

fischer 

Frame fixings.
The full range for all
applications.



The right choice.



Frame fixing DuoXpand.
Anchor with a smart bite.
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Frame fixing SXRL.
The versatile with multiple
anchorage depth.
Page 10

Frame fixing SXR.
The efficient with short
expansion element.
Page 16

Applications

Secure fixing for façade substructures, interior fittings, window and door installation as well as timber constructions

For fixing façade and roof substructures, heavy wall cabinets, square timber, cable trays, gates and doors, frame fixing anchors made of plastic are the right solution. With the long anchor shaft, they can be fastened directly in the building substrate through the attachment part. The innovative functionalities and the interaction with the screws enable untypical high load-bearing capacities for plastic anchors. Most anchors guarantee an additional plus in safety with the European Technical Assessment. fischer offers the right product for all attachment thicknesses, anchoring depths and building materials.

Overview of applications



Timber façade substructures



Carports



Wood constructions



Metal façade substructures



Electrical installations



TV consoles



Window frames



Kitchen cabinets



Hanging cabinets

Selection guide

Recommendation concrete															
															
Anchor-ø	ø 6	ø 8		SXRL 8			SXR 8	ø 10		SXRL 10			SXR 10	ø 14	
Product	SXR 6	DuoXpand 8						DuoXpand 10						SXRL 14	
Anchorage depth [mm]	50	50	70	50	70	90	50	50	70	50	70	90	50	70	90
Max. usable length [mm]	30	70	50	110	90	70	70	180	160	240	220	200	210	290	270
Concrete (Multiple fixing)	++	+	++	++	++		+	+	++	++	++		+	++	
Concrete (Single fixing)											++				
Thin concrete slabs and weather resistant shells of external wall panels	++	+		++	++		++			++			++		
Pre-stressed hollow concrete core slabs	++	+		++	++		++			++			++		
Approvals ETA/DiBt	-/-	●/-	●/-	●/-	●/-	-/-	●/-	●/-	●/-	●/-	●/●	-/-	●/-	●/●	-/●
++ fischer recommendation per ø ; ++ very good; + good															

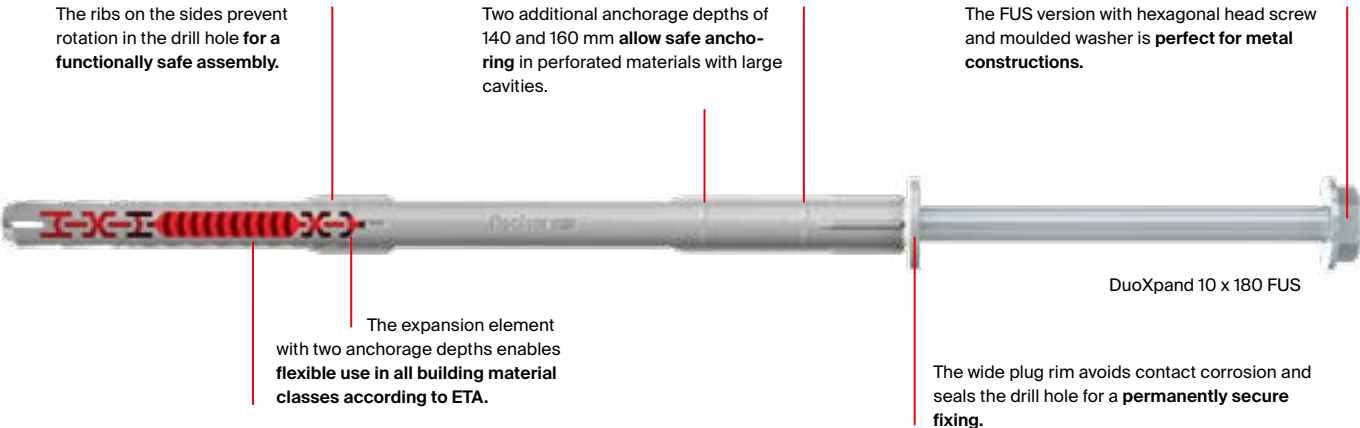
