, see ETA.
[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Hammerset anchor EA II

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in normal concrete C20/25 up to C50/60.
For the design the complete current assessment ETA-07/0142 has to be considered.

						Cracked and non-cracked concrete		
						Permissible load (F_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads		
Type	Material/ surface[2]	Screw material	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min}[3] [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	F_{perm}[4] [kN]	s_{min} [mm]	c_{min} [mm]
EA II M6 x 25	gvz	4.6	25	80	4	1.0	30	60
EA II M6 x 30	gvz	4.6	30	80	4	1.2	70	150
EA II M8 x 25	gvz	4.6	25	80	8	1.4	70	100
EA II M8 x 30	gvz	4.6	30	80	8	2.0	110	150
EA II M8 x 40	gvz	4.6	40	80	8	2.0	200	150
EA II M10 x 25	gvz	4.6	25	80	15	1.9	80	120
EA II M10 x 30	gvz	4.6	30	80	15	2.0	200	150
EA II M10 x 40	gvz	4.6	40	80	15	3.0	200	150
EA II M12 x 25	gvz	4.6	25	80	35	1.9	100	130
EA II M12 x 50	gvz	4.6	50	100	35	4.3	200	200

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered.
[2] For details of steel grade, variants and further concrete classes, see ETA.
[3] Minimum possible member thickness while increasing the spacing and edge distances at the same time. The combination of minimum spacing and edge distances with the minimum member thickness is not possible. Exact data see ETA.
[4] Valid for tensile load, shear load and oblique load under any angle. In the case of combinations of tensile, shear loads and bending moments, the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018.

Loads

Hammerset anchor EA II

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in pre-stressed hollow core slabs of concrete C30/37 up to C50/60.
For the design the complete current assessment ETA-07/0142 has to be considered.

						Cracked and non-cracked concrete		
						Permissible load (F_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads		
Type	Material/ surface[2]	Screw material	Effective anchorage depth h_{ef} [mm]	Bottom flange thickness[4] d_b [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	F_{perm}[3] [kN]	s_{min} [mm]	c_{min} [mm]
EA II M6 x 25	gvz	4.6	25	≥ 35	4	1.0	200	150
EA II M8 x 25	gvz	4.6	25	≥ 35	8	1.4	200	150
EA II M10 x 25	gvz	4.6	25	≥ 35	15	1.9	200	150
EA II M12 x 25	gvz	4.6	25	≥ 35	35	1.9	200	150

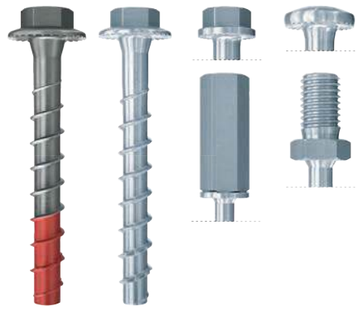
* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered.
[2] For details of steel grade and variants, see ETA.
[3] Valid for tensile load, shear load and oblique load under any angle. In the case of combinations of tensile, shear loads and bending moments, the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018.
[4] The anchor may be used in a flange thickness d_b = 30 mm with the same characteristic resistance, but the drill hole must not cut a cavity.

Concrete screw UltraCut FBS II 6

The high-performance concrete screw for absolute installation ease.



Suspended air-conditioners

Fastenings in outdoor areas with FBS II 6 R

11

Applications

- Pipeline routes
- Suspension for individual pipes
- Suspended mounting rails
- Prestressed concrete hollow core ceilings
- Cable trays
- Ventilation ducts
- Perforated tapes
- Air conditioning units

Advantages

- The European Technical Approval (ETA) Option 1 includes the use in cracked and non-cracked concrete for highest safety requirements.
- The UltraCut FBS II 6 is approved for multiple use of non-load bearing systems and thereby ideal for the installation of pipe routes and prestressed hollow concrete ceilings.
- The FBS II 6 also has an ETA for seismic performance category C1 for additional safety standards.
- The fischer concrete screw FBS II 6 gvz offers the possibility for the ETA compliant application in masonry brick. This grants high security not only in concrete but also in solid clay bricks, sand-lime bricks KSL and solid sand-lime bricks KSV.
- The expansion-free anchorage (undercut) ensures low edge and axial spacings.
- The stainless steel concrete screw guarantees a high level of corrosion resistance especially for wet rooms and external applications.

Certificates / Features

Building materials

Approved for:
- Concrete C20/25 to C50/60, cracked and non-cracked
- Prestressed hollow concrete ceilings C30/37 to C50/60 for the multiple use of non-load bearing systems
- Masonry brick (EN771-1), solid sand-lime brick (EN771-2) and perforated sand-lime brick (EN771-2)

Suitable for:
- Concrete C12/15
- Solid building materials
- Masonry with dense structure

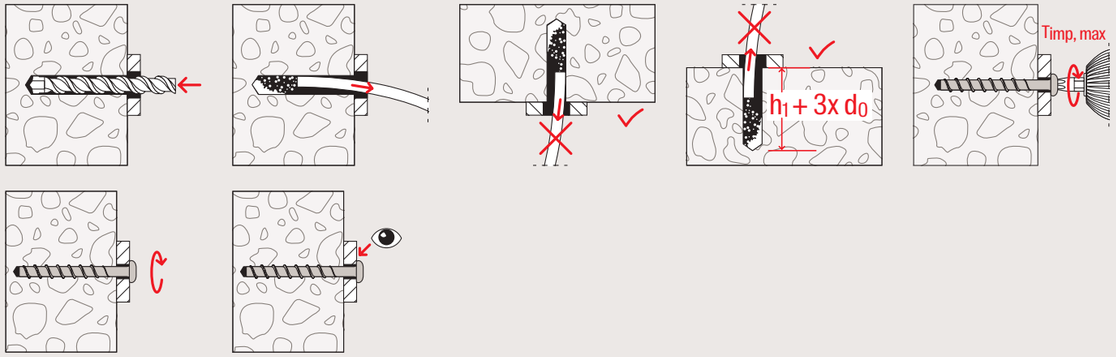
Versions

- Galvanised steel
- Stainless steel

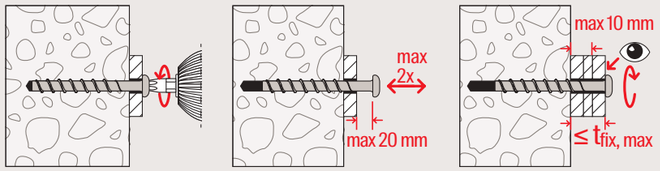
Functioning

- The UltraCut FBS II is recommended for the push-through installation. Versions with external/internal thread also for pre-positioned installation.
- Drill holes do not need to be cleaned during vertical installation with the FBS II 6 gvz. For floor fixings the hole must be drilled 3x drill hole diameter deeper.
- The approved adjustment for the concrete screws allows the screw to be unscrewed twice for a total length of 20 mm, to place maximum 10 mm packing below the base plates or to align the attached part.
- The screw is installed correctly when the screw head sits flush on the fixture (visual setting control).
- We recommend using a fischer impact wrench FSS 18V with a suitable impact screwdriver socket or an internal torx drive.

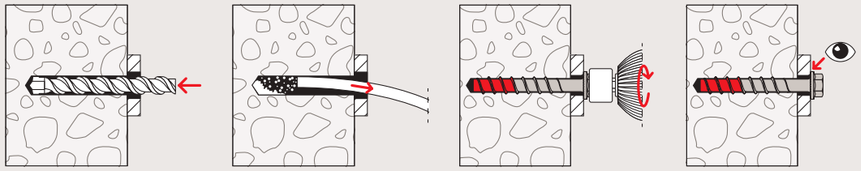
Installation UltraCut FBS II 6 zp in concrete



Fixture adjustment



Installation UltraCut FBS II 6 R in concrete



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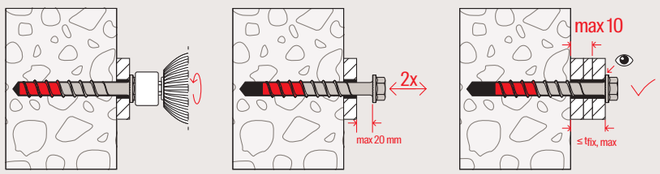
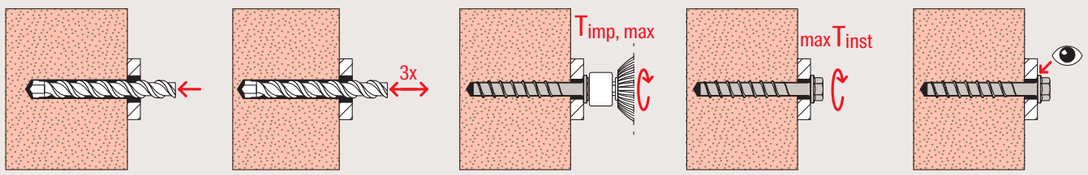
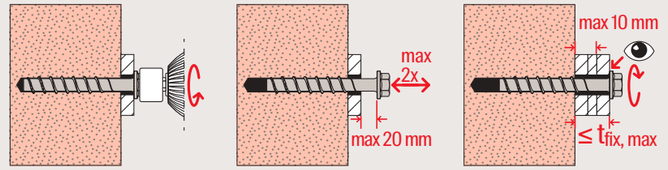
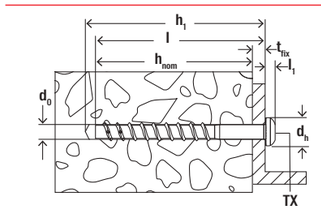


Installation UltraCut FBS II 6 zp in masonry



Fixture adjustment



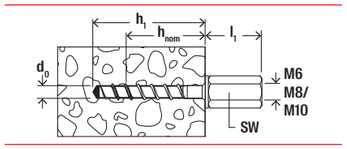


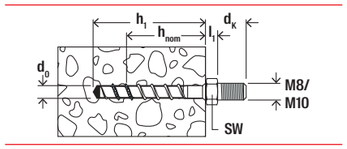
Technical data

Concrete screw UltraCut FBS II 6 zp

UltraCut FBS II 6 P / LP UltraCut FBS II 6 US

	Galvanised steel	Approval	Drill diameter	Min. drill hole depth for through fixings	Screw length	Head-ø	Screw-in depth Multiple fixing ETA	Screw-in depth Single point fixing ETA	Usable length	Drive	Sales unit
			d_0	h_2	l_s	d_h	$h_{nom,min}$ / $h_{nom,max}$	$h_{nom,min}$ / $h_{nom,max}$	$t_{fix,min}$ / $t_{fix,max}$		
	Item no.	ETA	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[pcs]
Item	gvz										
FBS II 6 x 30/5 P	546377	●	6	40	30	14.4	25	–	Screw length - h_{nom}	TX30	100
FBS II 6 x 40/5 P	546378	●	6	50	40	14.4	25-35	–	Screw length - h_{nom}	TX30	100
FBS II 6 x 40/5 LP	546379	●	6	50	40	17.5	25-35	–	Screw length - h_{nom}	TX30	100
FBS II 6 x 60/5 P	546380	●	6	70	60	14.4	25-55	40-55	Screw length - h_{nom}	TX30	100
FBS II 6 x 80/25 P	546381	●	6	90	80	14.4	25-55	40-55	Screw length - h_{nom}	TX30	100
FBS II 6 x 40/5 US zp (SW 13)	558601	●	6	50	40	17	25-35	–	Screw length - h_{nom}	SW 13	100
FBS II 6 x 40/5 US zp	546390	●	6	50	40	17	25-35	–	Screw length - h_{nom}	SW 10	100
FBS II 6 x 60/5 US zp (SW 13)	558602	●	6	70	60	17	25-55	40-55	Screw length - h_{nom}	SW 13	100
FBS II 6 x 60/5 US	546391	●	6	70	60	17	25-55	40-55	Screw length - h_{nom}	SW 10	100
FBS II 6 x 80/25 US	558603	●	6	90	80	17	25-55	40-55	Screw length - h_{nom}	SW 13	100
FBS II 6 x 80/25 US	546392	●	6	90	80	17	25-55	40-55	Screw length - h_{nom}	SW 10	100
FBS II 6 x 100/45 US	558604	●	6	110	100	17	25-55	40-55	Screw length - h_{nom}	SW 13	100
FBS II 6 x 100/45 US	546393	●	6	110	100	17	25-55	40-55	Screw length - h_{nom}	SW 10	100
FBS II 6 x 120/65 US	558605	●	6	130	120	17	25 – 55	40 – 55	Screw length - h_{nom}	SW 13	100
FBS II 6 x 120/65 US	546394	●	6	130	120	17	25 – 55	40 – 55	Screw length - h_{nom}	SW 10	100





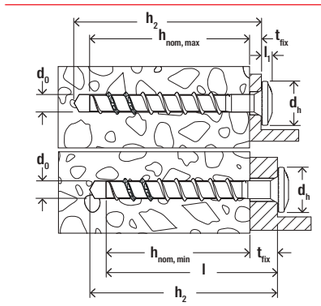
Technical data

Concrete screw UltraCut FBS II 6 M8/M10

UltraCut FBS II M8/M10

UltraCut FBS II M6

Item	Galvanised steel Item no. gvz	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth for pre-positioned installation h_1 [mm]	Screw diameter d_s [mm]	Screw length l_s [mm]	Screw-in depth Multiple fixing ETA $h_{nom,min}/h_{nom,max}$ [mm]	Screw-in depth Single point fixing ETA $h_{nom,min}/h_{nom,max}$ [mm]	Width across nut SW [mm]	Sales unit [pcs]
FBS II 6 x 25 M8/19	**546395**	●	6	35	6.0	25	25	–	10	100
FBS II 6 x 35 M8/19	**546396**	●	6	45	6.0	35	35	–	10	100
FBS II 6 x 55 M8/19	**546397**	●	6	65	6.0	55	55	55	10	100
FBS II 6 x 35 M10/21	**546398**	●	6	45	6.0	35	35	–	13	100
FBS II 6 x 55 M10/21	**546399**	●	6	65	6.0	55	55	55	13	100
FBS II 6x35 M6 I	**554065**	●	6	45	6.0	35	35	–	13	100
FBS II 6x55 M6 I	**554066**	●	6	65	6.0	55	55	55	13	100
FBS II 6 x 35 M8/M10 I	**546400**	●	6	45	6.0	35	35	–	13	100
FBS II 6 x 55 M8/M10 I	**546401**	●	6	65	6.0	55	55	55	13	100



Technical data

Concrete screw UltraCut FBS II 6 R

UltraCut FBS II P R

UltraCut FBS II US R

Item	Stainless steel Item no. R	Approval ETA	Drill diameter d_0 [mm]	Screw length l_s [mm]	Head-ø d_h [mm]	Screw-in depth Multiple fixing ETA $h_{nom,min}/h_{nom,max}$ [mm]	Screw-in depth Single point fixing ETA $h_{nom,min}/h_{nom,max}$ [mm]	Usable length $t_{fix,min}$ / $t_{fix,max}$ [mm]	Drive	Sales unit [pcs]
FBS II 6 x 50/5 P R	**573429**	●	6	50	14	45	–	Screw length - h_{nom}	TX30	100
FBS II 6 x 65/5 P R	**573430**	●	6	65	14	45 / 60	60	Screw length - h_{nom}	TX30	100
FBS II 6 x 85/25 P R	**573431**	●	6	85	14	45 / 60	60	Screw length - h_{nom}	TX30	100
FBS II 6 x 105/45 P R	**573432**	●	6	105	14	–	60	Screw length - h_{nom}	TX30	100
FBS II 6 x 50/5 US R (SW 10)	**573423**	●	6	50	15	45	–	Screw length - h_{nom}	SW 10	100
FBS II 6 x 50/5 US R (SW 13)	**573426**	●	6	50	17	45	–	Screw length - h_{nom}	SW 13	100
FBS II 6 x 65/5 US R (SW 10)	**573424**	●	6	65	15	45 / 60	60	Screw length - h_{nom}	SW 10	100
FBS II 6 x 65/5 US R (SW 13)	**573427**	●	6	65	17	45 / 60	60	Screw length - h_{nom}	SW 13	100
FBS II 6 x 85/25 US R (SW 10)	**573425**	●	6	85	15	45 / 60	60	Screw length - h_{nom}	SW 10	100
FBS II 6 x 85/25 US R (SW 13)	**573428**	●	6	85	17	45 / 60	60	Screw length - h_{nom}	SW 13	100

Loads

Concrete screw UltraCut FBS II 6

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-15/0352 has to be considered.

Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{imp,max}$ [2] [Nm]	Cracked concrete: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads N_{perm} [3] [kN]	V_{perm} [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]	Non-cracked concrete: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads N_{perm} [3] [kN]	V_{perm} [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]
FBS II 6	gvz	40	80	450	1.2	4.3	35	35	3.8	4.3	35	35
	gvz	45	90	450	1.7	4.3	35	35	4.8	4.3	35	35
	gvz	50	90	450	1.9	4.3	35	35	5.7	4.3	35	35
	gvz	55	100	450	2.4	6.3	35	35	6.4	6.3	35	35

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x h_{ef}. Accurate data see ETA.
[2] Maximum allowable torque for installation with any tangential impact screw driver. Further technical data see ETA.
[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Concrete screw UltraCut FBS II 6

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in normal concrete C20/25.
For the design the complete current assessment ETA - 18/0242 has to be considered.

Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst,max}$ [2] [Nm]	Cracked concrete: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads N_{perm} [3] [kN]	V_{perm} [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]	Non-cracked concrete: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads N_{perm} [3] [kN]	V_{perm} [3] [kN]	s_{min} [3] [mm]	c_{min} [3] [mm]
FBS II 6	gvz	25	80	≤ 5	0.7	1.8	35	35	1.4	2.3	35	35
	gvz	30	80	≤ 5	1.2	2.3	35	35	2.4	2.3	35	35
	gvz	35	80	≤ 5	1.7	4.3	35	35	3.1	4.3	35	35
	gvz	40	80	≤ 10	2.4	4.3	35	35	3.8	4.3	35	35
	gvz	45	90	≤ 10	2.9	4.3	35	35	4.8	4.3	35	35
	gvz	50	90	≤ 10	3.6	4.3	35	35	5.7	4.3	35	35
	gvz	55	100	≤ 10	4.0	6.3	35	35	6.4	6.3	35	35

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered.
[2] Further technical information for installation see ETA.
[3] In the case of combinations of tension and shear loads, bending moments with reduced or minimal edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018.

Loads

Concrete screw UltraCut FBS II 6

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in pre-stressed hollow-core concrete slabs of concrete strength C30/37.
For the design the complete current assessment ETA - 18/0242 has to be considered.

Type			FBS II 6 gvz						
Screw-in depth		h_{nom}	25	30	35	40	45	50	55
Permissible load F_{perm}[3] in the respective bottom flange thickness									
$d_b \geq 25$ mm		[kN]	0.2	0.5	0.5	0.5	0.5	0.5	0.5
$d_b \geq 30$ mm		[kN]	1.7	1.7	1.7	1.7	1.7	1.7	1.7
$d_b \geq 35$ mm		[kN]	1.7	1.9	2.1	2.4	2.6	2.9	3.1
$d_b \geq 40$ mm		[kN]	1.7	2.3	2.6	2.9	3.3	3.6	3.8
$d_b \geq 50$ mm		[kN]	1.7	2.3	3.3	3.8	4.3	4.3	5.7
Installation torque	$T_{inst,max}$	[Nm]	5.0	5.0	10	10	10	10	10
Minimum spacing	$s_{1,s2}$[2]	[mm]	100	100	100	100	100	100	100
Minimum edge distance	$c_{1,s2}$[2]	[mm]	100	100	100	100	100	100	100

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered.
[2] Further technical information for installation see ETA.
[3] Valid for tensile load, shear load and oblique load under any angle. In the case of combinations of tensile, shear loads and bending moments, the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018.

Loads

Concrete screw UltraCut FBS II US/SK

Permissible loads[1)2)] for a single anchor in masonry for Push-through installation.
For the design the complete current assessment ETA-20/0134 of 14.07.2022 has to be considered.

Type	Min. compressive brick strength f_b [N/mm²]	Brick raw density ρ [kg/dm³]	Minimum brick dimensions (L x W x H) [mm]	Nominal anchorage depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum Installation torque $T_{imp.max}$[3] [Nm]	Permissible tensile load[4] N_{perm} [kN]	Permissible shear load[4] parallel[6] $V_{perm\,\parallel}$ [kN]	Minimum spacing[5] $s_{min\,\parallel}$ / $s_{min\,\perp}$ [mm]	Minimum edge distance[5] c_{min} [mm]
Solid brick Mz, acc. to EN 771-1										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.34	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.60	0.40	80	50
FBS II 6	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.66	0.40	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.46	1.37	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	1.60	80	60
FBS II 8	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.57	1.66	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.40	1.26	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.46	1.46	80	70
FBS II 10	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.49	1.51	80	70
Solid brick Mz, nordic, acc. to EN 771-1										
FBS II 6	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.34	0.31	80	50
FBS II 6	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.40	0.37	80	50
FBS II 8	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.46	1.34	80	60
FBS II 8	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.51	1.49	80	60
FBS II 10	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.37	1.23	80	70
FBS II 10	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.43	1.37	80	70
Solid sand-lime brick KS, acc. to EN 771-2										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.43	0.51	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.49	0.60	80	50
FBS II 6	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.66	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	0.66	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.60	0.74	80	60
FBS II 8	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.69	0.83	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.54	0.89	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.63	1.00	80	70
FBS II 10	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.69	1.11	80	70
Perforated sand-lime brick KSL, acc. to EN 771-2										
FBS II 6	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.09	0.80	80	50
FBS II 6	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.11	0.94	80	50
FBS II 6	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.14	1.17	80	50
FBS II 6	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.17	1.26	80	50
FBS II 8	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.26	0.66	80	60
FBS II 8	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.29	1.03	80	60
FBS II 8	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.37	1.40	80	60
FBS II 8	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.40	1.49	80	60
FBS II 10	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.23	0.77	80	70
FBS II 10	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.26	1.23	80	70
FBS II 10	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.34	1.66	80	70
FBS II 10	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.37	1.77	80	70

[1)] The partial safety factors for material resistance as regulated in assessment as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. Load values are valid for zinc-plated steel all sizes and head shapes, for stainless steel R for the sizes 8 and 10. Exakt values see ETA.
[2)] The given loads are valid for installation and use of fixations in dry masonry, use category d/d, width of the joints $w_j \leq 3$ mm and general purpose mortar with strength class M2.5 -M9. Further information and details on drill hole preparation, etc., see ETA.
[3)] Maximum allowable device torque for installation with any tangential impact screw driver. Further technical data see ETA.
[4)] In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete assessment.
[5)] Minimum feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.
[6)] Shear load parallel to the vertical joint. Load reduction for shear load perpendicular to the vertical joint see ETA.

Loads

Concrete screw UltraCut FBS II R

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-17/0740 of 2025.01.08 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material/ surface	Screw-in depth	Minimum member thickness	Maximum Instal-lation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{nom} [mm]	h_{min} [mm]	$T_{imp.max}$[2] [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FBS II 6 R	R	60	100	240	1.4	7.2	35	35	3.4	7.2	35	35
FBS II 8 R	R	50	100	450	1.9	4.1	35	35	3.3	5.9	35	35
	R	65	120	450	4.3	6.1	35	35	6.7	8.8	35	35
FBS II 10 R	R	55	100	450	2.1	4.6	40	40	4.0	6.6	40	40
	R	65	120	450	2.9	6.0	40	40	6.7	8.5	40	40
	R	85	140	450	7.6	18.4	40	40	13.1	20.9	40	40
FBS II 12 R	R	60	110	650	2.1	5.3	50	50	4.8	7.5	50	50
	R	75	130	650	5.2	15.2	50	50	5.7	21.8	50	50
	R	100	150	650	12.0	23.9	50	50	17.1	26.2	50	50

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.
[2] Maximum allowable torque for installation using any tangential impact screwdriver. For further technical information, see the ETA.
[3] In the case of combinations of tensile and shear loads, bending moments with reduced or minimal edge and axial spacings (anchor groups), the design must comply with the provisions of the complete ETA and EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Concrete screw UltraCut FBS II 6 R

Permissible loads for a single anchor[1] for multiple use of redundant non-structural applications* in normal concrete C20/25.
For the design the complete current assessment ETA-24/0973 of 2025.01.08 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material/ surface	Screw-in depth	Minimum member thickness	Maximum installation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{nom} [mm]	h_{min} [mm]	$T_{inst.max}$[2] [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FBS II 6 R	R	45	100	240	0.9	2.5	35	35	1.7	2.5	35	35
	R	60	100	240	2.0	6.0	35	35	3.4	6.0	35	35

* In addition to the load table above, the following must be considered for multiple fastening of non-structural redundant systems:
A multiple fixing (redundant system) according to EN 1992-4 and CEN/TR 17079 is defined by
- at least 3 fixing points (per attached element) with at least one anchor at each fixing point and a permissible load per fixing point of 1.4 kN
- or by at least 4 fixing points with at least one anchor each fixing point and a permissible load per fixing point of 2.1 kN
- Additionally, it has to be proven that the stiffness of the attached element shall be large enough to ensure that in case of excessive slip or failure of a fastener the load on this fastener or fixing point can be transferred to neighbouring fixing points without significantly violating the requirements on the attached element in the serviceability and ultimate limit state.

For further details see EN 1992-4 section 7.3 and CEN/TR 17079.

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered.
[2] Maximum allowable torque for installation using any tangential impact screwdriver. For further technical information, see the ETA.
[3] In the case of combinations of tensile and shear loads, bending moments as well as reduced or minimal edge and axial spacings (anchor groups), the design must comply with the provisions of the complete ETA and EN 1992-4:2018.

Concrete screw UltraCut FBS II 8-14

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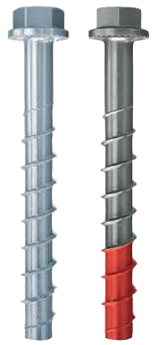


Railings

Inclined supports

11

Applications

- Guard rails
- Consoles/base plates
- Metal profiles
- Steel constructions
- Façades
- Protection barriers
- Results/beam anchors
- Shuttering props (only FBS II galvanised steel)
- Temporary anchoring, e.g. of building site equipment (only FBS II galvanised steel)
- Concrete-concrete connections (e.g. strengthening of bridges, parking garages or renovation of buildings)

Advantages

- Unique saw-tooth geometry cuts quickly into the building material.
- The ETA covers applications in cracked and non-cracked concrete and performance categories seismic C1 and C2.
- With up to 3 embedment depths, the FBS II allows for the same screw to be used for different component thicknesses.
- The concrete screw FBS II 8-10 in zinc-plated steel and stainless steel R has an ETA for masonry brick (EN771-1), solid sand-lime brick (EN771-2) and perforated sand-lime brick (EN771-2) for a flexible use in different substrates.
- The high coating quality of the FBS II CP is prooved through the salt spray chamber test over 2,000h.
- For the zinc-plated steel version the checking gauge allows for reuse covered by the approval.
- The specially hardened red tip of the stainless steel R version provides faster and more secure installation.
- Together with the fischer adjusting washer FSW and the FBS II 10 wooden beams and wooden sleepers can be adjusted easily and quickly.

Certificates / Features

ETA CE aBG Z-21.8-2049

R 120

Inox Stainless Steel

Seismic C2

Building materials

Approved for:
- Concrete C20/25 to C50/60, cracked and non-cracked
- Strengthening of existing concrete structures with top layer concrete
- Masonry brick (EN771-1), solid sand-lime brick (EN771-2) and perforated sand-lime brick (EN771-2)

Suitable for:
- Concrete C12/15
- Solid building materials

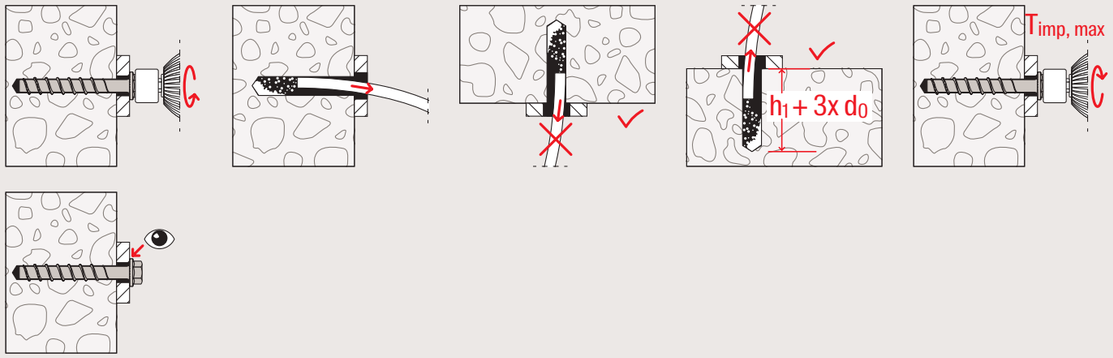
Versions

- Galvanised steel
- Stainless steel R
- Corrosion protection coating (CP)

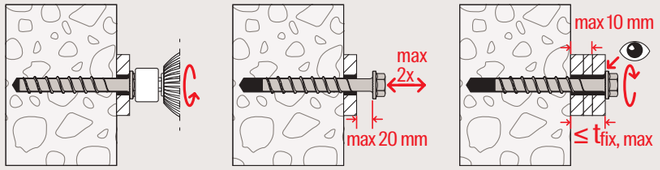
Functioning

- The UltraCut FBSII is recommended for the push-through installation.
- Drill holes do not need to be cleaned during vertical installation (ceiling and floor). For floor fixings the hole must be drilled 3x drill hole diameter deeper.
- The approved adjustment for the concrete screws allows the screw to be unscrewed twice for a total length of 20 mm, to place maximum 10 mm packing below the base plates or to align the attached part.
- The screw is installed correctly when the screw head sits flush on the fixture (visual setting control).
- For the installation of restructuring of existing concrete structures by concrete overlay, the setting tool SC-ST can be used for a faster installation.

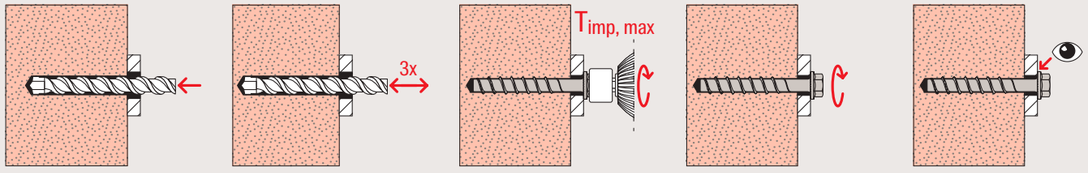
Installation UltraCut FBS II in concrete



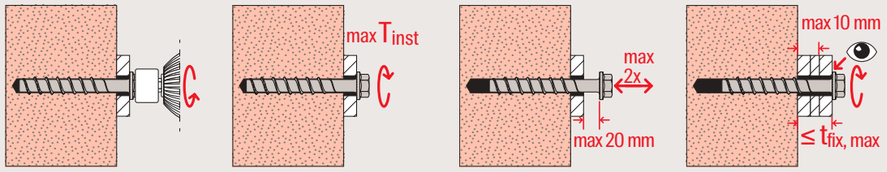
Fixture adjustment

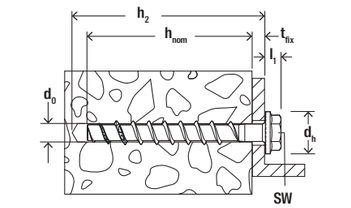


Installation UltraCut FBS II in masonry



Fixture adjustment



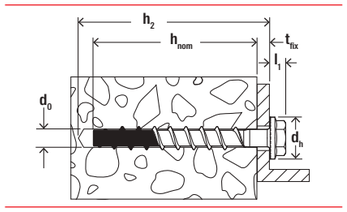


Technical data

Concrete screw UltraCut FBS II US

FBS II US

Item	Item no.	Galvanised steel gvz	Approval ETA	Approval DIBt	Drill diameter d_0 [mm]	Head-ø d_h [mm]	Min. drill hole depth for through fixings h_2 [mm]	Screw dimension d_s x l_s [mm]	Nominal embedment depth / thickness of fixture h_{nom1} / t_{fix} [mm]	Nominal embedment depth / thickness of fixture h_{nom2} / t_{fix} [mm]	Nominal embedment depth / thickness of fixture h_{nom3} / t_{fix} [mm]	Drive	Sales unit [pcs]
FBS II 8x55 5/- US TX gvz	**536851**		●	●	8	18	65	10.0x55	50 / 5	–	–	TX40 / SW 13	50
FBS II 8x70 20/5 US TX gvz	**536852**		●	●	8	18	80	10.0x70	50 / 20	65 / 5	–	TX40 / SW 13	50
FBS II 8x80 30/15 US TX gvz	**536853**		●	●	8	18	90	10.0x80	50 / 30	65 / 15	–	TX40 / SW 13	50
FBS II 8x90 40/25 US TX gvz	**536854**		●	●	8	18	100	10.0x90	50 / 40	65 / 25	–	TX40 / SW 13	50
FBS II 8x100 50/35 US TX gvz	**536855**		●	●	8	18	110	10.0x100	50 / 50	65 / 35	–	TX40 / SW 13	50
FBS II 8x110 60/45 US TX gvz	**536856**		●	●	8	18	120	10.0x110	50 / 60	65 / 45	–	TX40 / SW 13	50
FBS II 10x60 5/-/- US gvz	**536858**		●	●	10	20.5	70	12.0x60	55 / 5	–	–	SW 15	50
FBS II 10x70 15/5/- US gvz	**536859**		●	●	10	20.5	80	12.0x70	55 / 15	65 / 5	–	SW 15	50
FBS II 10x80 25/15/- US gvz	**536860**		●	●	10	20.5	90	12.0x80	55 / 25	65 / 15	–	SW 15	50
FBS II 10x90 35/25/5 US gvz	**536861**		●	●	10	20.5	100	12.0x90	55 / 35	65 / 25	85 / 5	SW 15	50
FBS II 10x100 45/35/15 US gvz	**536862**		●	●	10	20.5	110	12.0x100	55 / 45	65 / 35	85 / 15	SW 15	50
FBS II 10x120 65/55/35 US gvz	**536863**		●	●	10	20.5	130	12.0x120	55 / 65	65 / 55	85 / 35	SW 15	50
FBS II 12x70 10/-/- US gvz	**536869**		●	●	12	23	80	14.0x70	60 / 10	–	–	SW 17	20
FBS II 12x85 25/10/- US gvz	**536870**		●	●	12	23	95	14.0x85	60 / 25	75 / 10	–	SW 17	20
FBS II 12x110 50/35/10 US gvz	**536871**		●	●	12	23	120	14.0x110	60 / 50	75 / 35	100 / 10	SW 17	20
FBS II 12x130 70/55/30 US gvz	**536872**		●	●	12	23	140	14.0x130	60 / 70	75 / 55	100 / 30	SW 17	20
FBS II 14x75 10/-/- US gvz	**536874**		●	●	14	28	90	16.0x75	65 / 10	–	–	SW 21	20
FBS II 14x95 30/10/- US gvz	**536875**		●	●	14	28	110	16.0x95	65 / 30	85 / 10	–	SW 21	20
FBS II 14x100 35/15/- US gvz	**536876**		●	●	14	28	115	16.0x100	65 / 35	85 / 15	–	SW 21	20
FBS II 14x125 60/40/10 US gvz	**536877**		●	●	14	28	140	16.0x125	65 / 60	85 / 40	115 / 10	SW 21	10
FBS II 14x150 85/65/35 US gvz	**536878**		●	●	14	28	165	16.0x150	65 / 85	85 / 65	115 / 35	SW 21	10



Technical data

Concrete screw UltraCut FBS II US R

FBS II US R

Item	Item no.	Stainless steel R	Approval ETA	Drill diameter d_0 [mm]	Head-ø d_h [mm]	Min. drill hole depth for through fixings h_2 [mm]	Screw dimension d_s x l_s [mm]	Nominal embedment depth / thickness of fixture h_{nom1} / t_{fix} [mm]	Nominal embedment depth / thickness of fixture h_{nom2} / t_{fix} [mm]	Nominal embedment depth / thickness of fixture h_{nom3} / t_{fix} [mm]	Width across nut SW [mm]	Sales unit [pcs]
FBS II 8x60 10/- US	543565	●	8	18	70	10.0x60	50 / 10	–	–	13	50
FBS II 8x70 20/5 US	543566	●	8	18	80	10.0x70	50 / 20	65 / 5	–	13	50
FBS II 8x80 30/15 US	543567	●	8	18	90	10.0x80	50 / 30	65 / 15	–	13	50
FBS II 8x90 40/25 US	543568	●	8	18	100	10.0x90	50 / 40	65 / 25	–	13	50
FBS II 8x100 50/35 US	558239	●	8	18	110	10.0x100	50 / 50	65 / 35	–	13	50
FBS II 8x120 70/55 US	558240	●	8	18	130	10.0x120	50 / 70	65 / 55	–	13	50
FBS II 10x60 5/-/- US	543569	●	10	20.5	70	12.0x60	55 / 5	–	–	15	50
FBS II 10x70 15/5/- US	543570	●	10	20.5	80	12.0x70	55 / 15	65 / 5	–	15	50
FBS II 10x80 25/15/- US	543571	●	10	20.5	90	12.0x80	55 / 25	65 / 15	–	15	50
FBS II 10x90 35/25/5 US	543572	●	10	20.5	100	12.0x90	55 / 35	65 / 25	85 / 5	15	50
FBS II 10x100 45/35/15 US	543573	●	10	20.5	110	12.0x100	55 / 45	65 / 35	85 / 15	15	50
FBS II 10x120 65/55/35 US	543574	●	10	20.5	130	12.0x120	55 / 65	65 / 55	85 / 35	15	50
FBS II 12x70 10/-/- US	543575	●	12	23	80	14.0x70	55 / 85	–	–	17	20
FBS II 12x85 25/10/- US	543576	●	12	13	95	14.0x85	60 / 25	75 / 10	–	17	20
FBS II 12x110 50/35/10 US	543577	●	12	23	120	14.0x110	60 / 50	75 / 35	100 / 10	17	20
FBS II 12x130 70/55/30 US	543578	●	12	23	140	14.0x130	60 / 70	75 / 55	100 / 30	17	20

Technical data

Accessories UltraCut FBS II

FUP

Socket SW 10

Socket SW13 HF

Socket 1/2" - 1/4"

Socket TX50

FPB ProfiBit TX 50 5/16"

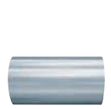
FMB II TX

SC-ST

Item	Item no.	Approval DIBt	Internal diameter D [mm]	Drive	Match	Sales unit [pcs]
FUP 8	537200	–	9.9	–	FBS II 8	1
FUP 10	537201	●	12	–	FBS II 10	1
FUP 12	537202	●	13.9	–	FBS II 12	1
FUP 14	537203	●	15.6	–	FBS II 14	1
Socket 1/2" size 10	538577	–	–	1/2" / SW10	FBS II 6	1
Socket 1/2" size 13	538578	–	–	1/2" / SW13	FBS II 8	1
Socket 1/2" size 15	538579	–	–	1/2" / SW15	FBS II 10	1

Technical data

Accessories UltraCut FBS II



FUP

Socket SW 10

Socket SW13 HF

Socket 1/2" - 1/4"

Socket TX50

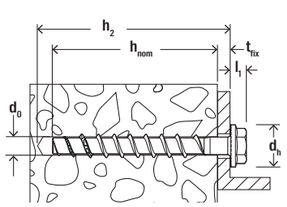
FPB ProfiBit TX 50 5/16"

FMB II TX

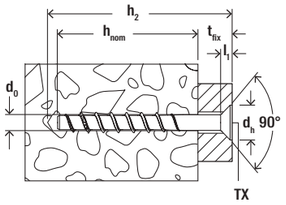
SC-ST

Item	Item no.	Approval DIBt	Internal diameter D [mm]	Drive	Match	Sales unit [pcs]
Socket 1/2" size 17	538580	–	–	1/2" / SW17	FBS II 12	1
Socket 1/2" size 21	538581	–	–	1/2" / SW21	FBS II 14	1
Socket 1/2"- 1/4"	553928	–	–	1/2" / 1/4"	FBS II 6 / FBS II 8 / FBS II 8 SK	1
Socket SW13 HF 38	577328	–	–	1/2" / SW13	FBS II 6 R	1
Socket SW13 HF 100	577329	–	–	1/2" / SW13	FBS II 6 R	1
Socket 1/2" - TX50	553929	–	–	1/2" / TX50	FBS II 10 SK	1
FMB II TX20 Bit	564312	–	–	TX20	–	1
FMB II TX25 Bit	564313	–	–	TX25	–	1
FMB II TX30 Bit	564314	–	–	TX30	FBS II 6	1
FMB II TX40 Bit	564315	–	–	TX40	FBS II 8 / FBS II 8 SK	1
FPB TX50 5/16"ProfiBit	557844	–	–	TX50	FBS II 10 SK	1
SC-ST 8 setting tool	557872	–	–	–	FBS II 8	1
SC-ST 10 setting tool	557874	–	–	–	FBS II 10	1
SC-ST 12 setting tool	563090	–	–	–	FBS II 12	1

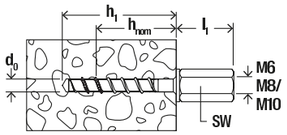
Installation data - concrete C20/25 - C50/60



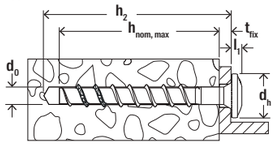
Type US



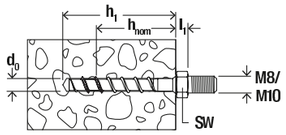
Type SK



Type I



Type P / Typ LP



Type M8 / M10

UltraCut		FBS II 8		FBS II 10		FBS II 6				FBS II M8/M10	FBS II 6 I, M8/M10, M6
		SK	SK R	SK	SK R	SK	P	LP	US		
l_1	[mm]	6,0	7,0	7,0	7,0	6,0	3,9	3,6	6,2	3,6/5	15/16
d_K	[mm]	20,0	23,0	23,0	25,0	13,5	14,4	17,5	17,0	37,0/32	-

Concrete screw UltraCut FBS II 6-14 gvz / R			6	8	10	12	14
Drill hole diameter	d_0	[mm]	6	8	10	12	14
Nominal screw-in depth	$h_{nom\,1}$	[mm]	25 - 55	50	55	60	65
	$h_{nom\,2}$	[mm]	25 - 55	-	65	75	85
	$h_{nom\,3}$	[mm]	25 - 55	65	85	100	115
Drill hole depth (push-trough installation)	$h_2 \geq$	[mm]	l + 10	l + 10	l + 10	l + 10	l + 15
Clearance hole diameter	d_f	[mm]	≤ 8	10,6 - 12	12,8 - 14	14,8 - 16	16,9 - 18
Maximum torque for installation with impact screw driver in concrete[3]	$T_{imp,\,max\,gvz}$	[Nm]	450[1]	600	650	650	650
	$T_{imp,\,max\,R}$	[Nm]	-	450	450	650	-
Width across flat	SW		10[2]	13	15	17	21
Drive	TX		T30	T40 (SK u. US)	T50 (SK)	-	-

1) Screw-in depth < 35 mm 80 Nm
2) SW 13 for FBS II ... M10 and FBS II ... M8/M10 I
3) The values apply to concrete strength of approx. 40 N/mm², for other concrete strength classes the values may differ. The conversion of nominal output into effective tightening torque varies from machine to machine - always therefore use torque control.

Installation data masonry

Concrete screw UltraCut FBS II 8-10

Building material	Compressive strength class [N/mm²]	max. T_{inst} [Nm]		h_{nom} [mm]	
		FBS II 8	FBS II 10	FBS II 8	FBS II 10
Solid clay brick (EN771-1)	≥ 16	20	20	50	55
Solid sand-lime brick (EN771-2)	≥ 12	20	20	50	55
Perforated sand-lime brick (EN771-2)	≥ 12	4	8	50	55
Aerated concrete (EN771-4)*	≥ 6	5	5	65	85

* Not regulated in ETA-20/0134, only a recommendation.

Loads

Concrete screw Ultracut FBS II US hexagon head with integral washer and FBS II SK countersunk head

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-15/0352 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material/ surface	Screw-in depth	Minimum member thickness	Instal-lation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{nom} [mm]	h_{min} [mm]	$T_{imp,\,max}$[2] [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FBS II 6	gvz	40	80	450	1.2	4.3	35	35	3.8	4.3	35	35
	gvz	45	90	450	1.7	4.3	35	35	4.8	4.3	35	35
	gvz	50	90	450	1.9	4.3	35	35	5.7	4.3	35	35
	gvz	55	100	450	2.4	6.3	35	35	6.4	6.3	35	35
FBS II 8	gvz / CP	50	100	600	2.9	4.1	35	35	5.9	5.9	35	35
	gvz / CP	65	120	600	5.7	9.0	35	35	8.8	9.0	35	35
FBS II 10	gvz / CP	55	100	650	4.3	4.6	40	40	6.6	6.6	40	40
	gvz / CP	65	120	650	5.7	11.9	40	40	8.5	14.0	40	40
	gvz / CP	85	140	650	9.2	16.6	40	40	13.1	16.6	40	40
FBS II 12	gvz / CP	60	110	650	5.3	10.6	50	50	7.5	15.1	50	50
	gvz / CP	75	130	650	7.6	15.2	50	50	10.9	15.2	50	50
	gvz / CP	100	150	650	12.0	20.3	50	50	17.1	20.3	50	50
FBS II 14	gvz / CP	65	120	650	5.8	11.6	60	60	8.3	16.6	60	60
	gvz / CP	85	140	650	9.0	18.0	60	60	12.8	22.1	60	60
	gvz / CP	115	180	650	14.7	29.4	60	60	21.0	29.4	60	60

1) Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x h_{ef}. Accurate data see ETA.
2) Maximum allowable torque for installation with any tangential impact screw driver. Further technical data see ETA.
3) In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Concrete screw UltraCut FBS II US R hexagon head with integral washer and FBS II SK R countersunk head

Permissible loads of a single anchor[1] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-17/0740 has to be considered.

					Cracked concrete				Non-cracked concrete			
	Material/ surface	Screw-in depth	Minimum member thickness	Maximum installation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type		h_{nom} [mm]	h_{min} [mm]	$T_{imp,\,max}$[2] [Nm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]	N_{perm}[3] [kN]	V_{perm}[3] [kN]	s_{min}[3] [mm]	c_{min}[3] [mm]
FBS II 8	R	50	100	450	1.9	4.1	35	35	3.3	5.9	35	35
FBS II 8	R	65	120	450	4.3	6.1	35	35	6.7	8.8	35	35
FBS II 10	R	55	100	450	2.1	4.6	40	40	4.0	6.6	40	40
FBS II 10	R	65	120	450	2.9	6.0	40	40	6.7	8.5	40	40
FBS II 10	R	85	140	450	7.6	18.4	40	40	13.1	20.9	40	40
FBS II 12	R	60	110	650	2.1	5.3	50	50	4.8	7.5	50	50
FBS II 12	R	75	130	650	5.2	15.2	50	50	5.7	21.8	50	50
FBS II 12	R	100	150	650	12.0	23.9	50	50	17.1	26.2	50	50

1) Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x h_{ef}. Accurate data see ETA.
2) Maximum allowable torque for installation with any tangential impact screw driver. Further technical data see ETA.
3) In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Concrete screw UltraCut FBS II US/SK

Permissible loads[1)2)] for a single anchor in masonry for Push-through installation.
For the design the complete current assessment ETA-20/0134 of 14.07.2022 has to be considered.

Type	Min. compressive brick strength f_b [N/mm²]	Brick raw density ρ [kg/dm³]	Minimum brick dimensions (L x W x H) [mm]	Nominal anchorage depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum Installation torque $T_{imp,\,max}$ [3)] [Nm]	Permissible tensile load[4)] N_{perm} [kN]	Permissible shear load[4)6)] parallel $V_{perm\,\parallel}$ [kN]	Minimum spacing[5)] $s_{min\,\parallel}$ / $s_{min\,\perp}$ [mm]	Minimum edge distance[5)] c_{min} [mm]
Solid brick Mz, acc. to EN 771-1										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.34	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.60	0.40	80	50
FBS II 6	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.66	0.40	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.46	1.37	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	1.60	80	60
FBS II 8	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.57	1.66	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.40	1.26	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.46	1.46	80	70
FBS II 10	≥ 17.5	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.49	1.51	80	70
Solid brick Mz, nordic, acc. to EN 771-1										
FBS II 6	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.34	0.31	80	50
FBS II 6	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 40	≥ 108	80	0.40	0.37	80	50
FBS II 8	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.46	1.34	80	60
FBS II 8	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 50	≥ 108	80	0.51	1.49	80	60
FBS II 10	≥ 16.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.37	1.23	80	70
FBS II 10	≥ 20.0	≥ 1.8	228 x 108 x 54	≥ 55	≥ 108	80	0.43	1.37	80	70
Solid sand-lime brick KS, acc. to EN 771-2										
FBS II 6	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.43	0.51	80	50
FBS II 6	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.49	0.60	80	50
FBS II 6	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 40	≥ 115	80	0.54	0.66	80	50
FBS II 8	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.54	0.66	80	60
FBS II 8	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.60	0.74	80	60
FBS II 8	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 50	≥ 115	80	0.69	0.83	80	60
FBS II 10	≥ 12.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.54	0.89	80	70
FBS II 10	≥ 16.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.63	1.00	80	70
FBS II 10	≥ 20.0	≥ 1.8	240 x 115 x 71	≥ 55	≥ 115	80	0.69	1.11	80	70
Perforated sand-lime brick KSL, acc. to EN 771-2										
FBS II 6	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.09	0.80	80	50
FBS II 6	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.11	0.94	80	50
FBS II 6	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.14	1.17	80	50
FBS II 6	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 40	≥ 175	65	0.17	1.26	80	50
FBS II 8	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.26	0.66	80	60
FBS II 8	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.29	1.03	80	60
FBS II 8	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.37	1.40	80	60
FBS II 8	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 50	≥ 175	65	0.40	1.49	80	60
FBS II 10	≥ 10.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.23	0.77	80	70
FBS II 10	≥ 12.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.26	1.23	80	70
FBS II 10	≥ 16.0	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.34	1.66	80	70
FBS II 10	≥ 17.5	≥ 1.4	240 x 175 x 113	≥ 55	≥ 175	65	0.37	1.77	80	70

1) The partial safety factors for material resistance as regulated in assessment as well as a partial safety factor for load actions of γ_L = 1.4 are considered. Load values are valid for zinc-plated steel all sizes and head shapes, for stainless steel R for the sizes 8 and 10. Exakt values see ETA.
2) The given loads are valid for installation and use of fixations in dry masonry, use category d/d, width of the joints $w_j \leq 3$ mm and general purpose mortar with strength class M2.5 -M9. Further information and details on drill hole preparation, etc., see ETA.
3) Maximum allowable device torque for installation with any tangential impact screw driver. Further technical data see ETA.
4) In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete assessment.
5) Minimum feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.
6) Shear load parallel to the vertical joint. Load reduction for shear load perpendicular to the vertical joint see ETA.

Loads

Concrete screw UltraCut FBS II for temporary fastening

Permissible loads of a single anchor[1)] in normal concrete of strength class C20/25 to C50/60.
For the design the complete current assessment Z-21.8-2049 has to be considered.

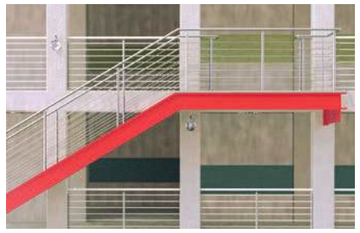
Type	Material/ surface	Screw-in depth h_{nom} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{imp,\,max}$ [2)] [Nm]	Minimum spacing (s_{min}) and edge distances (c_{min}) s_{min} [mm]	c_{min} [3)] [mm]	Cracked and non-cracked concrete Permissible load F_{perm} [4)] $f_{c,cube} \geq 10$ N/mm² [kN]	$f_{c,cube} \geq 15$ N/mm² [kN]	$f_{c,cube} \geq 20$ N/mm² [kN]	$f_{c,cube} \geq 25$ N/mm² [kN]
FBS II 8	gvz	50	100	400	200	65	1.9	2.3	2.6	2.9
	gvz	65	150	400	300	100	3.6	4.4	5.1	5.6
FBS II 10	gvz	55	105	400	210	70	2.2	2.7	3.1	3.5
	gvz	65	130	400	260	85	2.9	3.5	4.1	4.5
	gvz	85	205	650	410	135	5.8	7.1	8.1	9.1
FBS II 12	gvz	60	120	400	240	80	2.8	3.4	3.9	4.4
	gvz	75	150	400	300	100	4.0	4.9	5.6	6.1
	gvz	100	240	650	480	160	7.6	9.3	10.8	12.0
FBS II 14	gvz	65	115	400	230	75	2.3	2.8	3.2	3.6
	gvz	85	150	400	300	100	3.6	4.4	5.0	5.6
	gvz	115	255	650	510	170	8.9	10.9	12.6	14.0

1) Material safety factor as well as a partial safety factor for load actions of γ_L = 1.4 is considered. The screw may be used in the concrete member before the characteristic compressive strength $f_{ck,cube}$ is reached. In this case, the concrete compressive strength $f_{c,cube}$ must have reached a value of at least 10 N/mm². Only intended for temporary use and one-time screwing into the same drill hole. Conditions for reuse of the screw see, approval.
2) Values for impulse wrenches with tangential impact and automatic stop device.
3) In case of combined action of shear load and installation close to the edge, the edge distance must be ≥ c_{min} x 1.5. Detail see approval.
4) Values valid for all load directions.

Injection mortar FIS V Plus

The powerful universal mortar for concrete and masonry.

Rescue ladders



Steel constructions

Applications

- Steelwork constructions
- Timber constructions
- Guard rails
- Façades
- Staircases
- Steel brackets
- Machines
- Masts
- Awnings
- Canopies
- Gates
- Consoles
- Pipelines
- Gratings
- Satellite antennas

Advantages

- The FIS V Plus injection mortar has numerous system approvals, such as in cracked and non-cracked concrete, masonry and for special applications.
- The ETA assessment for a service life of 100 years offers permanent safety for all applications.
- The approved use in water-filled drill holes enables a wide range of applications, even under harsh environmental conditions.
- FIS VW Plus High Speed has a significantly shorter curing time than FIS V Plus, thus also ensuring swift work progress even at low temperatures.
- Due to the possible installation temperature of -10° to 40°C the universal mortar can be applied all year long.
- FIS VS Plus Low Speed with extended gelling time prevents premature curing of the mortar at higher temperatures and is ideally suited to large drill hole depths.
- The extensive range of accessories is ideally suited to the FIS V Plus injection mortar family.

Certificates / Features

CE · ETA · ICC ES ESR-2786 See ICC-ES Evaluation Report at www.icc-es.org

aBG Mit allgemeiner Bauartgenehmigung Z-21.3-2110, Z-21.3-1737 Z-21.8-1837, Z-21.8-2029

Seismic C2

R 120

100 Years Service life

Building materials

Approved for anchorings in:

- Concrete C12/15 to C50/60, cracked and non-cracked
- Hollow blocks made from lightweight concrete
- Hollow blocks made from concrete
- Vertically perforated brick
- Perforated sand-lime brick
- Solid sand-lime brick
- Aerated concrete
- Solid brick

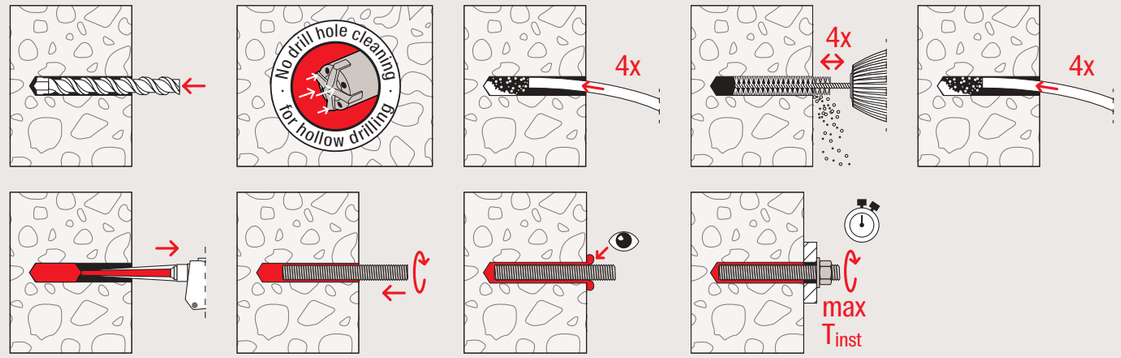
Approved for anchorings with:

- Rebar connections
- Remedial wall tie VBS 8
- Weather facing reconstruction system FWS II
- Stand-off installation TherMax

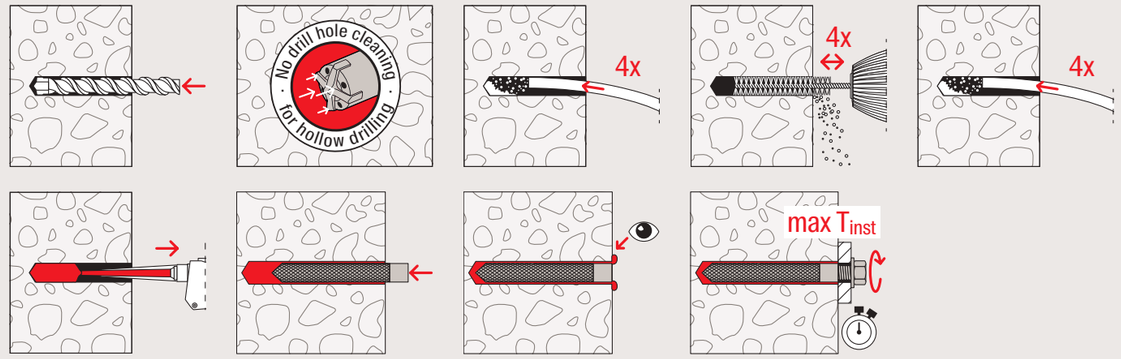
Functioning

- FIS V Plus is a 2-component injection mortar based on a vinyl ester hybrid concept.
- Resin and hardener are stored in two separate chambers and are not mixed and activated until extrusion through the static mixer.
- The mortar is extruded bubble free from the drill hole base.
- The mortar bonds the entire surface of the anchor with the drill hole wall and seals the drill hole.
- The injection cartridges are quick and easy to use with the fischer dispensers.
- Partially used cartridges can be reused by changing the static mixer.

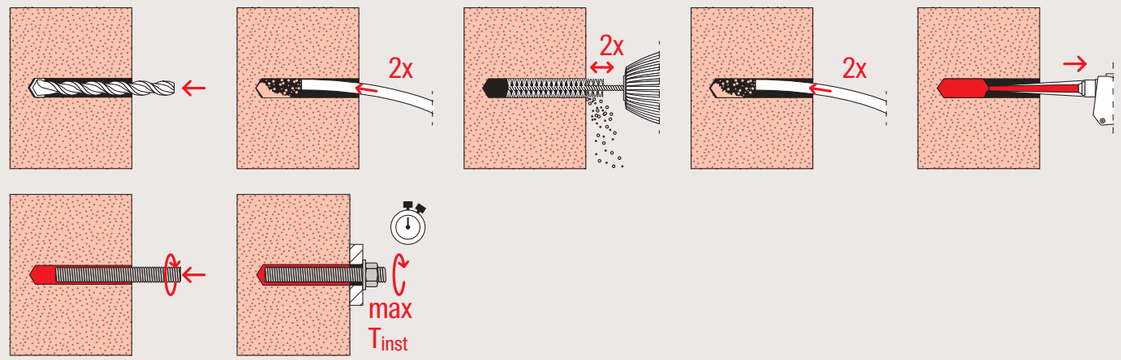
Installation in concrete with FIS V Plus and FIS A / RG M



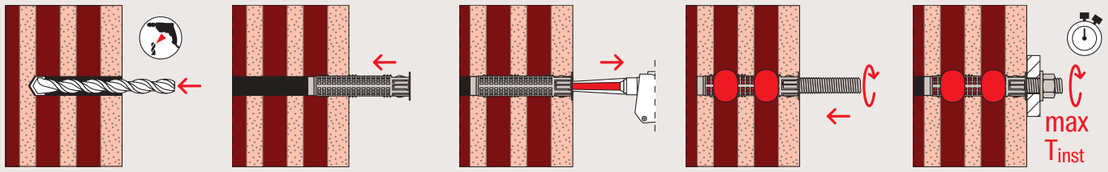
Installation in concrete with FIS V Plus and RG M I



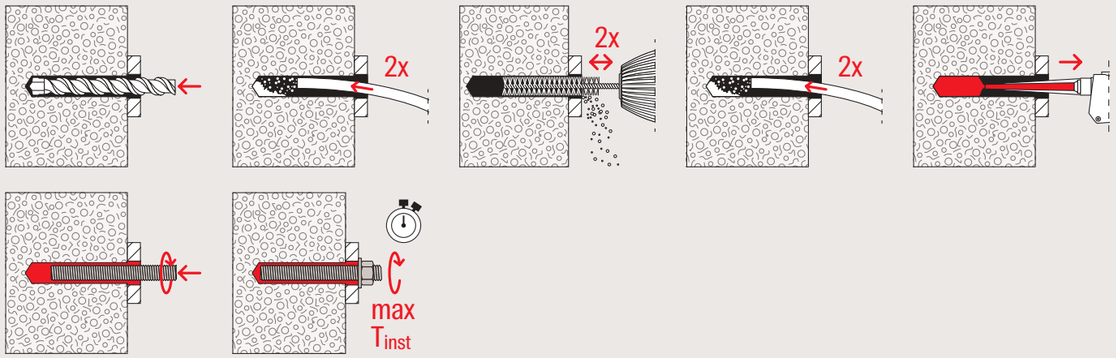
Installation in solid brick with FIS V Plus and FIS A



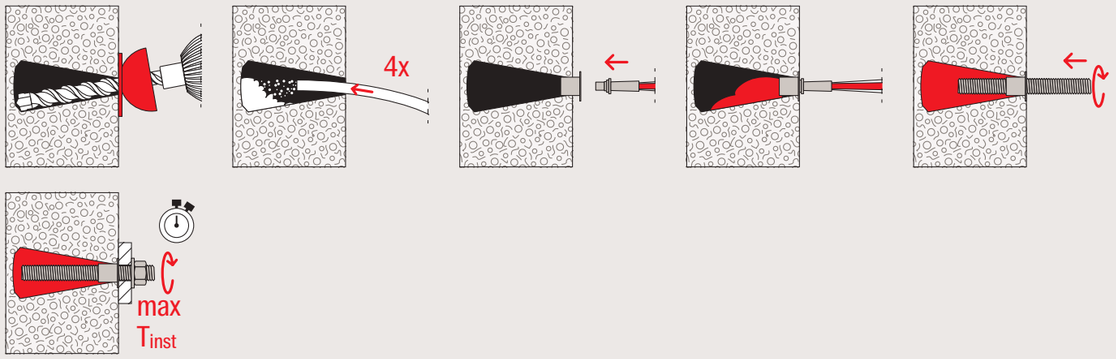
Installation in hollow blocks with FIS V Plus and FIS HK + FIS A



Installation in aerated concrete with FIS V Plus and FIS A / RG M



Installation in undercut drill hole in aerated concrete with FIS V Plus and FIS A / RG M



Technical data

Injection mortar FIS V Plus 300 T

FIS V Plus 300 T FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 300 T	**563281**	●	●	●	DE	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 300 T	**563282**	●	●	●	DE, EN, IT	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 300 T	**563292**	●	●	●	EN, ES, PT	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 300 T	**569074**	●	●	●	DA, FI, NO, SV	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS V Plus 300 T	**569254**	●	●	●	AR, EN, FR	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V Plus 300 T

FIS V Plus 300 T FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 300 T	**563279**	●	●	●	DE, FR, NL	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

Technical data

Injection mortar FIS VS Plus 300 T

FIS VS Plus 300 T FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS VS Plus 300 T	**563278**	●	●	●	ES, PT	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS VS Plus 300 T	**563280**	●	●	●	EN, ES, PT	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS VS Plus 300 T	**563290**	●	●	●	EL, HU, PL, RO	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS VS Plus 300 T	**563291**	●	●	●	FR	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

Technical data

Injection mortar FIS VW Plus 300 T

FIS VW Plus 300 T FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS VW Plus High Speed 300 T	**563286**	●	●	●	DA, FI, NO, SV	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus with transparent clip	1
FIS VW Plus High Speed 300 T	**563287**	●	●	●	CS, HU, PL, RU	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus High Speed 300 T	**563293**	●	●	●	DE, EN, HU, IT	150	1 x Cartridge 300 ml, 2 x Static mixer FIS MR Plus	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

Technical data

Injection mortar FIS V Plus 360 S

FIS V Plus 360 S FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 360 S	**558744**	●	●	●	EN	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558745**	●	●	●	DE	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558746**	●	●	●	EN, ES, PT	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558747**	●	●	●	AR, EN, ZH	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V Plus 360 S

FIS V Plus 360 S

FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 360 S	**558753**	●	●	●	IT, PL, RO	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558752**	●	●	●	DE, FR, NL	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558754**	●	●	●	AR, EL, TR	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558755**	●	●	●	DA, FI, NO, SV	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558758**	●	●	●	EN, ES, PT (Americas)	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**558762**	●	●	●	CS, HU, SK	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**560635**	●	●	●	AR, EN, FR	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 360 S	**561055**	●	●	●	EN, PL, UK	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

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Technical data

Injection mortar FIS VS Plus 360 S

FIS VS Plus 360 S

FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS VS Plus 360 S	**558750**	●	●	●	EN, ES, PT	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VS Plus 360 S	**558749**	●	●	●	JA, KO, ZH	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VS Plus 360 S	**561057**	●	●	●	EN, PL, UK	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

Technical data

Injection mortar FIS VW Plus 360 S

FIS VW Plus 360 S

FIS MR Plus

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS VW Plus 360 S	**569072**	●	●	●	DA, FI, NO, SV	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus 360 S	**558759**	●	●	●	DE	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus 360 S	**558764**	●	●	●	EN, HU	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus 360 S	**558765**	●	●	●	DE, FR, NL	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus 360 S	**558768**	●	●	●	CS, HU, SK	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS VW Plus 360 S	**562602**	●	●	●	EN, PL, UK	180	1 x Cartridge 360 ml, 2 x Static mixer FIS MR Plus	1
FIS MR Plus	**545853**	–	–	–	–	–	10 x Static mixer FIS MR Plus for all cartridge sizes from 100 ml to 410 and 825 ml	10

Technical data

Injection mortar FIS VS Plus 360 S HWK

FIS VS Plus 300 T HWK K

FIS V Plus 300 T HWK G

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 300 T HWK small	**563283**	●	●	●	DE, FR, NL	150	10 x Cartridge 300 ml, 20 x Static mixer FIS MR Plus	1
FIS V Plus 300 T HWK big	**563294**	●	●	●	DE, FR, NL	150	20 x Cartridge 300 ml, 40 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V Plus 360 S HWK

FIS V Plus 360 S HWK K

FIS V Plus 360 S HWK G

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 360 S HWK small	**558770**	●	●	●	DE	180	10 x Cartridge 360 ml, 20 x Static mixer FIS MR Plus	1
FIS V Plus 360 S HWK small	**558769**	●	●	●	DE, FR, NL	180	10 x Cartridge 360 ml, 20 x Static mixer FIS MR Plus	1
FIS V Plus 360 S HWK small	**558771**	●	●	●	CS, HU, SK	180	10 x Cartridge 360 ml, 20 x Static mixer FIS MR Plus	1
FIS V Plus 360 S HWK big	**558756**	●	●	●	DE	180	20 x Cartridge 360 ml, 40 x Static mixer FIS MR Plus	1
FIS V Plus 360 S HWK big	**558757**	●	●	●	DE, FR, NL	180	20 x Cartridge 360 ml, 40 x Static mixer FIS MR Plus	1
FIS V Plus 360 S HWK big	**558748**	●	●	●	AR, EN, ZH	180	20 x Cartridge 360 ml, 40 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V / FIS VS Plus

FIS V Plus 360 S

FIS VS Plus 360 S

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 360 S in bucket	**558743**	●	●	●	EN	180	20 x Cartridge 360 ml 40 x Static mixer FIS MR Plus	20
FIS V Plus 360 S in bucket	**558751**	●	●	●	AR, EN, ZH	180	20 x Cartridge 360 ml 20 x Static mixer FIS MR Plus	1
FIS V Plus 360 S in bucket	**558763**	●	●	●	DE, FR, NL	180	20 x Cartridge 360 ml 20 x Static mixer FIS MR Plus	1
FIS VS Plus 360 S in bucket	**562601**	●	●	●	IT, PL, RO	180	20 x Cartridge 360 ml 20 x Static mixer FIS MR Plus	1
FIS VS Plus 360 S in bucket	**562603**	●	●	●	EN, ES, PT	180	20 x Cartridge 360 ml 40 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V Plus 410 C

FIS V Plus 410 C

FIS VW Plus High Speed 410 C

FIS V Plus 410 C in bucket

FIS V Plus 410 C HWK

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 410 C	**558780**	●	●	●	DE, EN, IT	200	1 x Cartridge 410 ml, 2 x Static mixer FIS MR Plus	1
FIS V Plus 410 C	**558784**	●	●	●	EN, ES, PT (Americas)	200	1 x Cartridge 410 ml, 2 x static mixer FIS MR Plus	1
FIS VW PlusHigh Speed 410 C	**569342**	●	●	●	DE, FR, IT	200	1 x Cartridge 410 ml, 2 x static mixer FIS MR Plus	1
FIS V Plus 410 C in bucket	**558782**	●	●	●	DE, EN, IT	200	16 x cartridge 410 ml, 32 x static mixer FIS MR Plus	1
FIS V Plus 410 C in bucket	**558783**	●	●	●	EN, RU, TR	200	16 x Cartridge 410 ml, 32 x Static mixer FIS MR Plus	1
FIS V Plus 410 C HWK big	**558781**	●	●	●	DE, EN, IT	200	20 x Cartridge 410 ml, 40 x Static mixer FIS MR Plus	1

Technical data

Injection mortar FIS V Plus 825 S

FIS V Plus 825 S

FIS JMR 825

Item	Item no.	Approval ETA	DIBt	ICC	Language on label	Scale unit	Contents	Sales unit [pcs]
FIS V Plus 825 S	**567511**	●	●	●	DE, EN, FR, IT, NL	415	1 x Cartridge 825 ml, 2 x Static mixer FIS JMR 825	1
FIS V Plus 825 S	**567512**	●	●	●	EN, ES, FR, PT, TR	415	1 x Cartridge 825 ml, 2 x Static mixer FIS JMR 825	1
FIS V Plus 825 S	**567513**	●	●	●	CS, EN, PL, RU, SK	415	1 x Cartridge 825 ml, 2 x Static mixer FIS JMR 825	1
FIS JMR 825	**567522**	–	–	–	–	–	12 x Static mixer FIS JMR 825 for 825 ml cartridges	12

Curing times

FIS VW Plus High Speed
FIS V Plus
FIS VS Plus Low Speed

Temperature at anchoring base	Maximum processing time t_{work}			Minimum curing time t_{cure} [1]					
	FIS VW Plus High Speed	FIS V Plus	FIS VS Plus Low Speed	FIS VW Plus High Speed		FIS V Plus		FIS VS Plus Low Speed	
[°C]	[min.]	[min.]	[min.]	[hrs.]	[min.]	[hrs.]	[min.]	[hrs.]	[min.]
-10 – -5 [2]	–	–	–	12	–	–	–	–	–
> -5 – 0 [2]	5	–	–	3	–	24	–	–	–
> 0 – +5 [2]	5	13	–	3	–	3	–	6	–
> +5 – +10	3	9	20	–	50	–	90	3	–
> +10 – +20	1	5	10	–	30	–	60	2	–
> +20 – +30	–	4	6	–	–	–	45	–	60
> +30 – +40	–	2	4	–	–	–	35	–	30

[1] In wet concrete or water filled holes the curing times must be doubled.
[2] Minimal cartridge temperature +5 °C

Loads

Injection system FIS V Plus with internal threaded anchor RG M I

Permissible loads of a single anchor[1] [2] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-20/0603 has to be considered.

Type	Screw Material[3]	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	Non-cracked concrete: Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
					N_{perm} [4] [kN]	V_{perm} [4] [kN]	s_{min} [4] [mm]	c_{min} [4] [mm]
RG M 8 I	5.8	90	120	10	9.0	5.3	55	55
	8.8	90	120	10	13.8	8.3	55	55
	R-70	90	120	10	9.9	5.9	55	55
RG M 10 I	5.8	90	130	20	13.8	8.3	65	65
	8.8	90	130	20	20.0	13.3	65	65
	R-70	90	130	20	15.7	9.3	65	65
RG M 12 I	5.8	125	170	40	20.5	12.1	75	75
	8.8	125	170	40	32.0	19.3	75	75
	R-70	125	170	40	22.5	13.5	75	75
RG M 16 I	5.8	160	210	80	37.6	22.4	95	95
	8.8	160	210	80	47.4	30.9	95	95
	R-70	160	210	80	42.0	25.1	95	95
RG M 20 I	5.8	200	260	120	58.6	35.4	125	125
	8.8	200	260	120	66.3	51.4	125	125
	R-70	200	260	120	65.7	39.4	125	125

[1] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.
[2] The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 80 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} for sustained load was taken into account with 1.0.
[3] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).
[4] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Injection system FIS V Plus with threaded rod FIS A resp. RG M

Permissible loads of a single anchor[1) 2)] in normal concrete of strength class C20/25.
For the design the complete current assessment ETA-20/0603 has to be considered.

					Cracked concrete				Non-cracked concrete			
					Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
Type	Material / surface[3)]	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	N_{perm}[4)] [kN]	V_{perm}[4)] [kN]	s_{min}[4)] [mm]	c_{min}[4)] [mm]	N_{perm}[4)] [kN]	V_{perm}[4)] [kN]	s_{min}[4)] [mm]	c_{min}[4)] [mm]
FIS A M 8	5.8	60	100	10	3.9	6.3	40	40	9.0	6.3	40	40
	5.8	80	110	10	5.3	6.3	40	40	9.0	6.3	40	40
	5.8	160	190	10	9.0	6.3	40	40	9.0	6.3	40	40
	R-70	60	100	10	3.9	6.0	40	40	9.9	6.0	40	40
	R-70	80	110	10	5.3	6.0	40	40	9.9	6.0	40	40
	R-70	160	190	10	9.9	6.0	40	40	9.9	6.0	40	40
FIS A M 10	5.8	60	100	20	5.4	9.7	45	45	10.9	9.7	45	45
	5.8	90	120	20	8.1	9.7	45	45	13.8	9.7	45	45
	5.8	200	230	20	13.8	9.7	45	45	13.8	9.7	45	45
	R-70	60	100	20	5.4	9.2	45	45	10.9	9.2	45	45
	R-70	90	120	20	8.1	9.2	45	45	15.7	9.2	45	45
	R-70	200	230	20	15.7	9.2	45	45	15.7	9.2	45	45
FIS A M 12	5.8	70	100	40	8.2	14.3	55	45	13.7	14.3	55	45
	5.8	110	140	40	12.8	14.3	55	45	20.5	14.3	55	45
	5.8	240	270	40	20.5	14.3	55	45	20.5	14.3	55	45
	R-70	70	100	40	8.2	13.7	55	45	13.7	13.7	55	45
	R-70	110	140	40	12.8	13.7	55	45	22.5	13.7	55	45
	R-70	240	270	40	22.5	13.7	55	45	22.5	13.7	55	45
FIS A M 16	5.8	80	120	60	11.5	23.0	65	50	16.8	26.9	65	50
	5.8	125	170	60	18.0	26.9	65	50	32.7	26.9	65	50
	5.8	320	360	60	37.6	26.9	65	50	37.6	26.9	65	50
	R-70	80	120	60	11.5	23.0	65	50	16.8	25.2	65	50
	R-70	125	170	60	18.0	25.2	65	50	32.7	25.2	65	50
	R-70	320	360	60	42.0	25.2	65	50	42.0	25.2	65	50
FIS A M 20	5.8	90	140	120	14.0	28.0	85	55	20.0	40.0	85	55
	5.8	170	220	120	28.0	42.3	85	55	51.9	42.3	85	55
	5.8	400	450	120	58.6	42.3	85	55	58.6	42.3	85	55
	R-70	90	140	120	14.0	28.0	85	55	20.0	39.4	85	55
	R-70	170	220	120	28.0	39.4	85	55	51.9	39.4	85	55
	R-70	400	450	120	65.7	39.4	85	55	65.7	39.4	85	55
FIS A M 24	5.8	96	160	150	15.4	30.8	105	60	22.0	44.1	105	60
	5.8	210	270	150	37.7	60.6	105	60	71.3	60.6	105	60
	5.8	480	540	150	84.3	60.6	105	60	84.3	60.6	105	60
	R-70	96	160	150	15.4	30.8	105	60	22.0	44.1	105	60
	R-70	210	270	150	37.7	56.8	105	60	71.3	56.8	105	60
	R-70	480	540	150	86.2	56.8	105	60	94.3	56.8	105	60
FIS A M 30	5.8	120	190	300	21.6	43.1	140	80	30.8	61.6	140	80
	5.8	280	350	300	56.5	96.0	140	80	109.8	96.0	140	80
	5.8	600	670	300	121.2	96.0	140	80	133.8	96.0	140	80
	R-70	120	190	300	21.6	43.1	140	80	30.8	61.6	140	80
	R-70	280	350	300	56.5	90.2	140	80	109.8	90.2	140	80
	R-70	600	670	300	121.2	90.2	140	80	150.1	90.2	140	80

[1)] Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x h_{ef}. Accurate data see ETA.
[2)] The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 80 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} for sustained load was taken into account with 1.0.
[3)] Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (gvz); for damp interiors and for outdoor use, stainless steel (R).
[4)] In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software C-FIX.

Loads

Injection system FIS V Plus with threaded rod FIS A in solid and perforated masonry

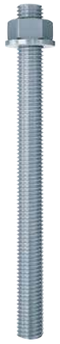
Permissible loads[1) 2)] for a single anchor in masonry for pre-positioned installation. In solid bricks and aerated concrete push-trough installation is also possible.
For the design the complete valid assessment ETA-20/0729 of 03.02.2025 has to be considered.

Type	Compressive brick strength f_b [N/mm²]	Brick raw density ρ [kg/dm³]	Minimum brick dimensions[3)] (L x W x H) [mm]	Effective anchorage depth h_{ef} [mm]	Minimum member thickness h_{min} [mm]	Maximum installation torque $T_{inst,max}$ [Nm]	Permissible tensile load[4)] N_{perm} [kN]	Permissible shear load[4)] V_{perm} [kN]	Minimum-spacing[5)] $s_{min\parallel}$ / $s_{min\perp}$ [mm]	Characteristic resp. minimum edge distance[5)] $c_{cr} = c_{min}$ [mm]
Solid brick Mz, NF, acc. to EN 771-1										
M6	≥ 12	≥ 1.8	240 x 115 x 71	≥ 50	115	4	1.14	0.71	240 / 75	100
M8	≥ 12	≥ 1.8	240 x 115 x 71	≥ 50	115	10	1.14	0.71	240 / 75	100
M10	≥ 12	≥ 1.8	240 x 115 x 71	80	115	10	1.42	1.14	240 / 75	100
M10	≥ 12	≥ 1.8	240 x 115 x 71	200	240	10	3.43	2.43	240 / 75	100
M12	≥ 12	≥ 1.8	240 x 115 x 71	80	115	10	1.57	1.14	240 / 75	100
M12	≥ 12	≥ 1.8	240 x 115 x 71	200	240	10	2.29	3.28	240 / 75	100
Solid sand-lime brick KS, acc. to EN 771-2										
M6	≥ 12	≥ 1.8	240 x 115 x 71	50	115	3	1.14	0.42	80 / 150	60
M6	≥ 12	≥ 1.8	240 x 115 x 71	100	115	3	1.57	0.89	80 / 300	60
M8	≥ 12	≥ 1.8	240 x 115 x 71	50	115	5	1.14	0.42	80 / 150	60
M8	≥ 12	≥ 1.8	240 x 115 x 71	100	115	5	2.29	0.89	80 / 300	60
M10	≥ 12	≥ 1.8	240 x 115 x 71	100	115	15	1.57	0.57	80 / 300	60
M10	≥ 12	≥ 1.8	240 x 115 x 71	200	240	15	3.42	0.57	80 / 600	60
M12	≥ 12	≥ 1.8	240 x 115 x 71	100	115	15	1.28	0.57	80 / 300	60
M12	≥ 12	≥ 1.8	240 x 115 x 71	200	240	15	3.42	0.57	80 / 600	60
M16	≥ 12	≥ 1.8	240 x 115 x 71	100	115	25	1.57	0.57	80 / 300	60
M16	≥ 12	≥ 1.8	240 x 115 x 71	200	240	25	3.42	0.57	80 / 600	60
Vertically perforated brick Hlz, acc. to EN 771-1[3)]										
M6 / M8 with FIS H 12 x 85 K	≥ 12	≥ 1.0	370 x 240 x 237	85	240	2	0.34	0.43	100 / 100	100
M8 / M10 with FIS H 16 x 130 K	≥ 12	≥ 1.0	370 x 240 x 237	130	240	2	0.86	0.57	100 / 100	100
M12 / M16 with FIS H 20 x 130 K	≥ 12	≥ 1.0	370 x 240 x 237	130	240	2	1.14	0.57	100 / 100	100
Perforated sand-lime brick KSL, acc. to EN 771-2[3)]										
M6 / M8 with FIS H 12 x 85 K	≥ 12	≥ 1.4	240 x 175 x 113	85	175	2	0.71	0.71	100 / 115	60
M8 / M10 with FIS H 16 x 130 K	≥ 12	≥ 1.4	240 x 175 x 113	130	175	2	1.00	1.29	100 / 115	80
M12 / M16 with FIS H 20 x 85 K	≥ 12	≥ 1.4	240 x 175 x 113	85	175	2	1.00	1.14	100 / 115	80
Lightweight concrete hollow block Hbl, acc. EN 771-3[3)]										
M6 / M8 with FIS H 12 x 85 K	≥ 2	≥ 1.0	362 x 240 x 240	85	240	2	0.43	0.26	100 / 240	60
M6 / M8 with FIS H 12 x 85 K	≥ 4	≥ 1.0	362 x 240 x 240	85	240	2	0.86	0.57	100 / 240	60
M8 / M10 with FIS H 16 x 85 K	≥ 2	≥ 1.0	362 x 240 x 240	85	240	2	0.43	0.26	100 / 240	60
M8 / M10 with FIS H 16 x 85 K	≥ 4	≥ 1.0	362 x 240 x 240	85	240	2	0.86	0.57	100 / 240	60
M12 / M16 with FIS H 20 x 200 K	≥ 2	≥ 1.0	362 x 240 x 240	200	240	2	0.71	0.26	100 / 240	60
M12 / M16 with FIS H 20 x 200 K	≥ 4	≥ 1.0	362 x 240 x 240	200	240	2	1.57	0.57	100 / 240	60
Aerated concrete acc. to EN 771-4[6)]										
M8	≥ 2	≥ 0.35	-	100	130	1	0.54	0.43	250 / 250	100
M8	≥ 4	≥ 0.50	-	200	230	8	1.07	0.71	80 / 80	100
M10	≥ 2	≥ 0.35	-	100	130	2	0.54	0.43	250 / 250	100
M10	≥ 4	≥ 0.50	-	200	230	12	1.79	0.71	80 / 80	100
M12	≥ 2	≥ 0.35	-	100	130	2	0.71	0.54	250 / 250	100
M12	≥ 4	≥ 0.50	-	200	230	16	1.79	0.71	80 / 80	100
M16	≥ 2	≥ 0.35	-	100	130	2	0.71	0.43	250 / 250	100
M16	≥ 4	≥ 0.50	-	200	230	20	1.79	0.71	80 / 80	100

[1)] The required partial safety factors for material resistance as well as a partial safety factor for load actions of γ_L = 1.4 are considered. Load values are valid for zinc-plated steel, stainless steel R and highly corrosion-resistant steel HCR. In perforated bricks and hollow blocks threaded rod FIS A in combination with anchor sleeve FIS H K.
[2)] The given loads are valid for installation and use of fixations in dry masonry - use category d/d - for temperatures in the substrate up to 50 °C (resp. short term up to 80 °C) and drill hole cleaning according to assessment. The given brick types in combination with the permissible loads are an extract of the assessment.
[3)] More information about, e.g. hole patterns, assortment of anchor sleeves FIS H K see assessment.
[4)] In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete assessment.
[5)] Minimum feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.
[6)] Cylindrical drill hole.

Anchor rod FIS A

The flexible anchor rod FIS A.



Bridges for traffic signs

Steel constructions

Applications

- Anchorings with each of the fischer injection mortars such as FIS V Plus, FIS V Zero, FIS SB, FIS EM Plus, FIS EB II, FIS V, FIS VL, FIS P Plus, FIS P and FIS EP

Advantages

- The anchor rod FIS A can be used with almost every fischer injection mortar (except Highbond special mortar FIS HB). It can be individually selected based on requirements, thus allowing for a wide range of applications.
- The wide range of approved anchor rods FIS A from M6 to M30 allows for various applications.
- Please refer to the approvals of the injection mortar used.

Building materials

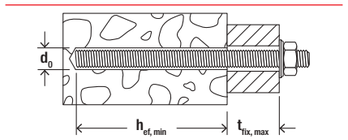
- In connection with several fischer injection mortars the anchor rod FIS A is approved or suitable for different building materials.

Versions

- Galvanised steel
- Stainless steel R
- Hot-dip galvanised steel
- Highly corrosion-resistant steel HCR

Functioning

- The anchor rod FIS A is suitable for pre-positioned and push-through installation.
- FIS A is set manually into the drill hole, by lightly rotating it until it reaches the drill hole base.



Technical data in concrete

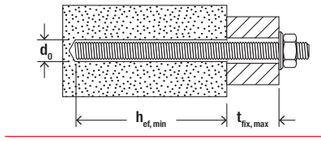
Threaded rod FIS A

FIS A

FIS A R

Item	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Galvanised steel, steel grade 8.8 Item no. gvz 8.8	Stainless steel Item no. R	Approval ETA	Drill diameter d_0 [mm]	Min. / max. anchorage depth $h_{ef,min / max}$ [mm]	Min. / max. usable length [mm]	Min. / max. filling quantity [scale units]	Sales unit [pcs]
FIS A M6 x 70	**046204**	**–**	**–**	●	8	50 / 62	0 / 12	2 / 3	10
FIS A M6 x 75	**090243**	**–**	**090437**	●	8	50 / 67	0 / 17	2 / 3	20
FIS A M6 x 85	**090272**	**–**	**–**	●	8	50 / 72	5 / 27	2 / 3	20
FIS A M6 x 110	**090273**	**–**	**090439**	●	8	50 / 72	30 / 52	2 / 3	20
FIS A M8 x 90	**090274**	**519390**	**090440**	●	10	60 / 80	0 / 20	2 / 3	10
FIS A M8 x 110	**090275**	**519391**	**090441**	●	10	60 / 100	0 / 40	2 / 3	10
FIS A M8 x 130	**090276**	**519392**	**090442**	●	10	60 / 120	0 / 60	2 / 4	10
FIS A M8 x 140	**553763**	**–**	**–**	●	10	60 / 130	0 / 70	2 / 4	10
FIS A M8 x 150	**–**	**553627**	**–**	●	10	60 / 140	0 / 80	2 / 4	10
FIS A M8 x 175	**090277**	**519393**	**090443**	●	10	60 / 160	5 / 105	2 / 5	10
FIS A M8 x 1,000	**509214**[1]	**509222**[1]	**509230**[1]	●	10	40 / 160	830 / 930	2 / 5	10
FIS A M10 x 110	**090278**	**–**	**090444**	●	12	60 / 96	0 / 36	3 / 4	10
FIS A M10 x 130	**090279**	**524170**	**090447**	●	12	60 / 116	0 / 56	3 / 5	10
FIS A M10 x 135	**–**	**–**	**562856**	●	12	60 / 121	0 / 61	3 / 5	10
FIS A M10 x 150	**090281**	**517935**	**090448**	●	12	60 / 136	0 / 76	3 / 5	10
FIS A M10 x 160	**–**	**–**	**562855**	●	12	60 / 146	0 / 86	3 / 6	10
FIS A M10 x 170	**044969**	**519395**	**044973**	●	12	60 / 156	0 / 96	3 / 6	10
FIS A M10 x 190	**–**	**517936**	**–**	●	12	60 / 176	0 / 116	3 / 7	10
FIS A M10 x 200	**090282**	**519396**	**090449**	●	12	60 / 186	0 / 126	3 / 7	10
FIS A M10 x 1,000	**509215**[1]	**509223**[1]	**509231**[1]	●	12	40 / 200	786 / 926	3 / 7	10
FIS A M12 x 120	**044971**	**519397**	**044974**	●	14	70 / 104	0 / 34	3 / 5	10
FIS A M12 x 140	**090283**	**519398**	**090450**	●	14	70 / 124	0 / 54	3 / 6	10
FIS A M12 x 160	**090284**	**517937**	**090451**	●	14	70 / 144	0 / 74	3 / 6	10
FIS A M12 x 180	**090285**	**519399**	**090452**	●	14	70 / 164	0 / 94	3 / 7	10
FIS A M12 x 200	**–**	**517938**	**519421**	●	14	70 / 184	0 / 114	3 / 8	10
FIS A M12 x 210	**090286**	**–**	**090453**	●	14	70 / 194	0 / 124	3 / 9	10
FIS A M12 x 260	**090287**	**–**	**090454**	●	14	70 / 240	4 / 174	3 / 10	10
FIS A M12 x 280	**–**	**–**	**547703**	●	14	70 / 240	24 / 194	3 / 10	10
FIS A M12 x 1,000	**509216**[1]	**509224**[1]	**509232**[1]	●	14	48 / 240	744 / 914	3 / 10	10
FIS A M16 x 130	**044972**	**519400**	**044975**	●	18	80 / 110	0 / 30	5 / 7	10
FIS A M16 x 175	**090288**	**519401**	**090455**	●	18	80 / 155	0 / 75	5 / 9	10
FIS A M16 x 200	**090289**	**517939**	**090456**	●	18	80 / 180	0 / 100	5 / 11	10
FIS A M16 x 1,000	**509217**[1]	**509225**[1]	**509233**[1]	●	18	64 / 320	660 / 900	5 / 19	10

[1] Order washer and nut separately.



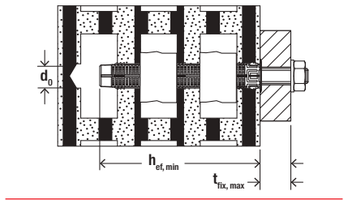
Technical data in solid brick masonry

Threaded rod FIS A

FIS A FIS A R

Item	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Galvanised steel, steel grade 8.8 Item no. gvz 8.8	Stainless steel Item no. R	Approval ETA	Drill hole diameter in solid brick masonry d_0 [mm]	Min. effective anchorage depth acc. ETA h_{ef} [mm]	Max. effective length acc. ETA $t_{fix,\,max}$ [mm]	Fill quantity for effect. anchorage depth in solid brick masonry [scale units]	Sales unit [pcs]
FIS A M6 x 70	046204	–	–	●	8	50	12	2	10
FIS A M6 x 75	090243	–	090437	●	8	50	17	2	20
FIS A M6 x 85	090272	–	–	●	8	50	27	2	20
FIS A M6 x 110	090273	–	090439	●	8	50	52	2	20
FIS A M8 x 90	090274	519390	090440	●	10	50	30	2	10
FIS A M8 x 110	090275	519391	090441	●	10	50	50	2	10
FIS A M8 x 130	090276	519392	090442	●	10	50	70	2	10
FIS A M8 x 140	553763	–	–	●	10	50	80	2	10
FIS A M8 x 150	–	553627	–	●	10	50	90	2	10
FIS A M8 x 175	090277	519393	090443	●	10	50	115	2	10
FIS A M8 x 1,000	509214[1)]	509222[1)]	509230[1)]	●	10	50	940	2	10
FIS A M10 x 110	090278	–	090444	●	12	50	46	3	10
FIS A M10 x 130	090279	524170	090447	●	12	50	66	3	10
FIS A M10 x 135	–	–	562856	●	12	50	71	3	10
FIS A M10 x 150	090281	517935	090448	●	12	50	86	3	10
FIS A M10 x 160	–	–	562855	●	12	50	96	3	10
FIS A M10 x 170	044969	519395	044973	●	12	50	106	3	10
FIS A M10 x 190	–	517936	–	●	12	50	126	3	10
FIS A M10 x 200	090282	519396	090449	●	12	50	136	3	10
FIS A M10 x 1,000	509215[1)]	509223[1)]	509231[1)]	●	12	50	936	3	10
FIS A M12 x 120	044971	519397	044974	●	14	50	54	3	10
FIS A M12 x 140	090283	519398	090450	●	14	50	74	3	10
FIS A M12 x 160	090284	517937	090451	●	14	50	94	3	10
FIS A M12 x 180	090285	519399	090452	●	14	50	114	3	10
FIS A M12 x 200	–	517938	519421	●	14	50	134	3	10
FIS A M12 x 210	090286	–	090453	●	14	50	144	3	10
FIS A M12 x 260	090287	–	090454	●	14	50	194	3	10
FIS A M12 x 280	–	–	547703	●	14	50	214	3	10
FIS A M12 x 1,000	509216[1)]	509224[1)]	509232[1)]	●	14	50	934	3	10
FIS A M16 x 130	044972	519400	044975	●	18	50	60	5	10
FIS A M16 x 175	090288	519401	090455	●	18	50	105	5	10
FIS A M16 x 200	090289	517939	090456	●	18	50	130	5	10
FIS A M16 x 1,000	509217[1)]	509225[1)]	509233[1)]	●	18	50	930	5	10

[1)] Order washer and nut separately.

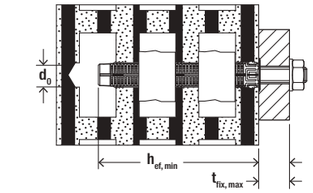


Technical data in perforated brick masonry

Threaded rod FIS A

FIS A FIS A R

Item	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Galvanised steel, steel grade 8.8 Item no. gvz 8.8	Stainless steel Item no. R	Approval ETA	Drill hole diameter in perforated brick masonry d_0 [mm]	Min. anchorage depth in perforated brick masonry $h_{ef,\,min}$ [mm]	Max. useful length in perforated brick masonry $t_{fix,\,max}$ [mm]	Suitable injection anchor sleeve	Sales unit [pcs]
FIS A M6 x 70	046204	–	–	●	12	50	12	FIS H 12 x 50 K	10
FIS A M6 x 75	090243	–	090437	●	12	50	17	FIS H 12 x 50 K	20
FIS A M6 x 85	090272	–	–	●	12	50	27	FIS H 12 x 50 K	20
FIS A M6 x 110	090273	–	090439	●	12 12	50 85	52 17	FIS H 12 x 50 K FIS H 12 x 85 K	20
FIS A M8 x 90	090274	519390	090440	●	12	50	30	FIS H 12 x 50 K	10
FIS A M8 x 110	090275	519391	090441	●	12 12 16	50 85 85	50 15 15	FIS H 12 x 50 K FIS H 12 x 85 K FIS H 16 x 85 K	10
FIS A M8 x 130	090276	519392	090442	●	12 12 16	50 85 85	70 35 35	FIS H 12 x 50 K FIS H 12 x 85 K FIS H 16 x 85 K	10
FIS A M8 x 140	553763	–	–	●	12 12 16	50 85 85	80 45 45	FIS H 12 x 50 K FIS H 12 x 85 K FIS H 16 x 85 K	10
FIS A M8 x 150	–	553627	–	●	12 12 16 16	50 85 85 130	90 55 55 10	FIS H 12 x 50 K FIS H 12 x 85 K FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M8 x 175	090277	519393	090443	●	12 12 16 16	50 85 85 130	115 80 80 35	FIS H 12 x 50 K FIS H 12 x 85 K FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M10 x 110	090278	–	090444	●	16	85	11	FIS H 16 x 85 K	10
FIS A M10 x 130	090279	524170	090447	●	16	85	31	FIS H 16 x 85 K	10
FIS A M10 x 135	–	–	562856	●	16	85	36	FIS H 16 x 85 K	10
FIS A M10 x 150	090281	517935	090448	●	16 16	85 130	51 6	FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M10 x 160	–	–	562855	●	16 16	85 130	61 16	FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M10 x 170	044969	519395	044973	●	16 16	85 130	71 26	FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M10 x 190	–	517936	–	●	16 16	85 130	91 46	FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M10 x 200	090282	519396	090449	●	16 16	85 130	101 56	FIS H 16 x 85 K FIS H 16 x 130 K	10
FIS A M12 x 120	044971	519397	044974	●	20	85	19	FIS H 20 x 85 K	10
FIS A M12 x 140	090283	519398	090450	●	20	85	39	FIS H 20 x 85 K	10
FIS A M12 x 160	090284	517937	090451	●	20 20	85 130	59 14	FIS H 20 x 85 K FIS H 20 x 130 K	10
FIS A M12 x 180	090285	519399	090452	●	20 20	85 130	79 34	FIS H 20 x 85 K FIS H 20 x 130 K	10
FIS A M12 x 200	–	517938	519421	●	20 20	85 130	99 54	FIS H 20 x 85 K FIS H 20 x 130 K	10
FIS A M12 x 210	090286	–	090453	●	20 20	85 130	109 64	FIS H 20 x 85 K FIS H 20 x 130 K	10
FIS A M12 x 260	090287	–	090454	●	20 20 20	85 130 200	159 114 44	FIS H 20 x 85 K FIS H 20 x 130 K FIS H 20 x 200 K	10

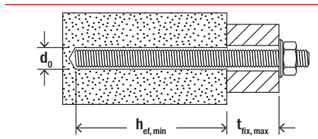


Technical data in perforated brick masonry

Threaded rod FIS A

FIS A FIS A R

	Galvanised steel, steel grade 5.8	Galvanised steel, steel grade 8.8	Stainless steel	Approval	Drill hole diameter in perforated brick masonry	Min. anchorage depth in perforated brick masonry	Max. useful length in perforated brick masonry	Suitable injection anchor sleeve	Sales unit
	Item no.	Item no.	Item no.	ETA	d_0 [mm]	$h_{ef,min}$ [mm]	$t_{fix,max}$ [mm]		[pcs]
Item	**gvz 5.8**	**gvz 8.8**	**R**						
FIS A M12 x 280	–	–	**547703**	●	20	85	189 134 64	FIS H 20 x 85 K FIS H 20 x 130 K FIS H 20 x 200 K	10
FIS A M16 x 130	**044972**	**519400**	**044975**	●	20	85	25	FIS H 20 x 85 K	10
FIS A M16 x 175	**090288**	**519401**	**090455**	●	20 20	85 130	70 25	FIS H 20 x 85 K FIS H 20 x 130 K	10
FIS A M16 x 200	**090289**	**517939**	**090456**	●	20 20	85 130	95 50	FIS H 20 x 85 K FIS H 20 x 130 K	10



Technical data

Threaded rod FIS A - By the meter

FIS A FIS A R

	Galvanised steel, steel grade 5.8	Galvanised steel, steel grade 8.8	Stainless steel	Approval	Drill diameter	Min. / max. anchorage depth	Max. usable length at min. / max. anchorage depth	Min. / max. filling quantity	Sales unit
	Item no.	Item no.	Item no.	ETA	d_0 [mm]	$h_{ef,min / max}$ [mm]	$t_{fix,min / max}$ [mm]	[scale units]	[pcs]
Item	**gvz 5.8**	**gvz 8.8**	**R**						
FIS A M8 x 1,000	**509214**[1]	**509222**[1]	**509230**[1]	●	10	40 / 160	950 / 830	2 / 5	10
FIS A M10 x 1,000	**509215**[1]	**509223**[1]	**509231**[1]	●	12	40 / 200	946 / 786	3 / 7	10
FIS A M12 x 1,000	**509216**[1]	**509224**[1]	**509232**[1]	●	14	48 / 240	936 / 744	3 / 10	10
FIS A M16 x 1,000	**509217**[1]	**509225**[1]	**509233**[1]	●	18	64 / 320	916 / 660	5 / 19	10

[1] Order washer and nut separately.

Hexagonal nut and washer

Hexagonal nut and washer

Nuts & Washers

Accessoires

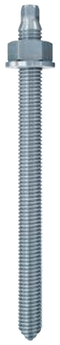
Hexagonal nut and washer

Nuts & Washers

	Galvanised steel, steel grade 8.8	Stainless steel	Thread	Washer (outer diameter x thickness)	Match	Width across nut	Sales unit
	Item no.	Item no.	M	[mm]		SW [mm]	[pcs]
Item	**gvz 8.8**	**R**					
Nut & Washer M8	**510509**	–	M8	16 x 1.6	FIS A M8	13	50
Nut & Washer M10	**510510**	–	M10	20 x 2.0	FIS A M10	17	50
Nut & Washer M12	**510511**	–	M12	24 x 2.5	FIS A M12	19	25
Nut & Washer M16	**510512**	–	M16	30 x 3.0	FIS A M16	24	20
Nut & Washer M8	–	**510513**	M8	16 x 1.6	FIS A M8 R	13	50
Nut & Washer M10	–	**510514**	M10	20 x 2.0	FIS A M10 R	17	50
Nut & Washer M12	–	**510515**	M12	24 x 2.5	FIS A M12 R	19	25
Nut & Washer M16	–	**510516**	M16	30 x 3.0	FIS A M16 R	24	20

Anchor rod RG M

The fischer threaded rod with chamfer.



Underwater applications

Crash barriers

Applications

- Anchorings with resin capsule RSB and RSB mini
- Anchorings with resin capsule RM II
- Anchorings with each of the fischer injection mortars such as FIS SB, FIS EM Plus, FIS EB II, FIS V, FIS VL, FIS V Zero, FIS P Plus, FIS P, FIS EP and FIS Green

Advantages

- The wide range of the RG M from M8 to M30 opens up a wide range of applications and therefore offers great flexibility.
- The wide range of approved steel types for RG M allows for use in all corrosion resistance classes and offers the best possible application safety.
- Please refer to the approvals for the resin capsules and mortar used.

Building materials

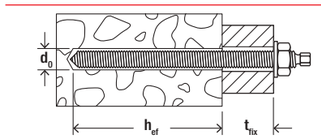
- In connection with the fischer resin capsules approved or suitable for cracked and non-cracked concrete.
- In connection with several fischer injection mortars approved or suitable for different building materials.

Versions

- Galvanised steel
- Stainless steel R
- Hot-dip galvanised steel
- Highly corrosion-resistant steel HCR

Functioning

- Due to its oblique edge, the anchor rod RG M is particularly suitable for use in conjunction with resin capsules.
- The anchor rod RG M is set using a hammer drill and the accompanying setting tool in rotating and hitting motions.
- During setting, the oblique edge of the RG M destroys the capsule, and mixes and activates the mortar.
- Use with injection mortar is also possible. Here, the anchor rod is manually inserted into the drill hole with a light rotating movement until it reaches the base of the hole.

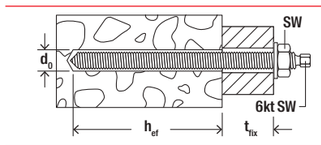


Technical data in concrete

Threaded rod RG M

RG M RG M R

Item	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Stainless steel Item no. R	Approval ETA	Drill hole diameter Injection mortar d_0 [mm]	Drill hole diameter resin capsule d_0 [mm]	Min. effect. anchorage depth h_{ef} [mm]	Usable length t_{fix} [mm]	Sales unit [pcs]
RG M8 x 110	050256	050263	●	10	10	50	14	10
RG M10 x 110	535007	535009	●	12	12	60	144	10
RG M10 x 115	–	562854	●	12	12	60	–	10
RG M10 x 130	050257	050264	●	12	12	60	20	10
RG M12 x 120	535010	535011	●	14	14	70	–	10



Technical data in concrete

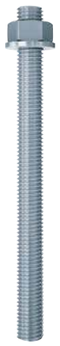
Threaded rod RG M

RG M hdg RG M HCR

Item	Hot-dip galvanised steel Item no. hdg	Approval ETA	Drill hole diameter Injection mortar d_0 [mm]	Drill hole diameter resin capsule d_0 [mm]	Min. effect. anchorage depth h_{ef} [mm]	Max. fixture thickness t_{fix} [mm]	Fits capsule RSB	Hexagon drive SW [mm]	Width across nut SW [mm]	Sales unit [pcs]
RG M12 x 160	512247	●	14	14	70	74	1 x RSB 12 mini 1 x RSB 12	8	19	10

Threaded rod G M

The economic threaded rod for standard applications.



Railings

Cable duct

Applications

- Steel structures
- Railing
- Staircases
- Wood structures
- Gates

Advantages

- The large packaging unit with up to 50 pieces facilitates handling for series applications.
- A wide selection of standard dimensions up to yard goods in various steel grades and galvanised types cover a wide range of applications.
- The mechanical properties according to standard EN ISO 898-1 guarantee a safe application.
- Variable anchorage depths allow efficient installation with fischer injection systems.

Building materials

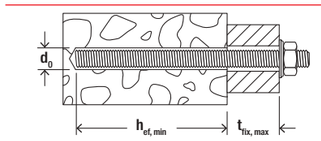
- The threaded rods G M are suitable for the fischer injection mortars in different building materials.
- The approved building materials can be found in the fischer injection mortar documents.

Versions

- 4.8 Galvanised steel
- 5.8 Galvanised steel
- 8.8 Galvanised steel
- 8.8 Hot dip galvanised steel

Functioning

- The threaded rod G M is suitable for pre-positioned and push-through installation.
- The threaded rod G M is set manually by lightly rotating it until it reaches the drill hole base.
- The mortar bonds the entire surface of the anchor rod with the drill holw wall and seals the drill hole.

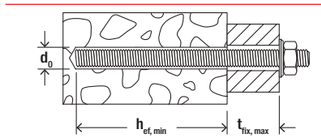


Technical data

Threaded rod G M

G M G M hdg

Item	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Galvanised steel, steel grade 8.8 Item no. gvz 8.8	Hot-dip galvanised steel grade 8.8 Item no. hdg 8.8	Drill diameter d_0 [mm]	Min. / max. anchorage depth $h_{ef,min\,/\,max}$ [mm]	Max. usable length at min. / max. anchorage depth $t_{fix,\,min\,/\,max}$ [mm]	Min. / max. filling quantity [scale units]	Sales unit [pcs]
G M8 x 110	561506	561514	–	10	60 / 100	40 / -	2 / 3	50
G M10 x 130	561508	561516	–	12	60 / 116	56 / -	3 / 5	50
G M12 x 140	561510	–	–	14	70 / 124	54 / -	3 / 6	40
G M12 x 160	–	561518	562138	14	70 / 144	74 / -	3 / 7	40
G M12 x 190	–	–	562139	14	70 / 174	104 / -	3 / 8	40
G M16 x 175	–	561520	–	18	80 / 155	75 / -	5 / 10	20
G M16 x 190	567693	–	561528	18	80 / 170	90 / -	5 / 11	20



Technical data

Threaded rod G M - By the meter

G M G M hdg

Item	Galvanised steel, steel grade 4.8 Item no. gvz 4.8	Galvanised steel, steel grade 5.8 Item no. gvz 5.8	Galvanised steel, steel grade 8.8 Item no. gvz 8.8	Hot-dip galvanised steel grade 8.8 Item no. hdg 8.8	Drill diameter d_0 [mm]	Min. / max. anchorage depth $h_{ef,min\,/\,max}$ [mm]	Max. usable length at min. / max. anchorage depth $t_{fix,\,min\,/\,max}$ [mm]	Min. / max. filling quantity [scale units]	Sales unit [pcs]
G M8 x 1000	561502	561507	561515	–	10	60 / 990	930 / -	2 / 5	20
G M10 x 1000	561503	561509	561517	561533	12	60 / 986	926 / -	3 / 7	20
G M12 x 1000	561504	561511	561519	561534	14	70 / 984	914 / -	3 / 10	15
G M16 x 1000	561505	561512	561522	561535	18	80 / 980	900 / -	5 / 19	10

Hexagonal nut and washer

Hexagonal nut and washer

Nuts & Washers

	Galvanised steel, steel grade 8.8	Stainless steel	Highly corrosion-resistant steel	Thread	Washer (outer diameter x thickness)	Width across nut	Sales unit
				M		SW	
	Item no.	Item no.	Item no.		[mm]	[mm]	[pcs]
Item	**gvz 8.8**	**R**	**HCR**				
Nut & Washer M8	**510509**	**510513**	**–**	M8	16 x 1.6	13	50
Nut & Washer M10	**510510**	**510514**	**–**	M10	20 x 2.0	17	50
Nut & Washer M12	**510511**	**510515**	**573788**	M12	24 x 2.5	19	25
Nut & Washer M16	**510512**	**510516**	**573789**	M16	30 x 3.0	24	20

DuoPower

The duo of power and intelligence.

Console

Pipelines

11

Applications

- TV consoles
- Lighting
- Shelves
- Mirror cabinets
- Letter boxes
- Pictures
- Fixing blinds
- Curtain rails
- Wash basin fixings
- Plumbing and heating fixings
- Bath and toilet installations
- Wall cabinets
- Range hood

Advantages

- Two component materials for top load values and intelligent functioning depending on the substrate.
- Great feedback (feel-good factor) of the plug. You can feel exactly when the plug is installed perfectly.
- The narrow plug rim prevents slipping into the drill hole.
- The serrated anti-rotation feature prevents rotation in the drill hole during installation.
- The greater anchorage depth of the DuoPower 6 x 50, 8 x 65 and 10 x 80 means that the plug is especially suited to fixings in hollow building materials, aerated concrete and to bridge plaster.
- The European Technical Assessment (ETA) for certain DuoPower dimensions guarantees tested safety for safety-relevant applications in concrete and asonry (see load table).

Certificates / Features

ETA CE 2K Technology

DuoLine

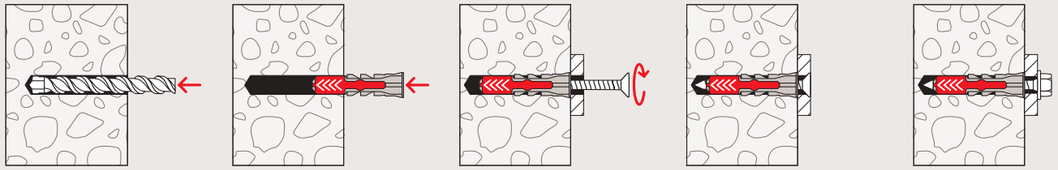
Building materials

- Concrete
- Solid brick
- Solid sand-lime brick
- Aerated concrete
- Vertically perforated brick
- Perforated sand-lime brick
- Plasterboard
- Gypsum plasterboard and gypsum fibreboards
- Hollow blocks made from lightweight concrete
- Cavity floor slabs made from bricks and concrete or similar
- Natural stone
- Chipboard
- Solid panel made from gypsum
- Solid brick made from lightweight concrete

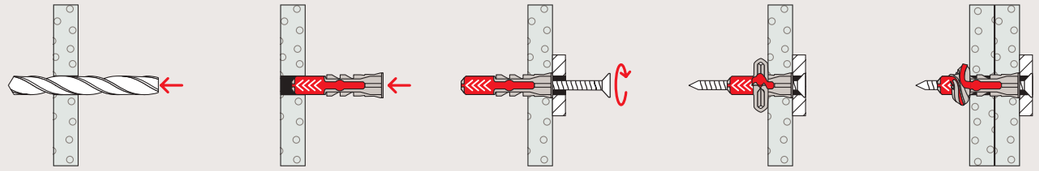
Functioning

- The grey component made from high quality nylon automatically activates for the optimum product function (expansion, folding, knotting) for the best hold.
- The required screw length is given by the plug length + fixture thickness + the screw diameter.
- Suitable for wood and chipboard screws, as well as stud screws.
- In the case of fixing boards, the threadless part of the screw must not be longer than the fixture.
- The fischer DuoPower ETA 10x50 with fischer safety screw is approved for concrete and masonry. The DuoPower ETA 8x40 with FPF II or fischer safety screw is approved for concrete.

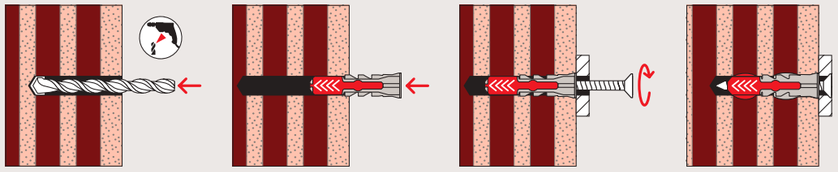
Installation in solid building materials

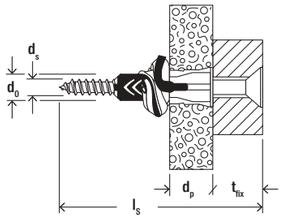


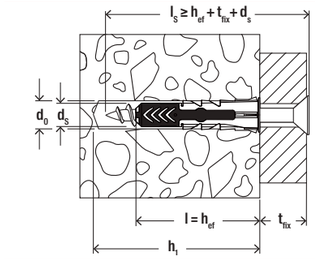
Installation in panel building materials



Installation in hollow building materials





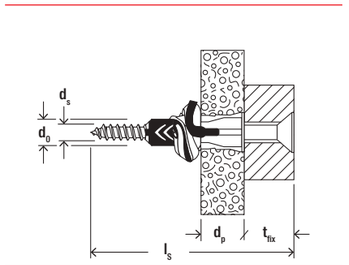


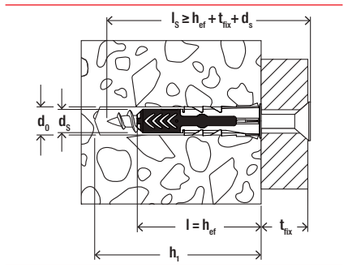
Technical data

DuoPower

DuoPower | DuoPower

Item	Item no.	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Min. panel thickness d_p [mm]	Anchor length l [mm]	Wood and chipboard screws d_s [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Sales unit [pcs]
DuoPower 6 x 30	**535453**	6	40	12.5	30	4.0 – 5.0	35	100
DuoPower 6 x 50	**538250**	6	60	12.5	50	4.0 – 5.0	55	100
DuoPower 8 x 40	**535455**	8	50	12.5	40	4.5 – 6.0	46	100
DuoPower 8 x 65	**538251**	8	75	25	65	4.5 – 6.0	71	50
DuoPower 10 x 50	**535456**	10	60	12.5	50	6.0 – 8.0	58	50
DuoPower 10 x 80	**538252**	10	100	–	80	6.0 – 8.0	88	25
DuoPower 12 x 60	**538253**	12	90	–	60	8.0 – 10.0	70	25
DuoPower 14 x 70	**538254**	14	90	–	70	10.0 – 12.0	82	20



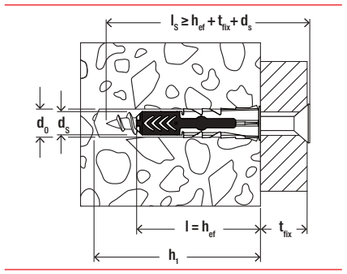


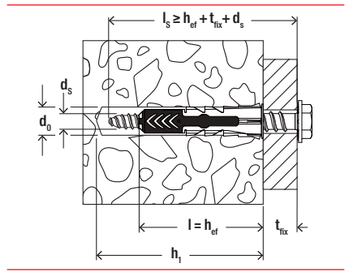
Technical data

DuoPower with screws

DuoPower S | DuoPower S PH | DuoPower S | DuoPower FUS

Item	Item no.	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Min. panel thickness d_p [mm]	Anchor length l [mm]	Screw dimension d_s x l_s [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Max. fixture thickness t_{fix} [mm]	Drive	Sales unit [pcs]
DuoPower 5 x 25 S	**535458**	5	40	12.5	25	3.5 x 35	29	6	PZ2	50
DuoPower 6 x 30 S	**535459**	6	45	12.5	30	4.5 x 40	35	5	PZ2	50
DuoPower 6 x 30 S PH	**535463**	6	45	12.5	30	4.5 x 40	34	6	PZ2	50
DuoPower 6 x 30 S PH	**545838**	6	45	12.5	30	4.5 x 40	35	5	TX20	100
DuoPower 6 x 50 S	**538255**	6	65	12.5	50	4.5 x 60	55	5	PZ2	50
DuoPower 6 x 50 S PH	**538260**	6	65	12.5	50	4.5 x 60	55	5	PZ2	50
DuoPower 8 x 40 S	**535460**	8	60	12.5	40	5.0 x 55	45	10	PZ2	50
DuoPower 8 x 65 S	**538256**	8	85	25	65	5.0 x 80	70	10	PZ2	25
DuoPower 8 x 65 S PH	**538261**	8	85	25	65	5.0 x 80	70	10	PH2	25
DuoPower 10 x 50 FUS	**535461**	10	74	12.5	50	7.0 x 69	57	12	TX40 / SW 13	25
DuoPower 10 x 80 S	**538257**	10	80	–	80	7.0 x 107	87	20	SW 13	10
DuoPower 12 x 60 S	**538258**	12	85	–	60	8.0 x 80	68	12	SW 13	10
DuoPower 14 x 70 S	**538259**	14	100	–	70	10.0 x 95	80	15	SW 17	8





Technical data

DuoPower ETA

DuoPower ETA FPF II DuoPower ETA S

Item	Item no.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Anchor length l [mm]	Screw dimension d_s x l_s [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Max. fixture thickness t_{fix} [mm]	Drive	Sales unit [pcs]
DuoPower ETA 8 x 40 FPF II	**564789**	●	8	69	40	6.0 x 60	45	14	TX30	50
DuoPower ETA 8 x 40 S	**564790**	●	8	78	40	6.0 x 66.5	45	20	TX30 / SW 10	50
DuoPower ETA 10 x 50 S	**564792**	●	10	78	50	7.0 x 69	57	12	TX40 / SW 13	50

The drill diameter is relative to the substrate compressive strength. Generally, the higher the compressive strength, the greater the drill diameter.

Loads

DuoPower

Recommended loads[1] for a single anchor.
The given loads are valid for wood screws with the specified diameter.

Type			5 x 25	6 x 30	6 x 50	8 x 40	8 x 65	10 x 50	10 x 80	12 x 60	14 x 70
Wood screw diameter		[mm]	4.0	5.0	5.0	6.0	6.0	8.0	8.0	10.0	12.0
Min. edge distance concrete	c_{min}	[mm]	30	35	35	50	50	65	65	80	100
Recommended loads in the respective base material F_{rec}[2]											
Concrete	≥ C20/25	[kN]	0.40	0.95	1.65	1.10	2.30	2.15	4.20	3.30	5.30
Solid brick	≥ Mz 12	[kN]	0.30	0.50	0.55	0.62	0.69	1.20	1.45	1.30	1.35
Solid sand-lime brick	≥ KS 12	[kN]	0.50	1.00	1.60	1.25	2.25	2.20	3.85	2.80	4.50
Aerated concrete	≥ AAC 2	[kN]	0.05	0.10	0.15	0.10	0.16	0.20	0.30	0.24	0.35
Aerated concrete	≥ AAC 4	[kN]	0.25	0.38	0.55	0.42	0.60	0.60	1.10	1.00	1.45
Sand-lime hollow block	≥ KSL 12 ($\rho \geq 1.6$ kg/dm³)	[kN]	0.40	0.60	0.60	0.70	1.00	0.70	2.00	0.75	1.50
Vertically perforated brick	≥ HLz 12 ($\rho \geq 0.9$ kg/dm³)	[kN]	0.13	0.15	0.17	0.25	0.40	0.25	0.40	0.35	0.40
Vertically perforated brick	Doppio UNI 19	[kN]	0.15	0.15	0.23	0.25	0.30	0.25	0.52	0.35	0.35
Vertically perforated brick	Forato Typ F8	[kN]	0.15	0.15	-	0.25	-	0.25	-	-	-
Light-weight concrete hollow block	Sepa Parpaing	[kN]	0.30	0.45	0.25[3]	0.45	0.45[3]	0.45	0.45[3]	0.60[3]	0.60[3]
Gypsum block	($\rho \geq 0.9$ kg/dm³)	[kN]	0.10	0.18	0.37	0.25	0.50	0.35	0.65	0.50	0.50
Gypsum fibreboard	12.5 mm	[kN]	0.24	0.33	0.35	0.35	-	0.50	-	-	-
Gypsum plasterboard	12.5 mm	[kN]	0.12	0.15	0.15	0.15	-	0.15	-	-	-
Gypsum plasterboard	2 x 12.5 mm	[kN]	0.13	0.15	0.24	0.20	0.32	0.30	-	-	-

[1] Required safety factors are considered. Valid for installation and use in dry base material for temperatures in the substrate up to +24 °C (resp. short term up to +40 °C).
[2] Valid for tensile load, shear load and oblique load under any angle.
[3] Load determination on plastered wall.

Loads

Universal plug DuoPower

Permissible loads[1][2][3] of a single anchor as part of a multiple fixing of non-structural systems.
For the design the complete current assessment ETA-22/0512 of 04.11.2022 has to be considered.

Type			DuoPower ETA 8x40 Power Fast II	DuoPower ETA 8x40 safety screw	DuoPower ETA 10x50 safety screw	
Anchor diameter	d_0	[mm]	8	8	10	
Screw diameter	d	[mm]	6.0	6.0	7.0	
Anchorage depth	h_{nom}	[mm]	40	40	50	
Anchorage in concrete ≥ C16/20[4]						
Permissible tensile load N_{perm}		[kN]	0.12	0.79	0.79	
Permissible shear load V_{perm}	zinc coated screws (gvz)	[kN]	3.10	4.23	5.98	
	stainless steel screw (R)	[kN]	-	3.93	5.98	
Minimum member thickness	h_{min}	[mm]	150	150	150	
Characteristic edge distance	$c_{cr,N}$	[mm]	55	90	80	
Characteristic spacing	a resp. $s_{cr,N}$	[mm]	15	50	50	
Minimum spacing	s_{min}	[mm]	50	50	50	
with an edge distance	c ≥	[mm]	100	100	100	
Minimum edge distance	c_{min}	[mm]	50	80	80	
with a spacing	s ≥	[mm]	100	160	160	
Anchorage in masonry						
Permisible load[5] F_{perm} in solid brick	≥ Mz 10/2; NF	[kN]	-	-	0.40	-
	≥ Mz 16/2; NF	[kN]	-	-	0.57	-
	≥ Mz 20/2; NF	[kN]	-	-	0.71	-
Permissible load[5] F_{perm} in solid sand-lime brick	≥ KS 8/2; 2DF	[kN]	-	-	0.60	0.70[6]
	≥ KS 12/2; 2DF	[kN]	-	-	0.60	0.70[6]
Permissible load[5] F_{perm} in perforated clay brick	≥ Hlz 10/1.2; 9 DF	[kN]	-	-	0.17	
	≥ Hlz 12/1.2; 9 DF	[kN]	-	-	0.21	
Minimum member thickness	h_{min}	[mm]	-	-	115	
Minimum spacing (single anchor)	a_{min}	[mm]	-	-	250	
Minimum spacing (anchor group)	s_{min}	[mm]	-	-	50	
Minimum edge distance (anchor group)	c_{min}	[mm]	-	-	80	

[1] Valid for zinc coated (gvz) Power Fast II and special screw and as well as for special screw made of stainless steel (R). For exterior use of the zinc coated screws measures against incoming humidity have to be taken.
[2] The required partial safety factors for material resistance as well as a partial safety factor for load actions $\gamma_L = 1.4$ are considered.
As a single anchor counts e.g. an anchor with a minimum spacing a according to Annex B 2 or B 3 of the assessment.
[3] Valid for temperatures in the substrate up to +24 °C (resp. short term up to +40 °C).
[4] For values in concrete C12/15 see assessment.
[5] Valid for tensile load, shear load and oblique load under any angle. For combinations of tensile loads, shear loads and bending moments see assessment. Bulk density of stone in [kg/dm³] and minimum compressive strength in [N/mm²] according to EN 771.
[6] Only valid for c_{1min} 110 mm and c_{2min} 165 mm.

DuoSeal

The sealing plug for wet areas.

Fixings on tiled surfaces

Accessories in wet areas

Applications

In tiled non-permanent wet areas like:
- Bathrooms
- Kitchens
- Spas
- Swimming pools
- Sports facilities

Suitable for:
- Accessories
- Faucets
- Shower panels
- Mirrors

Advantages

- The DuoSeal completely seals drill holes in tiles without additional sealing compound and thus prevents structural damage caused by moisture in the building material.
- The DuoSeal is ideally suited for tiled surfaces which are exposed to very frequent splashing water and temporarily accumulated water.
- The universal plug can be installed gently on tiles with very little effort.
- It´s red component ensures a secure hold in all building materials. Thus, the DuoSeal achieves the same load values as conventional nylon plugs.
- The stainless steel screw included in the set is ideally suited for installation in wet areas and avoids rusting.
- The soft plastic rim closes the drill hole completely and flexibly adapts to the shape of the attachment part.

Certificates / Features

DIN 18534
ETAG 022

SFV

DuoLine

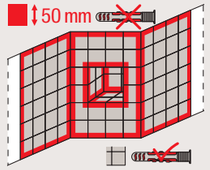
Building materials

- Concrete
- Solid brick
- Solid sand-lime brick
- Light concrete (solid brick)
- Light concrete (hollow brick)
- Vertically perforated brick
- Perforated sand-lime brick
- Aerated concrete
- Gypsum plasterboard
- Gypsum fibreboard
- Chipboard
- Gypsum block

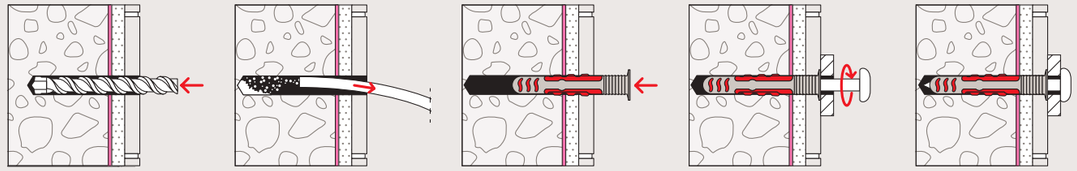
Functioning

- The DuoSeal is only suitable for application on tiles and can only be mounted as pre-position installation. A suitable diamond or tile drill should be used for drilling the hole.
- The DuoSeal can be installed gently on tiles with just a few hammer blows. The rim of the shaft prevents the plug from being set too deep and additionally seals the drill hole.
- The red component made of high-quality nylon automatically activates the optimum function principle (spreading, folding, knotting) depending on the building material for best hold.
- The soft grey component is pressed against the drill hole wall by screwing in the screw and seals the drill hole completely.
- The grooves in the plug shaft compensate for unevenness in the hole, so that the sealing function is guaranteed even if the drill hole is not perfect.

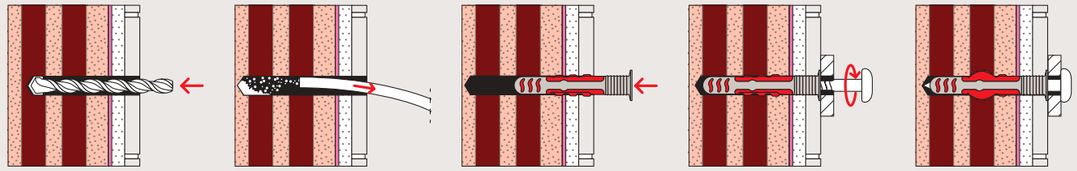
Installation of the DuoSeal with a minimum distance of 50 mm to all free edges



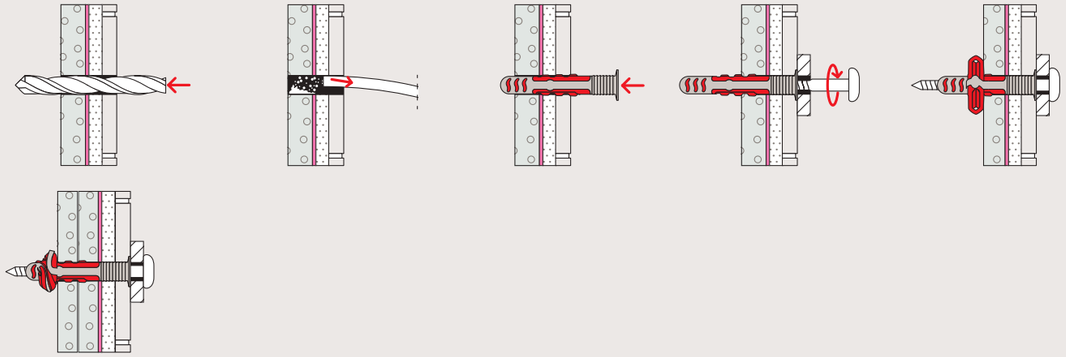
Installation in solid building materials

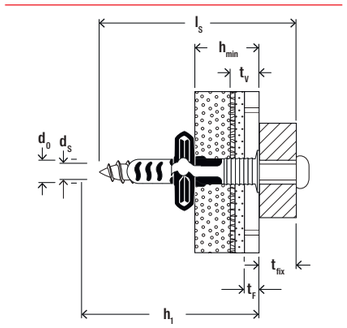


Installation in hollow building materials



Installation in panel building materials





Technical data

DuoSeal

DuoSeal S

Item	Item no.	Drill diameter d_0 [mm]	Drill hole diameter tolerance [mm]	Anchor length l [mm]	Min. building material thickness h_{min} [mm]	Sealing depth t_v [mm]	Tile thickness t_F [mm]	Screw dimension d_s x l_s [mm]	Min. bolt penetration $l_{E,min}$ [mm]	Max. fixture thickness t_{fix} [mm]	Drive	Sales unit [pcs]
DuoSeal 6 x 38 S PH TX A2	**557727**	6	6.0 – 6.4	38	22	5 – 14	5 – 10	4.5 x 60	48	12	TX20	50
DuoSeal 8 x 48 S PH TX A2	**557728**	8	8.0 – 8.45	48	25	5 – 14	5 – 10	6.0 x 70	54	16	TX30	25

Loads

DuoSeal

Recommended loads[1] for a single anchor.

Type			DuoSeal 6	DuoSeal 8
Screw diameter		**[mm]**	**4.5**	**6.0**
Recommended loads in the respective base material F_{rec} [2) 3)]				
Concrete	≥ C20/25	**[kN]**	0.40	0.60
Solid brick	≥ Mz 12	**[kN]**	0.20	0.30
Solid sand-lime brick	≥ KS 12	**[kN]**	0.30	0.40
Aerated concrete	≥ AAC 2	**[kN]**	0.10	0.10
Vertically perforated brick	≥ HLz 12	**[kN]**	0.20	0.30
Perforated sand-lime brick	≥ KSL 12	**[kN]**	0.30	0.40
Gypsum plasterboard impregnated (green)	12.5 mm	**[kN]**	0.10	0.104)
Gypsum plasterboard impregnated (green)	2 x 12.5 mm	**[kN]**	0.15	0.15
Gypsum plasterboard hard and impregnated (e. g. Knauf Diamant board or Rigipis Die Harte)	12.5 mm	**[kN]**	0.15	0.15
Gypsum plasterboard hard and impregnated (e. g. Knauf Diamant board or Rigipis Die Harte)	2 x 12.5 mm	**[kN]**	0.20	0.20
Gypsum fibreboard	12.5 mm	**[kN]**	0.20	0.20
Gypsum block	ρ ≥ 0.85 kg/dm³	**[kN]**	0.10	0.10

[1] Required safety factor is considered.
Load values are valid for using the supplied screws and under consideration of the total tile thickness: tile + tile glue + sealing compound.
[2] Valid for tensile load, shear load and oblique load under any angle. Valid for installation and use in dry base material for temperatures in the substrate up to +24 °C (resp. short term up to +40 °C).
[3] Values apply to tile thickness 5 - 10 mm and total tile thickness 9.5 - 14.5 mm.
[4] Value applies to tile thickness 8 - 10 mm and total tile thickness 12.5 - 14.5 mm.

Frame fixing DuoXpand

Anchor with a smart bite.

Façade substructures

Timber constructions

Applications

- Facade, ceiling and roof substructures made of wood and metal
- Windows
- Gates and doors
- Wardrobes
- Kitchen hanging cabinets
- Squared timbers
- Beams
- TV consoles
- Wall covering
- Metal brackets
- Metal supports
- Cable ducts
- Cable trays

Advantages

- The combination of design and material adapts to all building materials and enables universal use.
- The special lamella geometry expands gently in the respective building material. This avoids fractures in porous building materials and enables anchoring close to the edge.
- The grey main body made of high-quality nylon provides the strength, while the red material component ensures flexibility and optimal spreading.
- The European Technical Assessment (ETA) for multiple use for non-structural applications ensures secure hold in all building material classes.
- The pre-mounted safety screw is perfectly matched to the plug and ensures time savings during installation.
- The frame fixing DuoXpand 10 with lengths 80, 100, 180 und 200 mm is suitable for anchoring under seismic influence in hollow brick masonry.

Certificates / Features

ETA · CE · Inox Stainless Steel · R 120 · DuoLine

Building materials

Approved for use as multiple fastenings for non-load-bearing systems in:
- Concrete ≥ C12/15
- Solid brick
- Solid sand-lime brick
- Solid block made from lightweight concrete
- Vertically perforated bricks
- Perforated sand-lime brick
- Hollow blocks made from lightweight concrete
- Aerated concrete

Suitable for:
- Natural stone with dense structure
- Solid panel mad from gypsum

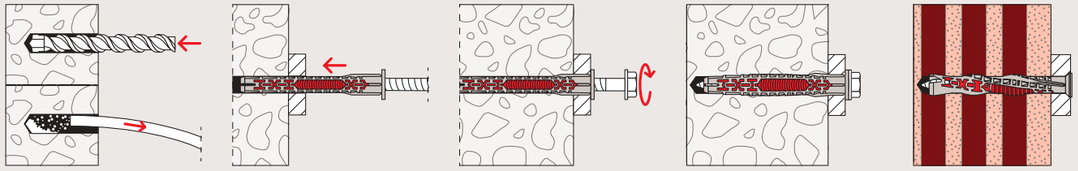
Versions

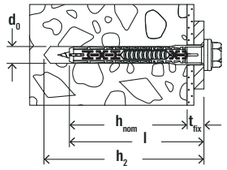
- Galvanised steel
- Stainless steel

Functioning

- The DuoXpand is suitable for push-through installation.
- In solid building materials, the product design guarantees equal load distribution into the substrate.
- In perforated brickwork, the lamellas expand at the stone web and form an undercut in the cavity. The anchor geometry ensures that the force is transferred evenly to the material, so that porous stone webs are not destroyed.
- The version with countersunk screw DuoXpand-T is particularly suitable for fastening timber to concrete and masonry. For fixing metal constructions, the version with a wide sleeve rim and a hexagon head screw with moulded washer DuoXpand-FUS is recommended.

Installation DuoXpand





Technical data

11

Frame fixing DuoXpand-FUS

DuoXpand-FUS DuoXpand-FUS R

	Galvanised steel	Stainless steel	Approval	Drill diameter	Min. drill hole depth for through fixings	Anchor length	Usable length at anchorage depth 50 mm	Usable length at anchorage depth 70 mm	Usable length at anchorage depth 140 mm	Usable length at anchorage depth 160 mm	Drive	Sales unit
	Item no.	Item no.	ETA	d_0 [mm]	h_2 [mm]	l [mm]	t_{fix} [mm]	t_{fix} [mm]	t_{fix} [mm]	t_{fix} [mm]		[pcs]
Item	gvz	R										
DuoXpand 8 x 80 FUS	562152	–	●	8	90	80	30	10	–	–	TX30 / SW 10	50
DuoXpand 8 x 100 FUS	562153	–	●	8	110	100	50	30	–	–	TX30 / SW 10	50
DuoXpand 8 x 120 FUS	562154	–	●	8	130	120	70	50	–	–	TX30 / SW 10	50
DuoXpand 10 x 80 FUS	562167	562175	●	10	90	80	30	10	–	–	TX40 / SW 13	50
DuoXpand 10 x 100 FUS	562168	562176	●	10	110	100	50	30	–	–	TX40 / SW 13	50
DuoXpand 10 x 120 FUS	562169	562177	●	10	130	120	70	50	–	–	TX40 / SW 13	50
DuoXpand 10 x 140 FUS	562170	562178	●	10	150	140	90	70	–	–	TX40 / SW 13	50
DuoXpand 10 x 160 FUS	562171	–	●	10	170	160	110	90	20	–	TX40 / SW 13	50
DuoXpand 10 x 180 FUS	562172	–	●	10	190	180	130	110	40	20	TX40 / SW 13	50
DuoXpand 10 x 200 FUS	562173	–	●	10	210	200	150	130	60	40	TX40 / SW 13	50
DuoXpand 10 x 230 FUS	562174	–	●	10	240	230	180	160	90	70	TX40 / SW 13	50

Loads

Frame fixing DuoXpand

Permissible loads[1)2)3)] of a single anchor as part of a multiple fixing of non-structural systems.
For the design the complete current assessment ETA-21/0324 has to be considered.

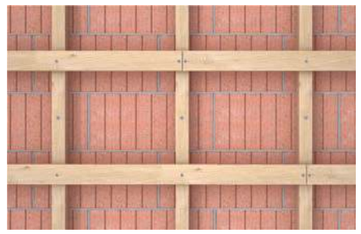
Type			DuoXpand 8		DuoXpand 10			
Anchor diameter	d	[mm]						
Anchorage in concrete ≥ C16/20[4)]								
Anchorage depth	h_{nom} ≥	[mm]	50	70	50	70	–	–
Permissible tensile load N_{perm}		[kN]	1.39	1.59	1.59	1.79	–	–
Permissible shear load V_{perm}	zinc coated screws (gvz)	[kN]	4.23	4.23	5.98	5.98	–	–
	stainless steel screw (R)	[kN]	3.93	3.93	5.98	5.98	–	–
Minimum member thickness	h_{min}	[mm]	80	100	80	100	–	–
Characteristic edge distance	$c_{cr,N}$	[mm]	50	50	50	50	–	–
Characteristic spacing	a resp. $s_{cr,N}$	[mm]	65	70	70	80	–	–
Minimum spacing	s_{min}	[mm]	50	50	50	50	–	–
with an edge distance	c ≥	[mm]	100	100	100	100	–	–
Minimum edge distance	c_{min}	[mm]	50	50	50	50	–	–
with a spacing	s ≥	[mm]	100	100	100	100	–	–
Anchorage in masonry[5)6)]								
Anchorage depth	h_{nom}	[mm]	50	70	50	70	140	160
Permisible load F_{perm} in solid brick Mz,	≥ NF; ≥ 10 [N/mm²] / ρ ≥ 1.8 [kg/dm³]	[kN]	0.43	0.43	0.26	0.26	–	–
e.g. Ziegelwerk Nordhausen	≥ NF; ≥ 20 [N/mm²] / ρ ≥ 1.8 [kg/dm³]	[kN]	0.86	1.00	0.57	0.57	–	–
Permissible load F_{perm} in solid sand-lime brick KS,	≥ NF; ≥ 10 [N/mm²] / ρ ≥ 2.0 [kg/dm³]	[kN]	0.43	0.57	0.57	0.57	–	–
e.g. Wemding	≥ NF; ≥ 20 [N/mm²] / ρ ≥ 2.0 [kg/dm³]	[kN]	1.00	1.14	1.14	1.14	–	–
Permissible load[7)] F_{perm} in lightweight concrete	≥ 2 DF; ≥ 2 [N/mm²] / ρ ≥ 1.4 [kg/dm³]	[kN]	0.11	0.17	0.09	0.17	–	–
block Vbl, e.g. KLB	≥ 2 DF; ≥ 4 [N/mm²] / ρ ≥ 1.4 [kg/dm³]	[kN]	0.21	0.34	0.17	0.34	–	–
Permissible load[7)] F_{perm} in vertically perforated	3 DF; ≥ 10 [N/mm²] / ρ ≥ 0.9 [kg/dm³]	[kN]	0.21	0.34	0.21	0.34	–	–
brick HLz, e.g. Schlagmann	3 DF; ≥ 12 [N/mm²] / ρ ≥ 0.9 [kg/dm³]	[kN]	0.26	0.43	0.26	0.43	–	–
Permissible load F_{perm} in perforated sand-lime	3 DF; ≥ 8 [N/mm²] / ρ ≥ 1.4 [kg/dm³]	[kN]	0.26	0.21	0.17	0.26	–	–
brick KSL, e.g. Wemding	3 DF; ≥ 16 [N/mm²] / ρ ≥ 1.4 [kg/dm³]	[kN]	0.43	0.43	0.34	0.57	–	–
Permissible load[7)] F_{perm} in hollow lightweight	16 DF; ≥ 2 [N/mm²] / ρ ≥ 0.7 [kg/dm³]	[kN]	0.14	0.14	0.21	0.21	–	–
concrete blocks Hbl, e.g Knobel, DE	16 DF; ≥ 4 [N/mm²] / ρ ≥ 0.7 [kg/dm³]	[kN]	0.26	0.26	0.43	0.43	–	–
Permissible load[7)] F_{perm} in hollow lightweight	≥ 2 [N/mm²] / ρ ≥ 1.0 [kg/dm³]	[kN]	0.09	–	0.14	0.14	–	0.09
concrete blocks Hbl, eg. Sepa Parpaing, FR	≥ 4 [N/mm²] / ρ ≥ 1.0 [kg/dm³]	[kN]	0.21	0.14	0.26	0.26	0.14	0.14
Minimum member thickness	h_{min}	[mm]	115	115	115	115	200	200
Minimum spacing (single anchor)	a_{min}	[mm]	250	250	250	250	250	250
Minimum spacing (anchor group)	s_{min}	[mm]	100	100	100	100	100	100
Minimum edge distance (anchor group)	c_{min}	[mm]	100	100	100	100	100	100
Anchorage in aerated concrete[6)]								
Anchorage depth	h_{nom} ≥	[mm]	70	–	70	–	–	–
Permissible load F_{perm} in aerated concrete,	AAC 2	[kN]	0.11	–	0.14	–	–	–
acc.to EN 771-4:2011+A1:2015	AAC 4	[kN]	0.27	–	0.21	–	–	–
	AAC 6	[kN]	0.54	–	0.32	–	–	–
Permissible load F_{perm} in reinforced aerated	AAC 4; f_{ck} ≥ 4 N/mm²	[kN]	–	–	0.18	–	–	–
concrete, acc. to EN 12602:2016	AAC 6; f_{ck} ≥ 6 N/mm²	[kN]	–	–	0.32	–	–	–
Minimum member thickness	h_{min}	[mm]	100 / 175[8)]	–	100 / 175[8)]	–	–	–
Minimum spacing (single anchor)	a_{min}	[mm]	250	–	250	–	–	–
Minimum spacing (anchor group)	s_{min}	[mm]	100 / 80[8)]	–	100 / 80[8)]	–	–	–
Minimum edge distance (anchor group)	c_{min}	[mm]	100	–	100	–	–	–

1) Valid for zinc coated screws (gvz) and for screws made of stainless steel (R). For exterior use of the zinc coated screws measures against incoming humidity according to assessment have to be taken.
2) The required partial safety factors for material resistance as well as a partial safety factor for load actions γ_L = 1.4 are considered.
As a single anchor counts e.g. an anchor with a minimum spacing a according to the ETA.
3) Valid for temperatures in the substrate up to +50 °C (resp. short term up to +80 °C). For long term temperatures up to +30 °C higher permissible loads may be possible.
4) For concrete specifications in C12/15, see ETA.
5) Stone property data in min. compressive strength [N/mm²] and bulk density [kg/dm³]. Corresponding mean compressive strengths according to EN 771 and other brick variants or brick geometries are listed in the ETA.
6) Load data are valid for tensile load, shear load and oblique load under any angle. For bending moments and invisible or not mortar-filled joints the design specifications of the ETA must be observed.
7) Rotary drilling method.
8) Only valid for groups of anchors in AAC with compression strength ≥ 6 N/mm².

11

Frame fixing SXRL

The versatile with multiple anchorage depth.



Timber substructures

Wall consoles

Applications

- Façade, ceiling and roof substructures made of wood and metal
- Facade substructures under compression load (e.g. distance installation without a wall bracket)
- Windows
- Gates and doors
- Wardrobes
- Kitchen hanging cabinets
- Squared timbers
- Beams
- TV consoles
- Wall covering
- Metal brackets

Advantages

- The long expansion element with multiple anchorage depths of 50, 70 or 90 mm for SXRL 8 and SXRL 10 and 70 or 90 mm for SXRL 14 makes the SXRL a versatile applicable product.
- Through the special geometry of the plug, the loads are evenly distributed in the drill hole.
- When the plug is to be set below the plaster, the longer ribs prevent plug rotation during installation.
- The approval for single-point fixing in cracked concrete makes the SXRL the designated specialist in concrete particularly for tasks such as the installation of awning roofs and outdoor railings compared to steel anchors.
- The SXRL 10 and SXRL 14 are additionally approved for applications that are subject to pressure and may be used for façade structures that are installed without wall bracket with a spacing.
- Complete range available with diameters of 8, 10 and 14 mm and usable lengths up to 290 mm.

Certificates / Features

ETA CE

aBG Z-21.2-2037

For applications subjected to pressure

aBG Z-21.2-2092

Inox Stainless Steel

For use as single anchor in concrete

R 120

Building materials

Approved for:

- Single-point fixing in concrete C20/25 to C50/60, cracked and non-cracked

Approved for use as a multiple fixing for non-load-bearing systems in:

- Vertically perforated brick
- Aerated concrete
- Hollow blocks made from lightweight concrete
- Perforated sand-lime brick
- Thermal insulation blocks
- Solid block made from lightweight and normal weight concrete
- Solid brick
- Solid sand-lime brick
- Concrete ≥ C12/15

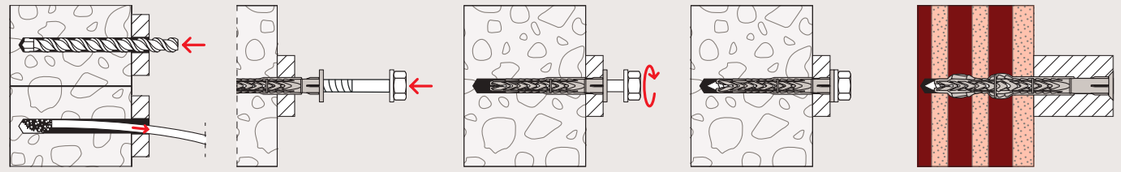
Suitable for:

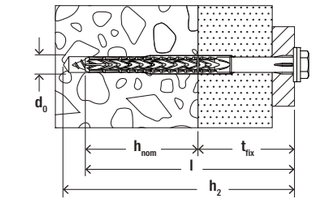
- Natural stone with dense structure
- Solid panel made from gypsum

Functioning

- In hollow building materials, the two expansion zones ensure that the introduction of force is gentle on the substrate. The porous block fillets are not crushed by the second expansion zone and therefore serve to transmit the force
- In aerated concrete and solid building material, the two expansion zones combine to form one long expansion element, thus providing for a uniform and flat distribution of the load into substrate.
- SXRL-T with countersunk head screw is recommended for the installation of timber constructions; in the case of metal constructions, use SXRL-FUS with a wide sleeve rim and a moulded washer on the screw, which also features an integrated hexagon socket.

Installation SXRL





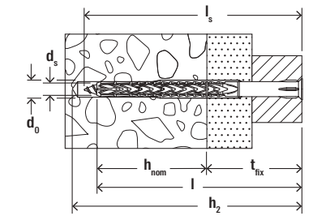
Technical data

Frame fixing SXRL-FUS

SXRL-FUS SXRL-FUS R

Item	Galvanised steel Item no. gvz	Stainless steel Item no. R	Approval ETA	Approval DIBt	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Anchor length l [mm]	Usable length at anchorage depth 50 mm t_{fix} [mm]	Usable length at anchorage depth 70 mm t_{fix} [mm]	Usable length at anchorage depth 90 mm t_{fix} [mm]	Drive	Sales unit [pcs]
SXRL 8 x 60 FUS	**540127**	**540135**	●	–	8	70	60	10	–	–	TX30 / SW 10	50
SXRL 8 x 80 FUS	**540129**	**540136**	●	–	8	90	80	30	10	–	TX30 / SW 10	50
SXRL 8 x 100 FUS	**540130**	**540137**	●	–	8	110	100	50	30	10	TX30 / SW 10	50
SXRL 8 x 120 FUS	**540131**	**–**	●	–	8	130	120	70	50	30	TX30 / SW 10	50
SXRL 8 x 140 FUS	**540133**	**–**	●	–	8	150	140	90	70	50	TX30 / SW 10	50
SXRL 8 x 160 FUS	**540134**	**–**	●	–	8	170	160	110	90	70	TX30 / SW 10	50
SXRL 10 x 60 FUS	**546506**	**546507**	●	●	10	70	60	10	–	–	TX40 / SW 13	50
SXRL 10 x 80 FUS	**522719**	**522730**	●	●	10	90	80	30	10	–	TX40 / SW 13	50
SXRL 10 x 100 FUS	**522720**	**522731**	●	●	10	110	100	50	30	10	TX40 / SW 13	50
SXRL 10 x 120 FUS	**522721**	**522732**	●	●	10	130	120	70	50	30	TX40 / SW 13	50
SXRL 10 x 140 FUS	**522723**	**522733**	●	●	10	150	140	90	70	50	TX40 / SW 13	50
SXRL 10 x 160 FUS	**522724**	**522734**	●	●	10	170	160	110	90	70	TX40 / SW 13	50
SXRL 10 x 180 FUS	**522725**	**522735**	●	●	10	190	180	130	110	90	TX40 / SW 13	50
SXRL 10 x 200 FUS	**522726**	**522736**	●	●	10	210	200	150	130	110	TX40 / SW 13	50
SXRL 10 x 230 FUS	**522727**	**522737**	●	●	10	240	230	180	160	140	TX40 / SW 13	50
SXRL 10 x 260 FUS	**522728**[1]	**522738**[1]	●	●	10	270	260	210	190	170	TX40 / SW 13	50
SXRL 10 x 290 FUS	**522729**[1]	**–**	●	●	10	300	290	240	220	200	TX40 / SW 13	50
SXRL 14 x 80 FUS	**530946**	**–**	●	●	14	95	80	–	10	–	TX50 / SW 17	50
SXRL 14 x 100 FUS	**530947**	**–**	●	●	14	115	100	–	30	10	TX50 / SW 17	50
SXRL 14 x 120 FUS	**530948**	**–**	●	●	14	135	120	–	50	30	TX50 / SW 17	50
SXRL 14 x 140 FUS	**530949**	**–**	●	●	14	155	140	–	70	50	TX50 / SW 17	50
SXRL 14 x 160 FUS	**530950**	**–**	●	●	14	175	160	–	90	70	TX50 / SW 17	50
SXRL 14 x 180 FUS	**530951**	**–**	●	●	14	195	180	–	110	90	TX50 / SW 17	50
SXRL 14 x 200 FUS	**530952**	**–**	●	●	14	215	200	–	130	110	TX50 / SW 17	50
SXRL 14 x 230 FUS	**530953**	**–**	●	●	14	245	230	–	160	140	TX50 / SW 17	50
SXRL 14 x 260 FUS	**530954**	**–**	●	●	14	275	260	–	190	170	TX50 / SW 17	50

[1] Not pre-assembled.



Technical data

Frame fixing SXRL

SXRL

Item	Item no.	Drill diameter d_0 [mm]	Min. drill hole depth for through fixings h_2 [mm]	Anchor length l [mm]	Screw diameter d_s [mm]	Min. screw length l_s [mm]	Usable length at anchorage depth 50 mm t_{fix} [mm]	Usable length at anchorage depth 70 mm t_{fix} [mm]	Usable length at anchorage depth 90 mm t_{fix} [mm]	Sales unit [pcs]
SXRL 8 x 80	**540880**	8	90	80	5.5 – 6.0	85	30	10	–	100
SXRL 8 x 100	**540881**	8	110	100	5.5 – 6.0	105	50	30	10	100
SXRL 8 x 120	**540882**	8	130	120	5.5 – 6.0	125	70	50	30	100

Loads

Frame fixing SXRL 8

Recommended loads[1)2)3)] for a single anchor as part of a multiple fixing of non-structural systems.
The given loads are valid for wood screws acc. DIN 571 with the specified diameter.

Type			SXRL 8		
Screw diameter		**[mm]**	6.0	6.0	6.0
Anchorage depth	h_{nom}	**[mm]**	50	70	90
Minimum edge distance concrete	c_{min}	**[mm]**	60	80	100
Recommended loads in the respective base material F_{rec}[2)]					
Concrete	≥ C20/25	**[kN]**	0.60	1.00	1.00
Solid brick	≥ Mz 12	**[kN]**	0.45	0.60	0.60
Solid sand-lime brick	≥ KS 12	**[kN]**	0.40	0.50	0.50
Vertically perforated brick	≥ HLz 12; ρ ≥ 1.0 [kg/dm³]	**[kN]**	0.15	0.15	0.15
Perforated sand-lime brick	≥ KSL 12	**[kN]**	0.10	0.40	0.40
Aerated concrete	AAC 2	**[kN]**	–	0.10	0.10
Aerated concrete	AAC 4	**[kN]**	–	0.15	0.20

[1)] Required safety factors are considered. Valid for installation and use in dry base material for temperatures in the substrate up to +24 °C (resp. short term up to +40 °C).
[2)] Valid for tensile load, shear load and oblique load under any angle.
[3)] Valid for zinc coated screws (gvz) and for screws made of stainless steel (R).
For exterior use of the zinc coated screws measures against incoming humidity have to be taken.

Loads

Frame fixing SXRL

Permissible loads[1)2)3)] of a single anchor as part of a multiple fixing of non-structural systems.
For the design the complete assessment ETA-07/0121 of 20.12.2022 has to be considered.

Type				SXRL 8			SXRL 10			SXRL 14	
Drill hole diameter	d_0	**[mm]**	8	8	8	10	10	10	14	14
Anchorage depth	$h_{nom} \geq$	**[mm]**	50	70	90	50	70	90	70	90
Anchorage in concrete ≥ C12/15										
Permissible tensile load N_{perm}		**[kN]**	1.59	1.98	1.98	1.98	2.58	2.58	3.37	3.37
Permissible shear load V_{perm}	zinc coated screw (gvz)	**[kN]**	4.23	4.23	4.23	5.98	5.98	5.98	12.40	12.40
	stainless steel screw (R)	**[kN]**	3.93	3.93	3.93	5.98	5.98	5.98	11.63	11.63
Minimum member thickness	h_{min}	**[mm]**	80	100	120	100	100	120	110	130
Characteristic edge distance	$c_{cr,N}$	**[mm]**	85	85	85	140	140	140	140	140
Characteristic spacing	a resp. $s_{cr,N}$	**[mm]**	90	105	105	120	120	120	135	135
Minimum spacing	s_{min}	**[mm]**	85	85	85	70	70	70	85	85
with an edge distance	$c \geq$	**[mm]**	85	85	85	140	140	140	140	140
Minimum edge distance	c_{min}	**[mm]**	85	85	85	70	70	70	85	85
with a spacing	$s \geq$	**[mm]**	85	85	85	175	175	175	175	175
Anchorage in narrow concrete members (h ≥ 40 mm) made of concrete ≥ C12/15										
Permissible tensile load N_{perm}		**[kN]**	–	–	–	0.99	–	–	–	–
Permissible shear load V_{perm}		**[kN]**	–	–	–	5.98	–	–	–	–
Anchorage in masonry[4)]										
Permisible load F_{perm} in solid brick Mz	≥ NF 12/1.8	**[kN]**	0.43	0.57	0.57	0.57[6)]	1.14	1.14	0.71	0.71
	≥ NF 28/1.8	**[kN]**	0.86	1.29	1.29	1.29[6)]	1.43[6)]	1.43[6)]	1.57	1.57
Permissible load F_{perm} in solid sand-lime brick KS	≥ NF 12/1.8	**[kN]**	0.34[6)]	0.26[6)]	0.26[6)]	–	0.71	0.71	0.57	0.57
	≥ NF 28/1.8	**[kN]**	0.57	0.57	0.57	–	1.57	1.57	1.29	1.29
Permissible load F_{perm} in solid sand-lime brick Vbl	≥ 8 DF 2/1.6	**[kN]**	0.17[6)]	0.26[6)]	0.26[6)]	0.26[6)]	0.57[6)]	0.57[6)]	0.43[6)]	0.43[6)]
	≥ 8 DF 8/1.6	**[kN]**	0.71[6)]	0.86[6)]	0.86[6)]	0.86[6)]	2.14[6)]	2.14[6)]	1.00[6)]	1.00[6)]
Permissible load[5)] F_{perm} in vertically perforated brick HLz	≥ 2 DF 12/1.2	**[kN]**	0.17[6)]	0.17[6)]	0.17	–	0.26[6)]	–	0.71[6)7)]	0.71[6)7)]
	≥ 2 DF 28/1.2	**[kN]**	0.34[6)]	0.34[6)]	0.43	–	0.57[6)]	–	–	–
Permissible load F_{perm} in perforated sand-lime brick KSL	≥ 2 DF 12/1.6	**[kN]**	0.26	0.43	0.34[6)]	–	0.71[6)]	0.71	0.57	0.71
Permissible load[5)] F_{perm} in hollow lightweight concrete blocks Hbl	≥ 2/0.8	**[kN]**	0.34[6)]	0.34[6)]	0.34[6)]	0.34[6)]	0.43[6)]	–	0.57[6)]	0.43[6)]
Permissible load[5)] F_{perm} in ceilings made of vertically perforated bricks	≥ 8/0.7	**[kN]**	–	–	–	–	0.57[6)]	–	–	–
Minimum member thickness	h_{min}	**[mm]**	115	115	115	110	110	110	115	115
Minimum spacing (single anchor)	a_{min}	**[mm]**	250	250	250	250	250	250	250	250
Minimum spacing (anchor group)	s_{min}	**[mm]**	100	100	100	100	100	100	100	100
Minimum edge distance (anchor group)	c_{min}	**[mm]**	100	100	100	100	100	100	100	100
Anchorage in aerated concrete[4)]										
Permissible load F_{perm}	AAC ≥ 2 N/mm²	**[kN]**	–	0.14	0.21	–	0.18	0.21[8)]	0.32	0.43
in aerated concrete	AAC ≥ 6 N/mm²	**[kN]**	–	0.54	0.71	–	0.89	1.10[8)]	1.43	1.79
Permissible load F_{perm}	AAC ≥ 2 N/mm²	**[kN]**	–	–	–	–	0.18[9)]	0.18[9)]	-	-
in reinforced aerated concrete	AAC ≥ 6 N/mm²	**[kN]**	–	–	–	–	1.07[10)]	1.25[10)]	-	-
Minimum member thickness	h_{min}	**[mm]**	–	175	175	–	100	120	175	175
Minimum spacing (single anchor)	a_{min}	**[mm]**	–	250	250	–	250	250	250	250
Minimum spacing (anchor group)	s_{min}	**[mm]**	–	80/110[11)]	80/110[11)]	–	100/120[11)]	100/120[11)]	80	100
Minimum edge distance (anchor group)	c_{min}	**[mm]**	–	90/110[11)]	90/110[11)]	–	120	120	120	120

1) Valid for zinc coated screws (gvz) and for screws made of stainless steel (R). For exterior use of the zinc coated screws measures against incoming humidity according to ETA have to be taken.
2) The required partial safety factors for material resistance as well as a partial safety factor for load actions γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a minimum spacing a according to annexes of the ETA.
3) Valid for temperatures in the substrate up to +50 °C (resp. short term up to +80 °C). For long term temperatures up to +30 °C higher permissible loads may be possible.
4) Valid for tensile load, shear load and oblique load under any angle. For bending moments and non-visible or non-mortared masonry joints, the design specifications of the ETA must be observed. Masonry properties in min. compressive strength [N/mm²] and density [kg/dm³] e.g. for Mz as 12/1.8. The corresponding average stone compressive strengths according to EN 771 and other masonry variants and geometries can be found in the ETA.
5) Rotary drilling.
6) Only for axial distance s ≥ 250 mm.
7) Valid for HLz ≥ 3 DF 12/1.0.
8) Only for axial distance $s_{1,min} \geq$ 240 mm and $s_{2,min} \geq$ 250 mm.
9) Valid for member thickness $h_{min} \geq$ 175 mm. Minimum spacing and edge distances see ETA.
10) Valid for member thickness $h_{min} \geq$ 240 mm. Minimum spacing and edge distances see ETA.
11) Valid for AAC with compression strength ≥ 6 N/mm².

Loads

Frame fixing SXRL 10

Permissible loads of a single anchor[1)] in normal concrete of strength class C20/25.
For the design the complete current general construction technique permit Z-21.2-2092 has to be considered.

			Cracked concrete					Non-cracked concrete				
	Material/ surface[2)]	Nominal anchorage depth	Minimum member thickness	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads				Minimum member thickness	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
		h_{nom}	h_{min}	N_{perm}[3)]	V_{perm}[3)]	s_{min}[3)]	c_{min}[3)]	h_{min}	N_{perm}[3)]	V_{perm}[3)]	s_{min}[3)]	c_{min}[3)]
Type		**[mm]**	**[mm]**	**[kN]**	**[kN]**	**[mm]**	**[mm]**	**[mm]**	**[kN]**	**[kN]**	**[mm]**	**[mm]**
SXRL 10	gvz	70	100	1.5	3.4	50	50	110	2.6	6.0	80	80
	R	70	100	1.5	3.4	50	50	110	2.6	6.0	80	80

1) Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as well as a partial safety factor for load actions of γ_L = 1.4 are considered. As a single anchor counts e.g. an anchor with a spacing s ≥ 3 x h_{ef} and an edge distance c ≥ 1.5 x hef. Accurate data see approval.
2) Further steel grades, versions and technical data see current general construction technique permit.
3) In the case of combinations of tensile and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete approval and the provisions of the EN 1992-4:2018. The given loads are valid for temperature range II. We recommend using our anchor design software C-FIX.

Hammer drill bit Quattric II S / Quattric II

The expert for the best performance in reinforced concrete.

Drilling in concrete wall

Drilling in floor plate

Applications

To create approval-compliant drill holes in:
- Reinforced concrete
- Concrete
- Solid brick
- Sand-lime brick

Suitable for:
- Natural stone

Advantages

- Robust solid carbide head (up to ø 20 mm) for a long service life.
- Massive main cutting edges in combination with the improved break-up performance of the Power Shoulders enable fast drilling progress.
- Integrated reinforcement chamfers prevent jamming in reinforcement.
- Special spiral geometry combines quick drilling progress and increased service life.
- Centering tip for a simple and accurate spot drilling, prevents running on smooth surfaces.
- Wear mark for easy recognition of the wear limit according to PGM.

Certificates / Features

PGM

SDS Plus

Functioning

- Four-cutter hammer drill bit with SDS Plus shank enables higher durability in reinforced concrete.

Technical data

Hammer drill bit Quattric II S / Quattric II

Quattric II S / Quattric II

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Quattric II 6/50/115 S	549983	6	50	115	Plastic clip	1	1
Quattric II 6/100/165 S	549979	6	100	165	Plastic clip	1	1
Quattric II 6/150/215 S	549981	6	150	215	Plastic clip	1	1
Quattric II 6/200/265 S	549985	6	200	265	Plastic clip	1	1
Quattric II 6/250/315 S	549986	6	250	315	Plastic clip	1	1
Quattric II 6.5/100/165 S	549975	6.5	100	165	Plastic clip	1	1
Quattric II 6.5/150/215 S	549976	6.5	150	215	Plastic clip	1	1
Quattric II 6.5/200/265 S	549977	6.5	200	265	Plastic clip	1	1
Quattric II 6.5/250/315 S	549978	6.5	250	315	Plastic clip	1	1
Quattric II 7/100/165 S	549987	7	100	165	Plastic clip	1	1

Technical data

Hammer drill bit Quattric II S / Quattric II

Quattric II S / Quattric II

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Quattric II 8/50/115 S	549993	8	50	115	Plastic clip	1	1
Quattric II 8/100/165 S	549988	8	100	165	Plastic clip	1	1
Quattric II 8/150/215 S	549990	8	150	215	Plastic clip	1	1
Quattric II 8/200/265 S	549994	8	200	265	Plastic clip	1	1
Quattric II 8/250/315 S	549992	8	250	315	Plastic clip	1	1
Quattric II 8/300/365 S	549995	8	300	365	Plastic clip	1	1
Quattric II 8/400/465 S	549996	8	400	465	Plastic clip	1	1
Quattric II 10/50/115 S	549928	10	50	115	Plastic clip	1	1
Quattric II 10/100/165 S	549922	10	100	165	Plastic clip	1	1
Quattric II 10/150/215 S	549925	10	150	215	Plastic clip	1	1
Quattric II 10/200/265 S	549929	10	200	265	Plastic clip	1	1
Quattric II 10/250/315 S	549927	10	250	315	Plastic clip	1	1
Quattric II 10/300/365 S	544224	10	300	365	Plastic clip	1	1
Quattric II 10/390/455 S	549930	10	390	455	Plastic clip	1	1
Quattric II 10/540/600 S	544222	10	540	600	Plastic clip	1	1
Quattric II 12/110/165 S	549932	12	110	165	Plastic clip	1	1
Quattric II 12/160/215 S	549936	12	160	215	Plastic clip	1	1
Quattric II 12/210/265 S	549934	12	210	265	Plastic clip	1	1
Quattric II 12/260/315 S	549939	12	260	315	Plastic clip	1	1
Quattric II 12/400/455 S	549935	12	400	455	Plastic clip	1	1
Quattric II 12/550/600 S	544213	12	550	600	Plastic clip	1	1
Quattric II 12/950/1000 S	549931	12	950	1,000	Plastic clip	1	1
Quattric II 14/110/165 S	549941	14	110	165	Plastic clip	1	1
Quattric II 14/160/215 S	549944	14	160	215	Plastic clip	1	1
Quattric II 14/210/265 S	549942	14	210	265	Plastic clip	1	1
Quattric II 14/260/315 S	549945	14	260	315	Plastic clip	1	1
Quattric II 14/400/455 S	549943	14	400	455	Plastic clip	1	1
Quattric II 14/550/600 S	544223	14	550	600	Plastic clip	1	1
Quattric II 14/950/1000 S	549940	14	950	1,000	Plastic clip	1	1
Quattric II 15/110/165 S	549946	15	110	165	Plastic clip	1	1
Quattric II 15/160/215 S	549947	15	160	215	Plastic clip	1	1
Quattric II 15/210/265 S	544215	15	210	265	Plastic clip	1	1
Quattric II 16/110/165 S	549950	16	110	165	Plastic clip	1	1
Quattric II 16/160/215 S	549951	16	160	215	Plastic clip	1	1
Quattric II 16/210/265 S	549952	16	210	265	Plastic clip	1	1
Quattric II 16/260/315 S	549953	16	260	315	Plastic clip	1	1
Quattric II 16/400/455 S	549954	16	400	455	Plastic clip	1	1
Quattric II 16/550/600 S	549955	16	550	600	Plastic clip	1	1
Quattric II 16/950/1000 S	549948	16	950	1,000	Plastic clip	1	1

Technical data

Hammer drill bit Quattric II SX-Pack

Quattric II S

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Quattric II 6/50/115 S XP5	549984	6	50	115	X-Pack	5	1
Quattric II 6/100/165 S XP5	544225	6	100	165	X-Pack	5	1
Quattric II 6/100/165 S XP10	549980	6	100	165	X-Pack	10	1
Quattric II 6/150/215 S XP5	549982	6	150	215	X-Pack	5	1
Quattric II 6/150/215 S XP10	544185	6	150	215	X-Pack	10	1
Quattric II 6/200/265 S XP5	552131	6	200	265	X-Pack	5	1

Technical data

Hammer drill bit Quattric II SX-Pack

Quattric II S

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Quattric II 8/100/165 S XP5	**549989**	8	100	165	X-Pack	5	1
Quattric II 8/100/165 S XP10	**544216**	8	100	165	X-Pack	10	1
Quattric II 8/150/21 S XP5	**549991**	8	150	215	X-Pack	5	1
Quattric II 8/150/215 S XP10	**544186**	8	150	215	X-Pack	10	1
Quattric II 8/200/265 S XP5	**552132**	8	200	265	X-Pack	5	1
Quattric II 10/100/165 S XP10	**549923**	10	100	165	X-Pack	10	1
Quattric II 10/100/165 S XP5	**549924**	10	100	165	X-Pack	5	1
Quattric II 10/150/215 S XP5	**549926**	10	150	215	X-Pack	5	1
Quattric II 10/150/215 S XP10	**544187**	10	150	215	X-Pack	10	1
Quattric II 10/200/265 S XP5	**552133**	10	200	265	X-Pack	5	1
Quattric II 12/110/165 S XP5	**549933**	12	110	165	X-Pack	5	1
Quattric II 12/110/165 S XP10	**552129**	12	110	165	X-Pack	10	1
Quattric II 12/160/215 S XP5	**549937**	12	160	215	X-Pack	5	1
Quattric II 12/160/215 S XP10	**544188**	12	160	215	X-Pack	10	1
Quattric II 12/210/265 S XP5	**549938**	12	210	265	X-Pack	5	1
Quattric II 12/210/265 S XP10	**552130**	12	210	265	X-Pack	10	1
Quattric II 14/110/165 S XP5	**544220**	14	110	165	X-Pack	5	1
Quattric II 14/160/215 S XP5	**544221**	14	160	215	X-Pack	5	1
Quattric II 14/160/215 S XP10	**544189**	14	160	215	X-Pack	10	1

Technical data

Hammer drill bit Quattric II S Set

Quattric II S Set

Item	Item no.	Packaging	Contents	Sales unit [pcs]
Quattric II S Set 5-12 mm (7)	**553210**	Assortment box	7 pcs: 5/50/115, 6/50/115, 6/100/165, 8/50/115, 8/100/165, 10/100/165, 12/110/165	1

Technical data

SDS PLUS IV with notch

SDS Plus IV with Notching

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
SDS Plus IV 8/120/400 K	**530685**	8	120	400	Pouch	1	1

Masonry drill bit Pointer U

The specialist for masonry with SDS Plus shank.

Drilling in perforated brick

Applications

- Particularly suitable for drilling into vertically perforated brick without cracking
- Ideal for drilling in material combinations

Advantages

- Robust and diamond sharpened carbide tip ensures precise and fast drilling progress in different materials.
- The shortened SDS Plus shank reduces the impact force on the drill bit and thus avoids fractures in building material webs for best load-bearing capacity in all types of vertically perforated bricks.
- A large-volume drill flute guarantees fast removal of the drill dust.
- Universal use in different materials saves time and costs.
- PGM certification guarantees precise hold of fixings in the drill hole.

Certificates / Features

PGM

SDS Plus Short

Building materials

To create drill holes in:
- Concrete
- Hollow bricks
- Aerated concrete
- Perforated sand-lime bricks
- Tiles
- Wood
- Metal sheets

Ideal for the following anchoring of:
- Frame or ETICS fixings, e.g. SXRL, FIS HK, fischer TherMax as well as VBS-M

Functioning

- Shortened SDS Plus shank reduces the impact force of the machine on the drill bit and prevents damage to the substrate.
- Drilling without impact is recommended.

Versions

- Shortened SDS Plus shank

Technical data

Masonry drill bit Pointer U

Pointer U

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Pointer U 6/200/260	**568179**	6	200	260	Plastic clip	1	1
Pointer U 8/50/110	**568180**	8	50	110	Plastic clip	1	1
Pointer U 8/100/160	**568181**	8	100	160	Plastic clip	1	1
Pointer U 8/150/210	**568182**	8	150	210	Plastic clip	1	1
Pointer U 8/200/260	**568183**	8	200	260	Plastic clip	1	1
Pointer U 8/400/450	**568184**	8	400	450	Plastic clip	1	1
Pointer U 10/100/160	**568185**	10	100	160	Plastic clip	1	1
Pointer U 10/150/210	**568186**	10	150	210	Plastic clip	1	1
Pointer U 10/200/260	**568187**	10	200	260	Plastic clip	1	1
Pointer U 12/100/160	**568188**	12	100	160	Plastic clip	1	1
Pointer U 12/150/210	**568189**	12	150	210	Plastic clip	1	1
Pointer U 12/200/260	**568190**	12	200	260	Plastic clip	1	1
Pointer U 14/200/260	**568191**	14	200	260	Plastic clip	1	1
Pointer U 16/200/260	**568192**	16	200	260	Plastic clip	1	1
Pointer U 16/400/450	**568193**	16	400	450	Plastic clip	1	1

Technical data

Masonry drill bit Pointer U

Pointer U with notch

Item	Item no.	Drill diameter d_0 [mm]	Working length [mm]	Total length l [mm]	Packaging	Contents [pcs]	Sales unit [pcs]
Pointer U 8/120/400 with notch	**530686**	8	120	400	Pouch	1	1

Masonry drill bit Pointer U · Plugs and anchors

11

12
Basics – good to know.

Maintenance groups and applications for mounting pipe installations.

The mounting of pipe installations, distribution systems and devices in various types of buildings, as well as industrial plants and processes are combined under the umbrella term, installation systems.
fischer Installation Systems is a complete range including an aplication oriented overview of the most relevant supplementary products, in particular plugs and anchors.

The following belong to the maintenance groups which install pipes:
- Heating, ventilation and cooling systems
- Plumbing
- Sprinklers - extinguishing systems
- Electrical installations (medium and low voltage)
- Water and waste water treatment
- Energy and water supply

Through these maintenance groups, different pipe installations, which are offered by the Installation Systems product range, are created:
- Heating and cooling pipes
- Steam pipes
- Ventilation ducts and ventilation pipes
- Drinking water and service water pipes
- Waste water and drainage water pipes
- Sprinkler pipes
- Gas and compressed air pipes
- Medical gas supply
- Process pipes for gases and liquids
- Water and waste water treatment
- Energy and water supply

Product solutions with examples.

Installation shaft with FUS channel system
Through the distinctive interlocking of the channels for the channel nuts FCN Clix P or PFCN, the FUS channel system provides a secure grip for handling high shear loads.

Also the first choice for pipe line routes due to the greater stability.

Cantilevers for different load ranges
With centred load (load case 1), the load range of the brackets is between 0.33 kN (33 kg) and 7.5 kN (750 kg).

Lightweight cantilevers in the FLS system: ALK
Medium cantilevers in the FUS system: FCA
Massive cantilevers in the FUS system: FCAM

fischer hollow drill bit.
For drilling with low dust as well as for efficient and approved anchoring.

Product solutions with examples.

Pre-assembled construction elements
The pre-assembled construction elements MW Clix 90° und SF Clix 31 guarantee for a time saving installation.

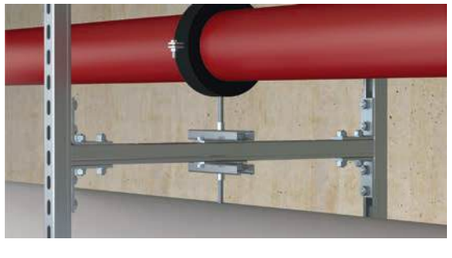
The time saving in comparison to the usual U-profile file system is around 70 %.

Fixed points and sliding elements
Sound insulation requirements for fixed points: FSFP anchor point
For all standard cases: The FFP or FFS fixed point sets with the FFPC fixed point clamp or FFRC refrigeration fixed point clamp ensures controlled movement in one direction: Sliding elements (see instructions on this under Elongation).

Channel connection - which loads are relevant?
In the design of supports or similar components for mounting pipe installations, the load of the connecting element, such channel nut (e. g. FCN Clix P) is decisive for the connection with a angle bracket, for example. The load information is shown for one element but can be doubled when using two elements. (see example on the left side).

Sprinkler loop with VdS and FM approval
Sprinkler systems are created according to the requirements of property insurers. The association of property insurers, VdS and FM global, testing products and give approvals for installation in water extinguishing systems. The FRSMN, FRLH and FRSP sprinkler clamp are approved sprinkler clamp or loops.

See also Mounting sprinkler installations.



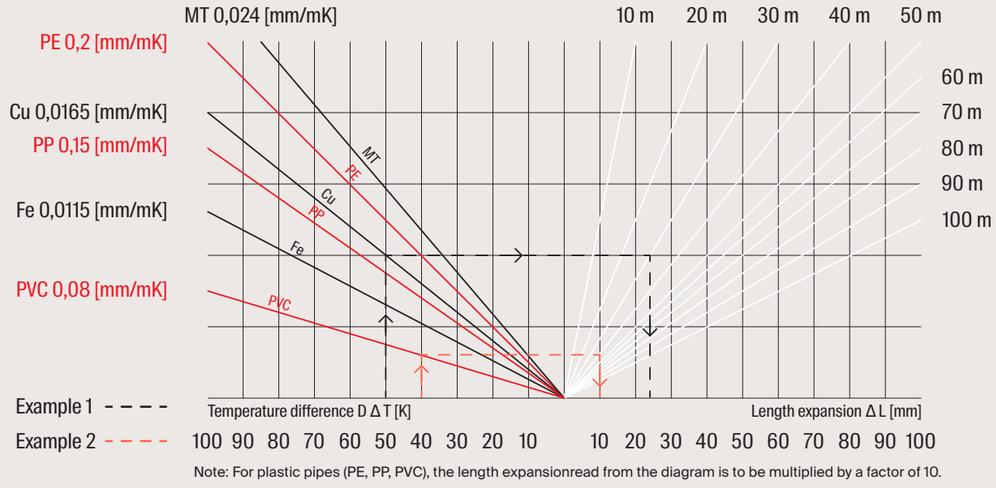
Refrigerant pipe clamps with integrated steel bracket
Different requirements for insulating layer thicknesses and the prevention of condensation are the basic requirements for a refrigerant pipe clamp.

The KFT refrigerant pipe clamp allows neat bonding for insulating layer thicknesses of up to 30 mm, 40 mm or 60 mm.

Elongation

Materials expand with heat. For long components, the change in length is mainly considered. 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 specifically 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 purpose, the pipe length and the expansion coefficient of the pipe material, as well as the expected temperature difference, 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 filled systems.



Note: For plastic pipes (PE, PP, PVC), the length expansionread from the diagram is to be multiplied by a factor of 10.

Copper pipe, Cu – Length of pipe span 30 m
Temperature difference ΔT = 50 K
Length expansion Δ L= 24,75 mm

PVC pipe – Length of pipe span L = 40 m
Temperature difference Δ T = 40 K
Length expansion Δ L = 128 mm (table value x 10)

Length expansion calculation formula
$\Delta L = L \times \Delta T \times \alpha$
[mm] [m] [K] [mm/m K]

Δ L=Change in length
L= Length of the pipe span/section
Δ 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.

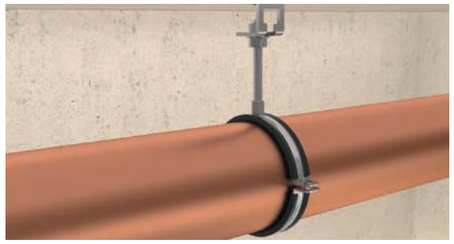
Soundproofing - DIN 4109
The DIN 4109 from 2016-07 still supplemented by A1 (2001-01), in which the permissible sound pressure level in living and sleeping areas for noise from building installations was reduced from 35 to 30 dB(A). The standard is not applicable to the protection against noise from 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 FGRS Universal hinged clamp, FRS pipe clamp and FRS-L Universal pipe clamp.

Corrosion protection



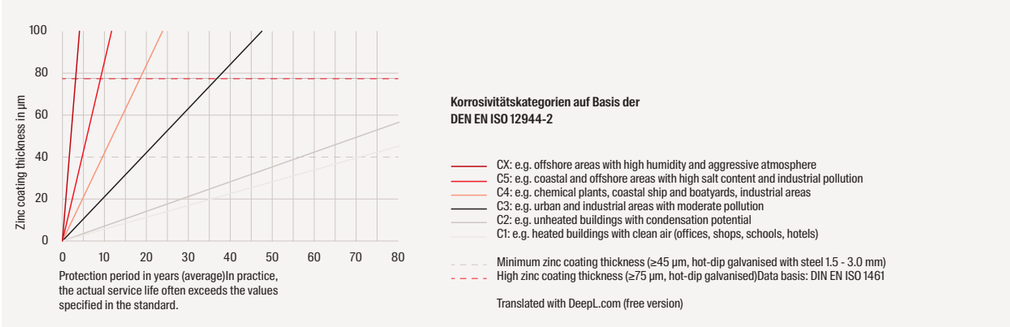
In most cases, pipes and supply lines are installed in dry rooms. Therefore, in addition to corrosion resistant materials, such as plastics or stainless steel and copper, the steel products used for installation systems are galvanised. A zinc coating thickness of 5-8 µm by means of electrolytic process (galvanising) is standard. For mounting channels, Strip galvanised material is mainly used. Strip galvanising is a method in which the material is drawn through a molten zinc bath, thereby achieving a zinc layer thickness of 12-25 µm. Besides a pure zinc coating also zinc-magnesium coating is possible. ZM-coatings have a higher corrosion resitance at the same layer thickness. This method is used when there is no more welding for the subsequent processing. This is the case for mounting channels 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 channels are therefore partly recommended for 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 , or hot-dip-galvanized with minimum 45 µm zinc layer..

If installation systems are installed outdoors or in wet interior rooms, they must be made of either hot-dip galvanised steel, zinc-magnesium coated 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 atmosphere 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 influences 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 galvanised 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	II/moderate	Accessible constructions without nameable content of chlorides or sulfur dioxide, except industrial atmosphere.
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	A4	III/medium	Constructions with moderate chloride and sulfur dioxide exposure and inaccessible constructions.
1.4404	X2CrNiMo17-12-2	316 L	S 31603	A4L	III/medium	Constructions with moderate chloride and sulfur dioxide exposure and inaccessible constructions.
1.4571	X6CrNiMoTi17-12-2	316 Ti	S 31635	A5	III/medium	Constructions with moderate chloride and sulfur dioxide exposure and inaccessible constructions.
1.4529	X1NiCrMo-CuN25-20-7	–	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.

Fixings in the technical building equipment.

Fixing product:

A key element in the installation of media lines is the anchor product, which ultimately forms the connection between the component and the building. A secure hold is ensured by sizing each application or project according to specific parameters. The interaction of the fixing product, such as plugs, anchors and screws, with the building material and the nature and extent of the load to which it is subjected is critical. The type of installation, such as push-through or push-in, also influences the choice of fastener. In addition, the components to be fastened can be very different in terms of the type of fastener used. For example, a mounting thread may be an internal or external thread, or a perforation in a base plate or lug. In addition, there are sometimes more stringent installation requirements. These may include the need to demonstrate fire resistance of pipework or seismic effects. Appropriate anchoring solutions with appropriate qualifications are essential.

Requirements of the building law:

CE marking, based on European Technical Assessments (ETAs) and harmonised European standards, provides the basis for product conformity and marketability. However, the European Construction Products Regulation (CPR) does not cover the fixing of installations in building services in its product areas. Similarly, harmonised standards or guidelines for the preparation of ETAs only exist for some areas. This is also due to the fact that cable installations are not covered by the basic requirements for buildings, in particular the requirement for mechanical strength and stability of the building.
However, the building regulations with the additional technical building regulations still apply. The following categories of requirements can be derived from this:

1. Cable and device fixings without special requirements. In this case the requirements result from the loads of the cables or devices.
2. Equipment and component fixings based on a requirement in a national approval or declaration of performance/CE marking of a product:
   a. Fixing of a fire damper
   b. Fixing of extinguishing systems (e.g. sprinklers)
3. Requirements for the fixing of equipment and cable systems based on other building regulations:
   a. Requirements based on national wiring system regulations (LAR)
   b. Requirements according to the guideline on fire protection requirements for ventilation systems of the federal states (LüAR).

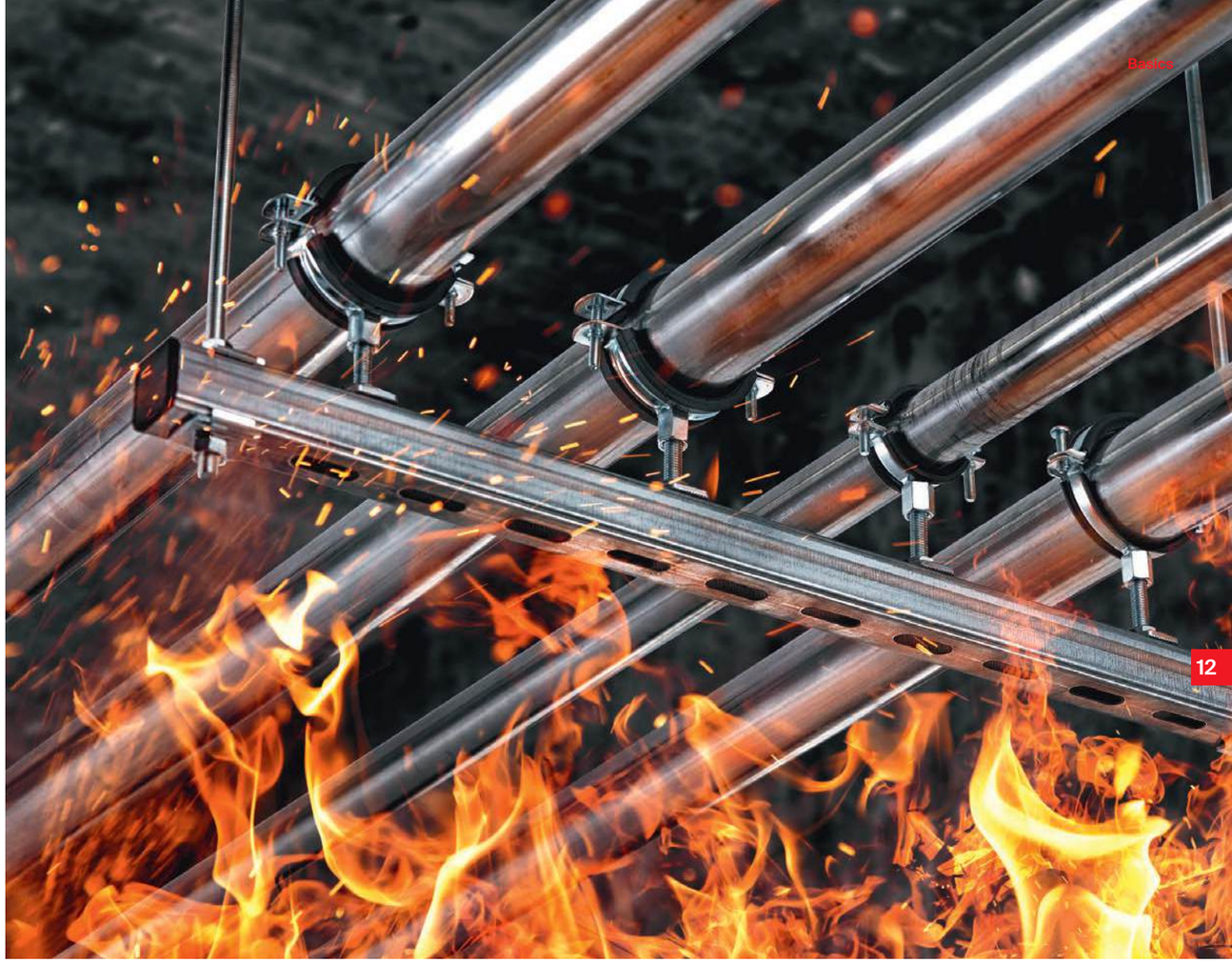
For categories 2 and 3, fire resistance period qualifications or approvals from insurers such as FM Factory Mutual or VdS Schadenverhütung are generally required. With the creation of a European Assessment Document (EAD), the Construction Products Regulation offers the possibility of serving as a basis for ETAs for installation systems in the future.

Fixing for installations

For practical purposes, the way in which cable systems are fixed should be categorised as follows:

1. Fixing directly to the substrate (wall or ceiling)
   a. Single fixing
   b. Row fixing with mounting rails
2. Suspended from the ceiling
   a. Single fixing
   b. Row fixing with rail constructions
3. Raised mounting
   a. Single fixing
   b. Multiple fixing with mounting rail constructions

As the cables generally connect the anchorage points, despite the individual anchorage points, this is a 'multiple anchorage' as failure of one anchorage point will not result in failure of the whole anchorage. Products with such ETAs are also suitable for use in cracked concrete and can therefore be used in the same way as risk resistant anchors.



Installation types

Three types of installation fixing are important:
1. **Pre-assembly:** The plug or anchor is drilled and inserted before the attachment parts (e.g. threaded rods or hanger screw) are fitted
2. **Push-through installation:** Drilling and anchor installation is carried out using the attachment parts such as brackets, mounting rails or saddle flanges
3. **Distance installation:** usually a push-fit installation with an extended threaded connection. An object can be fixed at a distance from the substrate, for example a pipe fixed vertically to the wall. Particular attention must be paid to the installation of vertical loads (e.g. through the pipework), as the buckling moment is decisive when selecting the fixing materials (threaded rods, etc.).

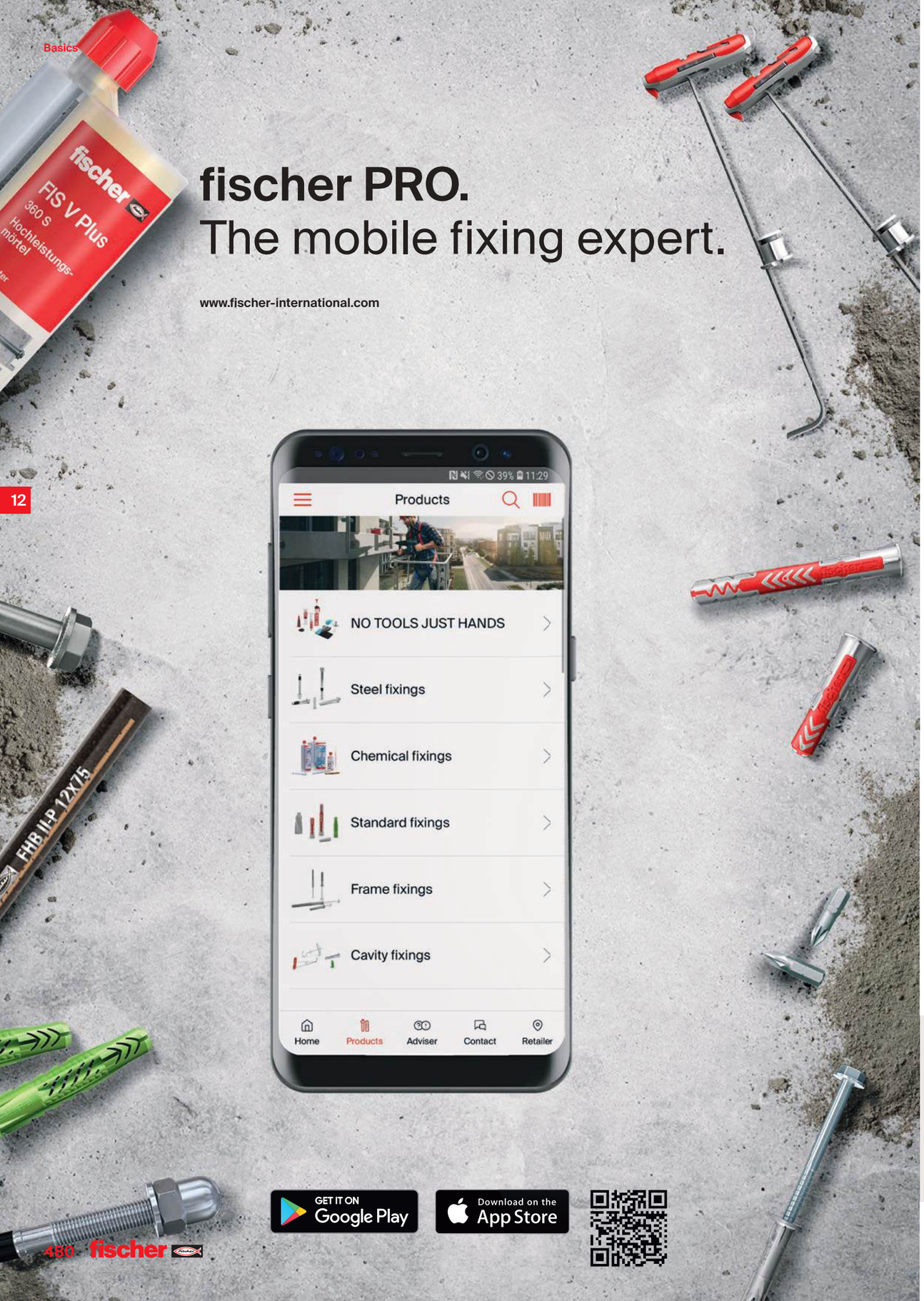
Selection of anchoring in the installation technology

Installation product (example)			Installation type	Anchoring base				Anchoring product (selection)		
Product image	Type	Application		Concrete	Solid brick	Perforated brick	Aerated concrete	Diameter [mm]	Fixing	Product image
	Channel FLS		Push-through or pre-installation [2]	●[1]	●[1]	●[1]	–	6	FBS II 6	
				●[1]	●[1]	●[1]	●[1]	8/10	SXR/ SXRL 8/10	
	Channel FUS			●[1]	●[1]	●[1]	–	10	FBS II 10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
				●[1]	●[1]	●[1]	●[1]	8/10	SXR/ SXRL 8/10	
	Cantilever arm ALK, FCA			●[1]	●[1]	●[1]	–	10	FBS II 10	
				●[1]	–	–	–	10/12	FAZ II Plus 10 /12	
	Saddle flange SF31, SF, PSF			●[1]	●[1]	●[1]	–	10	FBS II 10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
	Variable bracket VB, PVB			●[1]	●[1]	●[1]	–	10	FBS II 10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
	Fixed point saddle FFS-M2			●[1]	●[1]	●[1]	–	10	FBS II 10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
	Slider FASH 2			●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
	Base plate GPL, GPR			●[1]	●[1]	●[1]	–	6/8	FBS II 6/8	
				●[1]	–	–	–	8/10	FAZ II Plus 8/10	
	Bracing elements WS31, PSAE			●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	
				●[1]	–	–	–	10/12	FAZ II Plus 10/12	
	Bracket MW-U, FAF, PFAF			●[1]	●[1]	●[1]	–	6	FBS II 6	
				●[1]	●[1]	●[1]	●[1]	8	SXR/ SXRL 8	
	Slider FASM 2			●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	

Selection of anchoring in the installation technology

Installation product (example)			Installation type	Anchoring base				Anchoring product (selection)		
Product image	Type	Application		Concrete	Solid brick	Perforated brick	Aerated concrete	Diameter [mm]	Fixing	Product image
	Threaded stud /- rod G, GS	External thread as connector for the installation product	Pre-installation [3]	●[1]	–	–	–	8	EA II 8	
				●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	
				●[1]	●[1]	●[1]	–	8/10	Duo-Power ETA	
	Stud screw STST			●[1]	–	–	–	6/8/10/ 12/16	EA Plus 6-16	
				●[1]	●[1]	–	–	12	SX	
	Sliding hanger SB			●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	
				●[1]	●[1]	●[1]	●[1]	8/10	FIS V Plus 8/10	
	Pipe clamp FRS, FRS-L, FRSM, FGRS, ...	Internal thread as connector		●[1]	●[1]	●[1]	●[1]	8	FIS V Plus 8	
				●[1]	●[1]	●[1]	–	8/10	FBS II 8/10	
	Hexagonal connector VM			●[1]	–	–	–	8/10	FNA II 8/10	
	Pendulum hanger PDH/PDH-K			●[1]	–	–	–	8/10	FAZ II 8/10	

[1] Incl. Assessment
[2] Only in perforated sand-lime brick
[3] Push-through installation means: the anchoring is installed through the installation product. Pre-installation means: the anchorage is first installed on the free anchor base.



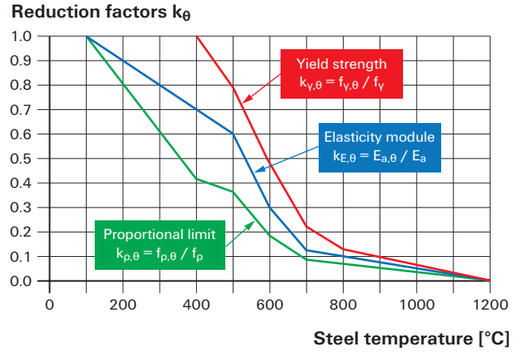
Fire protection classification.

Verifications

- Fireproof installations for individual pipes and pipe routes of R30 – R120 and F30 – F120.
- Proof of compliance with the criteria according MLAR (German standard pipe system directive) for installation in escape and rescue routes.

Fire protection – protection goals:

Firstly, fire protection serves to protect people and is regulated by the building laws in the respective countries (or regional states). Secondly, fire protection serves to protect property. 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 fire protection systems, such as sprinklers, etc.. In these cases approved or recognised components must be used (see the fischer catalogues for further details on this).



Dependency of the yield strength, proportional limit and elasticity module on the temperature (basis: EN1993-1-2:2012-12 Eurocode 3).

Test preparation

Fire inspection before. Fire inspection after.

Fire inspection reports for the installation of pipe clamps and channels:

The fire safety inspection reports described in this brochure meet the requirements for fire protection according to the building regulations of the countries and, especially for Germany, according to the nationwide homonymic German pipe systems directive (LAR), based on the standard pipe systems directive of 2005 (MLAR 2005).
Personal protection is defined in the MLAR Directive through clear rules for escape routes, such as corridors, stairwells, hallways between stairwells and the exit. The key message is to ensure the safety of the escape route by ensuring the functioning of the fireproof sub-ceiling. Therefore a minimum distance of min a ≤ 50 mm according to MLAR is required between installations and underlying suspended fire-proof F30 sub-ceilings (fire resistance of 30 minutes). Based on the fire inspections, load information for a fire resistance of 30 minutes was determined in relation to the maximum permissible deformation of channels or pipe clamps.
The necessity for these considerations arises from the properties of steel, which is subjected to a temperature of > 800 °C accor ding to the standard temperature curve (ISO curve).
Additionally, the same information is documented in inspection reports for a fire resistance rating of R30, R60, R90 and R120 according to EN1363-1 and DIN4102-2 (see load tables).

Fire inspection reports for installation systems - pipe clamps, sliding elements, channel and cantilever arm:

Following “supplementary sheets to inspection reports” from MFPA Leipzig are available:

- PUWF (Document no. GS 6.1/23-006-2)
- FRS (Document no. GS 3.2/14-175-2)
- FUS / FCA (Document no. GS3.2/14-175-4)
- FRS-L Universal (Document no. GS 3.2/15-141-3)
- FLS / ALK (Document no. GS 3.2/15-141-4)
- FASM2 / FASH2 (Document no. GS 6.1/22-066-2)

Additional available “fire inspection reports” from MPA NRW, similar to the above criteria are:

- SB sliding hanger (F120) inspection report no.
- PDH-K pendulum hanger (F120) inspection report no.

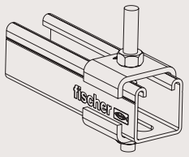
Certificates

F 30 MLAR | F 120 | R 30 MLAR | R 120

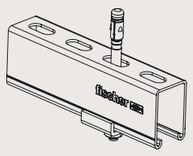
Product overview with proof in inspection reports and advisory opinions.

Product	Picture	Document no.	MLAR	R30 - R120	F30 - F120
FLS 37		MFPA Leipzig – GS 3.2/15-141-4	●	●	–
FUS 41		MFPA Leipzig – GS 3.2/14-175-4	●	●	–
FUS 62		MFPA Leipzig – GS 3.2/14-175-4	●	●	–
ALK 37		MFPA Leipzig – GS 3.2/15-141-4	●	●	–
FCA 41		MFPA Leipzig – GS 3.2/14-175-4	●	●	–
FCA 62		MFPA Leipzig – GS 3.2/14-175-4	●	●	–
PUWF		GS 6.1/23-006-2	●	●	–
FRS-L Universal		MFPA Leipzig – GS 3.2/15-141-3	●	●	–

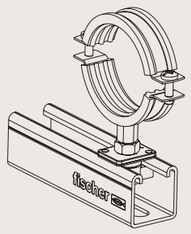
Product	Picture	Document no.	MLAR	R30 - R120	F30 - F120
FRS		MFPA Leipzig – GS 3.2/14-175-2	●	●	–
SB		MPA-NRW – 210005109-7			●
FASM 2 M10-12		MFPA Leipzig GS 6.1/22-066-2	●	●	–
FASH 2 M12-16		MFPA Leipzig GS 6.1/22-066-2	●	●	–
PDH-K		MPA-NRW – 210005109-6	●	–	●



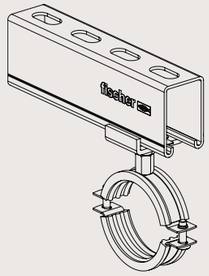
fischer channel washer HK 41 (≥ 10,5mm) or HK 31 (≥ 8,5mm)



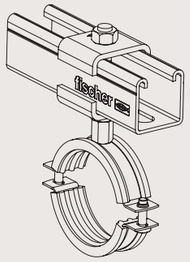
Connection ceiling fischer anchor and fischer channel washer HK 41 (≥ 10,5mm) orHK 31 (≥ 8,5mm)



fischer FCN Clix M or FSM Clix M (M8 und M10)



Combination with FCN Clix P or FSM Clix P (M8 oder M10) and HK



fischer channel washer HK 41 (≥ 10,5mm) or HK 31 (≥ 8,5mm)

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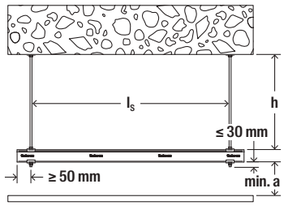
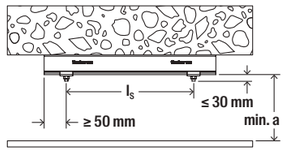
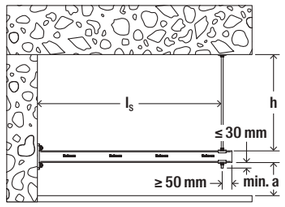
Load tables based on the advisory opinions.



Picture 1



Picture 2



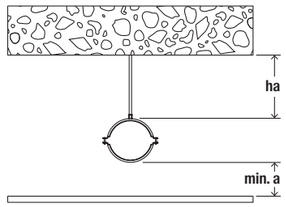
Picture 3

FLS-Channel / ALK-Cantilever arm

Load table based on the Adivisory Opinion No. GS 3.2/15-141-4
The following figures are valid for FLS channels and ALK cantilever arms, galvanised, hdg and stainless steel.

FLS/ALK 37/1,2 (Picture 1-3)		MLAR loads		Max. Loads				
Threaded rods ≥ 4.8		strain	F-resistance Min.	Max. strain	Fire resistance time [minute]			
Load case	ls [mm]	min a [mm]	30 [kN]	min a [mm]	30 [kN]	60 [kN]	90 [kN]	120 [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 = 500 mm, s. picture 1 (Expansion length of threaded rods in case of fire ~ 10 mm/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)



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 pipe clamps, galvanised, hdg and stainless steel.

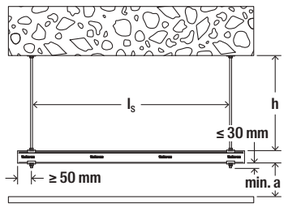
FRS M8/M10		MLAR		Maximale Lasten				
Threaded rods ≥ 4.8		strain	F-resist-ance	Max. strain	Fire resistance time [minute]			
Clamping range [mm]	ha [mm]	min a [mm]	30 [kN]	min a [mm]	30 [kN]	60 [kN]	90 [kN]	120 [kN]
12–67	≤ 250	≤ 50	0,56	51	0,56	0,29	0,20	0,15
	≤ 500	≤ 50	0,56	54	0,56	0,29	0,20	0,15
	≤ 750	≤ 50	0,56	57	0,56	0,29	0,20	0,15
	≤ 1000	≤ 50	0,55	60	0,56	0,29	0,20	0,15
72–92	≤ 250	≤ 50	0,65	50	0,79	0,49	0,36	0,29
	≤ 500	≤ 50	0,62	53	0,79	0,49	0,36	0,29
	≤ 750	≤ 50	0,59	56	0,79	0,49	0,36	0,29
	≤ 1000	≤ 50	0,57	59	0,79	0,49	0,36	0,29
108–116	≤ 250	≤ 50	0,48	61	0,63	0,39	0,29	0,23
	≤ 500	≤ 50	0,43	64	0,63	0,39	0,29	0,23
	≤ 750	≤ 50	0,39	66	0,63	0,39	0,29	0,23
	≤ 1000	≤ 50	0,35	69	0,63	0,39	0,29	0,23
121–168	≤ 250	≤ 50	0,96	61	1,00	0,51	0,34	0,25
	≤ 500	≤ 50	0,89	63	1,00	0,51	0,34	0,25
	≤ 750	≤ 50	0,82	66	1,00	0,51	0,34	0,25
	≤ 1000	≤ 50	0,85	69	1,00	0,51	0,34	0,25

Pipe clamp FRS-L Universal

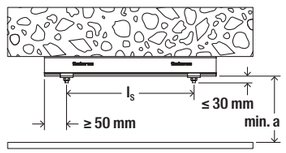
Load table based on the Adivisory Opinion No. GS 3.2/18-120-2
The following figures are valid for all FRS-L Universal pipe clamps, galvanised, hdg and stainless steel

FRS-L Universal M8/M10		MLAR -Loads		Max. Loads				
Threadeed rods ≥ 4.8		strain	F-resistance	Max. strain	Fire resistance time [minute]			
Clamping range [mm]	h_a [mm]	min a [mm]	30 [kN]	min a [mm]	30 [kN]	60 [kN]	90 [kN]	120 [kN]
8–37	≤ 250	≤ 50	0,27	54	0,27	0,14	0,09	0,07
	≤ 500	≤ 50	0,26	57	0,27	0,14	0,09	0,07
	≤ 750	≤ 50	0,24	60	0,27	0,14	0,09	0,07
	≤ 1000	≤ 50	0,22	62	0,27	0,14	0,09	0,07
38–66	≤ 250	≤ 50	0,17	72	0,29	0,14	0,09	0,06
	≤ 500	≤ 50	0,16	75	0,29	0,14	0,09	0,06
	≤ 750	≤ 50	0,15	78	0,29	0,14	0,09	0,06
	≤ 1000	≤ 50	0,13	80	0,29	0,14	0,09	0,06
67–119	≤ 250	≤ 50	0,53	75	0,53	0,35	0,27	0,22
	≤ 500	≤ 50	0,53	78	0,53	0,35	0,27	0,22
	≤ 750	≤ 50	0,53	81	0,53	0,35	0,27	0,22
	≤ 1000	≤ 50	0,53	83	0,53	0,35	0,27	0,22
120–172	≤ 250	≤ 50	0,40	65	0,42	0,31	0,25	0,22
	≤ 500	≤ 50	0,40	68	0,42	0,31	0,25	0,22
	≤ 750	≤ 50	0,38	72	0,42	0,31	0,25	0,22
	≤ 1000	≤ 50	0,36	75	0,42	0,31	0,25	0,22

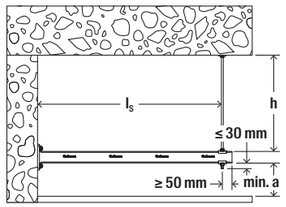
Load tables based on the advisory opinions.



Picture 1



Picture 2



Picture 3

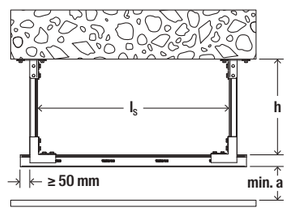
Note: Picture 1 - 3 are valid for FUS/FCA and FLS/ALK load tables

FUS-Channel / FCA-Cantilever arm

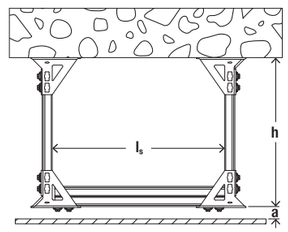
Load table based on the Adivisory Opinion No. GS 3.2/14-175-4
The following figures are valid for FUS channels and FCA cantilever arms, galvanised, hdg and stainless steel.

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	ls [mm]	min a [1] [mm]	30 [kN]	min a [2] [mm]	30 [kN]	60 [kN]	90 [kN]	120 [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 Min.	Max. strain	Fire resistance time [minute]			
Load case	ls [mm]	min a [1] [mm]	30 [kN]	min a [2] [mm]	30 [kN]	60 [kN]	90 [kN]	120 [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	ls [mm]	min a [1] [mm]	30 [kN]	min a [2] [mm]	30 [kN]	60 [kN]	90 [kN]	120 [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
	≤ 1000	≤ 50	0,62	649	1,92	1,34	1,08	0,92

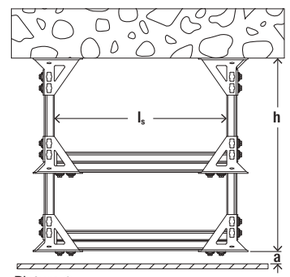
[1] Valid for a suspension height ha [3] 500 mm
[2] Based on suspension height ha = 250mm, Expansion length of threaded rods in case of fire ~ 10mm/m
[3] Given load values apply for multiple loads as summated point loads symmetrical allocated
[4] This values are valid for FCA 62/2,5 with additional support by threaded rod



Picture 4



Picture 5

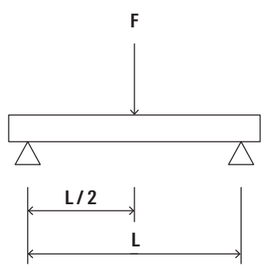


Picture 6

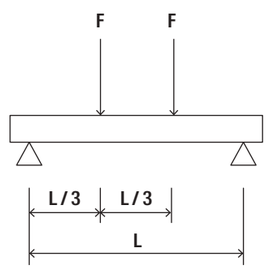
PUWF

Load table PUWF - Frame construction with loads for fire protection application
These loads apply with the same height and position/distribution of the mechanical load(s) and with the same bracing height h to smaller widths than the investigated clear width l_s,
with the same total height of the mechanical load and the same static system, to a higher number of uniformly distributed concentrated loads than tested,
with the same height of each individual mechanical load and the same static system, to less than the tested number of individual loads.

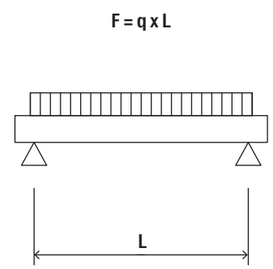
Without intermediate level (picture 5)		MLAR		Maximum loads			
FUS 41-2,5 / FUS 41D-2,5/ PUWF/ PFCN 41	Distance	Deformation	F-duration Min.	Fire resistance duration in minutes			
Load type	ls* [mm]	min a [1] [mm]	30 [kN]	30 [kN]	60 [kN]	90 [kN]	120 [kN]
Individual load	1250	≤50	0,592	2,262	1,415	1,133	0,992
With intermediate level (picture 6)		**MLAR**		**Maximum loads**			
FUS 41-2,5 / FUS 41D-2,5/ PUWF/ PFCN 41	**Distance**	**Deformation**	**F-duration Min.**	**Fire resistance duration in minutes**			
Load type	**ls* [mm]**	**min a [1] [mm]**	**30 [kN]**	**30 [kN]**	**60 [kN]**	**90 [kN]**	**120 [kN]**
Individual load per level	1250	≤50	0,478	1,311	0,805	0,637	0,553
Individual load total			0,956	2,621	1,611	1,274	1,106



Point load
Spot load, e.g. a pipeclamp on the channel.



Uniform load
Uniform distribution of load on the channels, e.g. bend-proof **ventilation duct.**



Multiple load
More than one load point on the channel, e.g. several pipe clamps.

Fixing of sprinkler systems.

Sprinkler systems are designed and installed to different standards. For example, to the German VdS standard (VdS CEA 4001), to the American FM standard 1951 (Factory Mutual Insurance Company, FM Global), to the UL (Underwriters Laboratories, UL) based on the NFPA 13 standard (National Fire Protection Association, NFPA) or to the European standard EN 12845.
The European guideline CEA 4001 was introduced in 1995 by the insurance industry in collaboration with the manufacturers' association and in Germany in 2003 by "VdS Schadensverhütung GmbH" as VdS CEA 4001.
EN 12845 was created on the basis of the CEA 4001 of 1995 and the VdS CEA 4001 of 2003, so that the resulting standard is virtually the same. The EN 12845 is supplemented by the EN 12259 series of standards for the most important components but does not cover the further requirements of fixing products.

The American standards correspond with each other and with the European standards and guidelines regarding the fixing of pipework. The differences are in the detail and must be noted in the respective use.

Certification symbol

FM APPROVED VdS UL

VdS CEA 4001 compliance symbol in concrete ceilings:

Load values. fixing distances and connection sizes for pipe loops and pipe clamps for the most common guidelines

	FM1951				NFPA13				VdS CEA 4001			
Pipe sizes	Test load	Max. distance	Min. rod size		Test load calculated	Max. distance	Min. rod size		Loading capacity	Max.	Min. Thread size	
DN	distance	Min. rod size	[metric]	[inch]	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[metric]	[inch]
15	–	–	–	–	1.4	3.60	9.5	3/8	2.0	4.00	M8	–
20	1.512	3.6	M10	3/8	1.5	3.60	9.5	3/8	2.0	4.00	M8	–
25	1.824	3.6	M10	3/8	1.7	3.66	9.5	3/8	2.0	4.00	M8	–
32	1.913	3.6	M10	3/8	1.9	3.66	9.5	3/8	2.0	4.00	M8	–
40	2.313	4.6	M10	3/8	2.4	4.57	9.5	3/8	2.0	4.00	M8	–
50	2.825	4.6	M10	3/8	2.9	4.57	9.5	3/8	3.5	4.00	M10	–
65	4.181	4.6	M10	3/8	3.8	4.57	9.5	3/8	3.5	6.00	M10	–
80	4.715	4.6	M10	3/8	4.8	4.57	9.5	3/8	3.5	6.00	M10	–
90	5.583	4.6	M10	3/8	5.7	4.57	9.5	3/8	3.5	6.00	M10	–
100	6.561	4.6	M10	3/8	6.7	4.57	9.5	3/8	5.0	6.00	M10	–
125	8.896	4.6	M12	1/2	9.0	4.57	12.7	1/2	5.0	6.00	M12	–
150	11.632	4.6	M12	1/2	11.8	4.57	12.7	1/2	8.5	6.00	M12	–
200	16.903	4.6	M12	1/2	18.2	4.57	12.7	1/2	8.5	6.00	M16	–
250	26.044	4.6	M16	5/8	26.7	4.60	15.9	5/8	–	6.00	–	–
300	35.141	4.6	M16	5/8	36.0	4.60	15.9	5/8	–	6.00	–	–
350	–	–	–	–	42.9	4.60	–	–	–	6.00	–	–
400	–	–	–	–	55.7	4.60	–	–	–	6.00	–	–
450	–	–	–	–	70.1	4.60	–	–	–	6.00	–	–
500	–	–	–	–	84.4	4.60	–	–	–	6.00	–	–

Mounting gas pipe.

A specification for the usable anchors emerged from the DVGW-TRGI revision in 2008. This is regulated in TRGI 2008 in Chapter II under item 5.3 "Preparation of pipe installations". In the TRGI from 2008, plastic anchors are now explicitly allowed under certain conditions.

The basis in the previous TRGI was the determination that gas pipes need to be mounted in the way that there are no free pipe cross-sections in the event of fire. In the new version, this was amended in that, in the event of fire, there may be no free pipe cross-sections up to a temperature of 650 °C. For pipe connections, this means that the axial restraint was also specified, and a brazed pipe joint, for example, is not considered as an axial restraint. Thus, standard commercially available plastic anchors with non-combustible pipe supports may be used for mounting metal inner pipes with an axial restraint of >650 °C. It should be noted that attachments are made to components with sufficient strength according to TRGI 2008. In addition, the mounting distances are governed in TRGI 2008, and are mandatory.

According to DVGW-TRGI 2008, plastic pipes for indoor pipes with an operating pressure up to 100 mbar are also allowed for the first time. For laying plastic inner pipes, in comparison to metal and non-combustible pipe installations, plastic pipes for gas installations are, without exception, subject to the system engagement of the manufacturer.

The fixing materials for open gas pipes can also be made of plastic if the static requirements are met. The requirement for using plastic pipes in gas installations is the installation of a type K gas flow monitor in conjunction with an additional thermally activated shut-off device (TAE), as the destruction of the openly laid plastic gas pipes in the event of fire must be assumed.

Integration of rules regarding building classes according to the German model building regulations (MBO) was also implemented in DVGW TRGI 2008. An alignment of the fire protection requirements, which are specified in the German standard pipe systems directive (MLAR 2005) for the installation of pipes in buildings was, therefore, only logical. The limit for increased demands on the gas installation according to TRGI 2008 are > 2 utilisation units (building class 3) for buildings and for a floor level upper edge of more than 7m of the top floor (building class 4).

If any of these conditions exists, or if any of them are exceeded, it is not possible to lay plastic pipes in escape routes. For metal pipes, the requirements of MLAR 2005 for laying in installation channels or below plaster and plaster base are applicable. For pipe mounting with anchors, MLAR 2005 stipulates that either officially approved anchors are used or, alternatively, that the provisions of DIN4102-T.4, section 8.5.7.5 (or DIN EN 1366-1, section 13.6) are observed. The same rule also applies to the installation of pipes through officially approved partitions in walls and ceilings, as the mechanical destruction of the partitions by pipes in the event of fire must be prevented.

When installing gas pipes, we therefore recommend the use of approved metal anchors, since, through the general official approval and the European technical approval, the certificate of suitability for the anchor is provided, also for in the event of fire. This gives the installer the necessary safety, also at the limits.

Seismic and dynamic.

The seismic and dynamic requirements for non-structural installations, such as pipe installations, are often underestimated in comparison to those of structural installations. But even here, the rule is that the weakest link in the chain can lead to failure or to damage.

Since basically every building in which such requirements, or additional requirements included by property insurers, such as FM, are different, it is also not possible to specify standard details. In addition, the solutions to be developed should also include the links to the components.

For this reason, we recommend everyone to use the support of our technical staff, in order to develop a suitable and project-specific solution.

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TherMax and TherMax II.
Thermal separation with secure hold.

Dimension and weights of pipes, ventilation ducts and ventilation pipes.

Boiler pipe acc. to DIN 2448 / DIN EN 10220						
DN	Size	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight waterfilled [kg/m]	Pipe weight waterfilled + isulated [1] [kg/m]	Support widths [m]
8	1/4"	13.5	0.5	0.6	1.4	2.00
10	3/8"	17.2	0.7	0.8	1.9	2.25
15	1/2"	21.3	1.0	1.2	2.2	2.75
		25.0	1.1	1.5	2.8	2.75
20	3/4"	26.9	1.4	1.8	3.1	3.00
		30.0	1.8	2.3	4.0	3.00
		31.8	1.9	2.4	4.2	3.00
25	1"	33.7	2.0	2.6	4.7	3.50
		38.0	2.3	3.1	5.2	3.50
32	11/4"	42.4	2.6	3.7	5.7	3.75
		44.5	2.7	3.9	6.9	3.75
40	11/2"	48.3	3.0	4.4	7.4	4.25
		51.0	3.1	4.8	7.7	4.40
		57.0	3.9	6.0	10.0	4.60
50	2"	60.3	4.1	6.5	10.5	4.75
		63.5	4.4	7.0	11.0	4.75
		70.0	4.8	8.1	13.4	4.75
65	2 1/2"	76.1	5.3	9.2	14.8	5.50
		82.5	6.3	10.9	19.2	5.75
80	3"	88.9	6.8	12.2	20.4	6.00
		101.6	8.8	15.8	27.0	6.00
		108.0	9.3	17.3	29.1	6.00
100	4"	114.3	9.9	18.9	30.6	6.00
		127.0	12.2	23.3	36.1	6.00
		133.0	12.8	25.1	37.8	6.00
125	5"	139.7	13.5	27.1	40.3	6.00
		152.4	16.5	32.7	47.1	6.00
		159.0	17.3	34.9	49.2	6.00
		165.1	17.9	37.1	52.0	6.00
150	6"	168.3	18.3	38.2	53.0	6.00
		177.8	21.4	43.6	58.1	6.00
		193.7	25.2	51.5	68.0	6.00
200	8"	219.1	31.2	65.0	83.3	6.00
		244.5	37.2	79.5	98.6	6.00
		267.0	40.8	91.6	112.7	6.00
250	10"	273.0	41.6	94.9	117.7	6.00
300	12"	323.9	55.6	131.0	156.6	6.00

[1] Heat insulation: density 120 kg/m3 + sheet metal jacket: density 7865 kg/m3
[2] Heat insulation: density 120 kg/m3
The corresponding pipe manufacturer´s data are to be considered.

Threaded pipe acc. to DIN 2440 / DIN EN 10255						
DN	Size	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight waterfilled [kg/m]	Pipe weight waterfilled + isulated [1] [kg/m]	Support widths [m]
8	1/4"	13.5	0.7	0.7	1.6	2.00
10	3/8"	17.2	0.9	1.0	2.0	2.25
15	1/2"	21.3	1.2	1.4	2.5	2.75
20	3/4"	26.9	1.6	2.0	3.2	3.00
25	1"	33.7	2.4	3.0	5.1	3.50
32	1 1/4"	42.4	3.1	4.2	6.2	3.75
40	1 1/2"	48.3	3.6	5.0	8.0	4.25
50	2"	60.3	5.1	7.3	11.4	4.75
65	2 1/2"	76.1	6.5	10.2	15.9	5.50
80	3"	88.9	8.5	13.6	21.8	6.00
100	4"	114.3	12.1	20.8	32.5	6.00
125	5"	139.7	16.2	29.5	42.7	6.00
150	6"	165.1	19.2	38.2	53.1	6.00

1) Heat insulation: density 120 kg/m3 + sheet metal jacket: density 7865 kg/m3
The corresponding pipe manufacturer´s data are to be considered.

Copper pipe acc. to DIN EN 1057						
DN	Size	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight waterfilled [kg/m]	Pipe weight waterfilled + isulated [1] [kg/m]	Support widths [m]
8	10x1	10	0.3	0.3	0.4	1.00
10	12x1	12	0.3	0.4	0.5	1.25
12	15x1	15	0.4	0.5	0.8	1.25
15	18x1	18	0.5	0.7	1.0	1.50
20	22x1	22	0.6	0.9	1.3	2.00
25	28x1.5	28	1.1	1.6	2.4	2.25
32	35x1.5	35	1.4	2.2	3.1	2.75
40	42x1.5	42	1.7	2.9	4.4	3.00
50	54x2	54	2.9	4.9	7.3	3.50
50	64x2	64	3.5	6.3	9.8	4.00
65	76.1x2	76.1	4.1	8.2	14.0	4.25
80	88.9x2	88.9	4.9	10.5	16.4	4.75
100	108x2.5	108	7.4	15.75	27.5	5.00

Stainless pipe (Mapress 1.4101)						
DN	Size	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight waterfilled [kg/m]	Pipe weight waterfilled + isulated [1] [kg/m]	Support widths [m]
12	15x1	15	0.3	0.5	0.8	1.50
15	18x1	18	0.4	0.6	1.0	1.50
20	22x1.2	22	0.6	0.9	1.3	2.50
25	28x1.2	28	0.8	1.3	2.4	2.50
32	35x1.5	35	1.2	2.0	3.1	3.50
40	42x1.5	42	1.5	2.7	4.4	3.50
50	54x1.5	54	2.0	4.0	7.3	3.50
65	76.1x2	76.1	3.6	7.6	14.0	5.00
80	88.9x2	88.9	4.2	9.8	16.4	5.00
100	108x2	108	5.1	13.5	27.5	5.00

Metal composite pipe						
DN	Size	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight waterfilled [kg/m]	Pipe weight waterfilled + isulated [1] [kg/m]	Support widths [m]
10	14x2	14	0.1	0.2	0.4	1.0
12	16x2.25	16	0.1	0.2	0.5	1.0
15	20x2.5	20	0.2	0.4	0.7	1.0
20	26x3	26	0.3	0.6	0.9	1.5
25	32x3	32	0.4	0.9	1.2	2.0
32	40x3.5	40	0.6	1.5	2.1	2.0
40	50x4	50	0.9	2.3	3.2	2.5
50	63x4.5	63	1.3	3.6	5.2	2.5

[1] Heat insulation: density 120 kg/m³ + sheet metal jacket: density 7865 kg/m³
The corresponding pipe manufacturer's data are to be considered.

Drain pipe. Cast iron. SML. DIN 19522				
DN	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight water filled [kg/m]	Support widths [m]
40	48	3.1	4.5	[1]
50	58	4.3	6.4	[1]
70	78	5.9	9.9	[1]
80	83	6.1	10.6	[1]
100	110	8.4	17.7	[1]
125	135	11.8	24.5	[1]
150	160	14.1	32.3	[1]
200	210	23.1	54.6	[1]
250	274	33.3	87.7	[1]
300	326	43.2	120.8	[1]
400	429	60.0	193.3	[1]
500	532	82.6	290.1	[1]

Drain pipe. PVC-U. DIN 8062					
DN	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight water filled [kg/m]	Support widths 20° [m]	40° [m]
40	50	0.8	1.3	0.8	0.6
50	63	1.3	2.0	1.1	0.7
65	75	1.8	3.9	1.3	0.8
80	90	2.6	3.9	1.3	0.8
100	110	3.9	8.0	1.6	1.0
125	125	5.0	12.4	1.8	1.1
150	160	8.2	18.0	2.2	1.2

LORO-X steel drain pipe				
DN	Pipe outer-ø [mm]	Pipe weight empty [kg/m]	Pipe weight water filled [kg/m]	Support widths [m]
40	42	1.5	2.7	[1]
50	53	2.2	4.2	[1]
70	73	3.3	7.1	[1]
80	89	4.1	9.9	[1]
100	102	5.8	13.3	[1]
125	133	9.6	22.5	[1]
150	159	11.5	30.1	[1]
200	219	21.5	57.2	[1]
250	273	22.5	78.5	[1]
300	324	25.0	104.4	[1]

Note: The values for the max. support widths are based on the permissible deflection under load of the pipes and the corresponding recommendations from the pipe manufacturer. The permissible loads of the pipe fasteners and mountings are not taken into consideration.
[1] approx. 1,50 m – 2,00 m. According to the manufacturer's data, each pipe length should be supported in at least two places. The corresponding data from the pipe manufacturer are to be taken into consideration.

Drain pipe. GA. DIN 19500					
DN	**Pipe outer-ø** [mm]	**Wall thickness** [mm]	**Pipe weight empty** [kg/m]	**Pipe weight water filled** [kg/m]	**Support widths** [m]
50	60	3.5	5.19	7.39	1)
70	80	3.5	7.02	11.21	1)
100	112	4.0	11.33	19.83	1)
125	137	4.0	13.96	27.03	1)
150	162	5.0	20.59	38.74	1)
200	212	6.0	32.42	63.84	1)

Drain pipe. PE. DIN 19535				
DN	**Pipe outer-ø** [mm]	**Pipe weight empty** [kg/m]	**Pipe weight water filled** [kg/m]	**Support widths** [m]
25	32	0.3	0.8	0.5
32	40	0.3	1.3	0.5
40	50	0.4	2.0	0.8
50	56	0.5	2.5	0.8
57	63	0.6	3.1	0.8
70	75	0.7	4.4	0.8
80	90	1.0	6.4	0.9
100	110	1.4	9.5	1.1
125	125	1.8	12.3	1.3
125	140	2.3	15.4	1.4
150	160	3.0	20.1	1.6
200	200	3.8	31.5	2.0
250	250	6.0	49.2	2.0

Spiral lock seam pipe. round. acc. to DIN EN12237																												
DN	**71**	**80**	**90**	**100**	**112**	**125**	**140**	**150**	**160**	**180**	**200**	**224**	**250**	**280**	**300**	**315**	**355**	**400**	**450**	**500**	**560**	**600**	**630**	**710**	**800**	**900**	**1000**	**1120**	**1250**
Pipe outer-ø [mm]	75	84	94	105	117	130	145	155	165	185	205	229	255	285	307	322	362	407	457	507	567	609	639	719	810	1012	1012	1132	1262
Sheet thickness [mm]	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.2	1.2	1.2
Pipe weight empty [kg/m]	0.8	0.9	1.0	1.7	1.9	2.1	2.4	2.6	2.7	3.1	3.4	3.8	4.2	4.7	5.2	7.1	8.0	9.0	10.2	11.3	12.6	13.5	17.7	20.0	22.5	25.4	34.9	39.1	43.7

Weights of galvanised air ducts in kg/m with insulation (80 kg/m³. 5 cm thickness)

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
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	12.7	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	13.4	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
–	–	–	14.2	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	80.8	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

Weights of galvanised 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
5.9	6.2	6.6	8.3	8.9	9.6	10.4	11.2	12.1	14.9	16.3	17.9	19.6	21.6	23.6	29.3	32.2	35.5	39.9	44.4	48.8	59.9	66.2	73.6	82.8	200
–	6.6	7.0	8.7	9.3	10.0	10.8	11.6	12.5	15.4	16.8	18.3	20.1	22.1	24.0	29.8	32.7	36.0	40.4	44.9	49.3	60.4	66.8	74.2	82.2	224
–	–	7.4	9.2	9.8	10.4	11.2	12.1	13.0	15.9	17.3	18.8	20.6	22.6	24.5	30.4	33.3	36.6	41.0	45.5	49.9	61.1	67.5	74.8	83.4	250
–	–	–	9.7	10.3	11.0	11.7	12.6	13.5	16.5	17.9	19.4	21.2	23.2	25.1	31.0	33.9	37.3	41.7	46.1	50.6	61.8	68.2	75.6	84.1	280
–	–	–	–	10.9	11.6	12.3	13.2	14.1	17.2	18.5	20.1	21.9	23.8	25.8	31.8	34.7	38.0	42.5	46.9	51.3	62.7	69.1	76.4	85.0	315
–	–	–	–	–	12.3	13.0	13.9	14.8	18.0	19.3	20.9	22.7	24.6	26.6	32.7	35.6	38.9	43.4	47.8	52.2	63.7	70.0	77.4	86.0	355
–	–	–	–	–	–	13.8	14.7	15.5	18.8	20.2	21.8	23.6	25.5	27.5	33.7	36.6	39.9	44.4	48.8	53.2	64.8	71.1	78.5	87.1	400
–	–	–	–	–	–	–	15.5	16.4	19.8	21.2	22.8	24.5	26.5	28.5	34.8	37.7	41.0	45.5	49.9	54.3	66.0	72.4	79.7	88.3	450
–	–	–	–	–	–	–	–	17.3	20.8	22.2	23.7	25.5	27.5	29.4	35.9	38.8	42.1	46.6	51.0	55.4	67.2	73.6	81.0	89.5	500
–	–	–	–	–	–	–	–	–	22.0	23.4	24.9	26.7	28.7	30.6	37.3	40.1	43.5	47.9	52.3	56.8	68.7	75.1	82.4	91.0	560
–	–	–	–	–	–	–	–	–	–	24.7	26.3	28.1	30.0	32.0	38.8	41.7	45.0	49.5	53.9	58.3	70.4	76.8	84.1	92.7	630
–	–	–	–	–	–	–	–	–	–	–	27.9	29.6	31.6	33.6	40.6	43.5	46.8	51.2	55.7	60.1	72.4	78.7	86.1	94.7	710
–	–	–	–	–	–	–	–	–	–	–	–	31.4	33.4	35.3	42.6	45.5	48.8	53.2	57.7	62.1	74.6	81.0	88.3	96.9	800
–	–	–	–	–	–	–	–	–	–	–	–	–	35.3	37.3	44.8	47.7	51.0	55.4	59.9	64.3	77.0	83.4	90.8	99.4	900
–	–	–	–	–	–	–	–	–	–	–	–	–	–	39.3	47.0	49.9	53.2	57.7	62.1	66.5	79.5	85.9	93.2	101.8	1000
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	49.7	52.6	55.9	60.3	64.8	69.2	82.4	88.8	96.2	104.7	1120
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	55.4	58.8	63.2	67.6	72.1	85.6	92.0	99.4	107.9	1250
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	62.1	66.5	71.0	75.4	89.3	95.7	103.0	111.6	1400
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	71.0	75.4	79.8	94.2	100.6	107.9	116.5	1600
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	79.8	84.3	99.1	105.5	112.8	121.4	1800
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	88.7	104.0	110.4	117.8	126.3	2000
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	109.9	116.3	123.6	132.2	2240
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	122.7	130.0	138.6	2500
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	137.4	146.0	2800
–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	154.5	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.

Important dimensions, variables and units.

Comparison of material standards			
DIN EN ISO			DIN EN ISO
Description	**Material-No.**		**ASTM**
S250GD+Z	1.0242	EN10027-2	A653
DD11	1.0332	DIN EN 10111	A621CQ
DC01	1.0330	DIN EN 10130	A366
St22	1.0320	DIN 1614-1	n/a
DX51D+Z275NA-C	1.0226+Z	DIN EN 10327	A653/CQ
S235JR	1.0037	DIN EN 10025	A283
S355MC	1.0976	DIN EN 10149	n/a
4.6; 4.8	DIN EN ISO 898-1		F568M

Variables and units					
Size	**Formula symbol** [mm]	**Unit SI** [mm]	**others** [kg/m]	**related** [kg/m]	**Note** [m]
Length	l	m	–	1 m = 10 dm = 100 cm = 1.000 mm 1 mm = 1.000 µm 1 km = 1.000 m	1 inch = 1 Zoll = 25.4 mm
Area	A, S	m^2	a, ha	1 m^2 = 10.000 cm^2 = 1.000.000 m^2 1 a = 100 m^2 1 ha = 100 a = 10.000 m^2	–
Volume	V	m^3	l	1 m^3 = 1.000 dm^3 = 1.000.000 cm^3 1 l = 1 dm^3 = 0.001 m^3 1 ml = 1 cm^3	–
Time	t	s	min, h, d	1 min = 60 s 1 h = 60 min = 3.600 s 1 d = 24 h	–
Frequency	f	Hz	–	1 Hz = 1/s	–
Speed	v	m/s	m/s, km/h	1 m/s = 3.6 km/h	–
Acceleration	a, g	m/s^2	–	g = 9.81 m/s^2	Formula character g only for acceleration due to gravity
Weight	m	kg	g, t	1 kg = 1.000 g 1 t = 1.000 kg	–
Density	ρ	kg/m^3	–	1.000 kg/m^3 = 1 t/m^3 = 1 kg/dm^3	–
Moment of inertia, 2nd degree	J	kg · m^2	–	–	Formerly: Mass moment of inertia
Force	F	N	–	1 N = 1 kg · m/s^2	Formerly: kp (kilopond) 1 kp = 9,80665 kgm/s^2 = 9,81 N
Torque	M	N · m	–	–	–
Bending moment	Mb	N · m	–	–	–
Torsion moment	T	N · m	–	–	–
Mechanical tension	σ, τ	N/m^2	–	–	–
Area-wise moment, 2nd degree	I	m^4	–	–	Formerly: Area moment of inertia
Energy, work	E, W	J	–	1 J = 1 N · m = 1 W · s	Formerly: cal (calorie) 1 cal = 4,1868 Ws = 4,19 J
Power	P	W	–	1 W = 1 J/s = 1 N · m/s	Formerly: hp (horsepower) 1 PS = 75 kpm/s = 75 · 9,81 N/ms = 0,736 kW
Thermodynamic temperature	T	K	–	0 °C = 273 K -273 °C = 0 K	–
Heat quantity	Q	J	(Wh)	1 J = 1 W · s = 1 N · m	–
Specific heat value	H	J/kg	–	–	–
Substance quantity	n	mol	–	1 corresponds to approx 6 · 10^{23}	–
Light intensity	Iv	cd	–	–	–

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Approvals, markings and their importance.

In the following, excerpts of approvals that are currently issued in Europe and their symbols will be given with their corresponding importance. Please check wether your application is safety relevant.

An application is safety relevant when failure of anchorages would cause risk to human life or serious injuries and/or lead to considerable economic consequences. In this case please use anchors with a European Technical (ETA) or with a German Approval.
You may recognise these anchors by:

ETA-05/0069, for cracked concrete

European Technical Approval/Assessment
Issued by a European approval authority (e. g. DIBt) on the basis of the guidelines for European technical approvals (ETAG). ETA (English): 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 harmonisation legal provisions of the union have been complied with.
Products with the CE mark can be freely traded in the European Economic Market.

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.

ICC ESR-2948

ICC = International Code Council, formed from BOCA, ICBO & SBCCI:
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).

VdS-Certificate:
Recognised for the use in local water-based fire extinguisher systems (formerly: Association of Property Insurers, now: VdS Damage Prevention)

Sprinkler Systems:
Meets the requirements according to VdS CEA 4001.

UL Certificate:
Recognised as pipe hangers for use e.g. in local water-based fire extinguisher systems (UL Online Certification Directory, VFXT.EX16429).

Fire-tested product MLAR:
The product was subjected to a fire test. A “Examination report regarding testing according the German Muster-Leitungsanlagenrichtlinie“ (MLAR) is available.

Fire-tested product MLAR:
The product was subjected to a fire test. A “Examination report regarding testing according the German Muster-Leitungsanlagenrichtlinie“ (MLAR) is available.

Fire-tested product DIN EN 1366-1:
The product was subjected to a fire test. A "Examination report" according DIN EN 1366-1 is available.

Fire-tested product DIN 4102-2:
The product was subjected to a fire test. A "Examination report" according DIN 4102-2 is available.

Sound insulation tested according DIN 4109:
The product was subjected to a sound insulation test. A "measurement of the insertion loss" is available in a test report.

Fixing that can be dynamically loaded:
The fixing is suitable and approved for anchoring of “not predominantly static“ (i.e. dynamic) loads.

Tested for flame resistance
according to VDE.

The RAL Gütezeichen (quality mark) for Rohrbefestigung (pipe supports) is awarded by the RAL Gütegemeinschaft Rohrbefestigung e.V. This organization grants specific quality marks:

Rohrbefestigung (RAL-GZ 655):
This mark is given to products that meet stringent technical and quality standards for pipe supports, such as pipe clamps, brackets, and mounting rails.

Catalogue fixing systems.

Products for use in fixing technology.

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

- Product descriptions with advantages/benefits at a glance
- Tips for installation
- Application aids
- Detailed technical data and drawings
- Basics of fastening technology
- All you need to know about professional fixing

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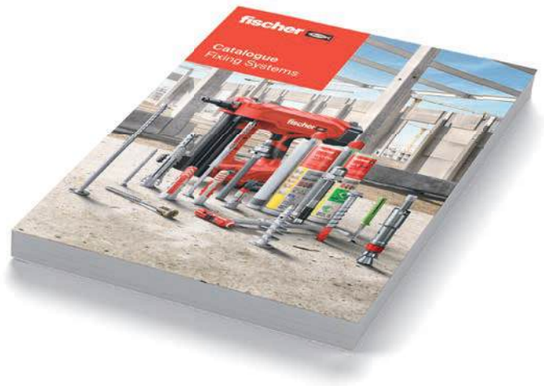

Main catalogue EWI.

All about the fischer range for façades with external thermal insulation composite systems (ETICS) for new build and renovation.

We offer a wide range of fixing solutions for the installation of insulation boards, such as:

- Products for different building materials, materials, thicknesses and fire protection and system requirements.
- System providers and installers of ETICS can find the optimal building the optimum solution in terms of building physics, easy to apply and safe solution within the framework of the European Technical Assessment (ETA).

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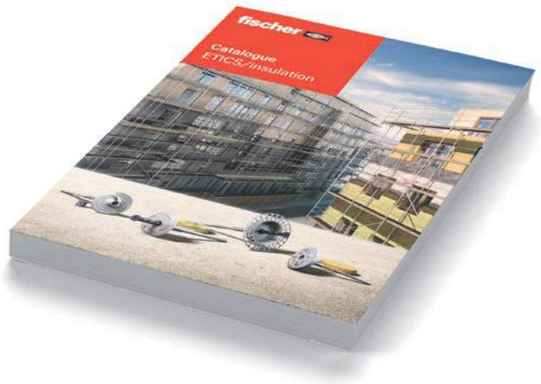

Catalogue Façade Systems.

All facts about the fischer façade range and its applications.

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

- Presentation of Zykon panel anchor, machine technology, drill bits, subframes, general fixing products and accessories with detailed technical data and illustrations.
- Application support.
- Basic knowledge about undercut anchors and subframe systems.
- Available design software

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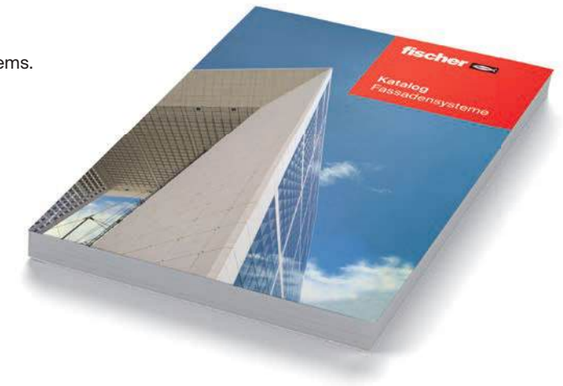

Catalogue FireStop.

Products for use in passive fire protection.

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

- Basics of passive fire protection
- Product and system presentations
- Application aids
- Detailed technical data and drawings

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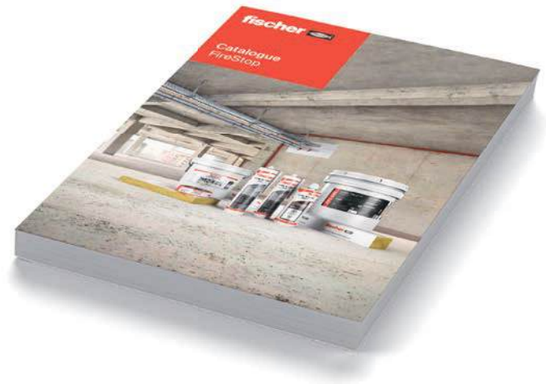

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The information in this catalogue is intended for general guidance only and is given without engagement. Additional information and advice on specific applications is available from our Technical Support Team. For this however, we require a precise description of your particular application.
All the data in this catalogue concerning work with our fixing elements must be adapted to suit local conditions and the type of materials in use.
If no detailed performance specifications are given for certain articles and types, please contact our Technical Service Department for advice.

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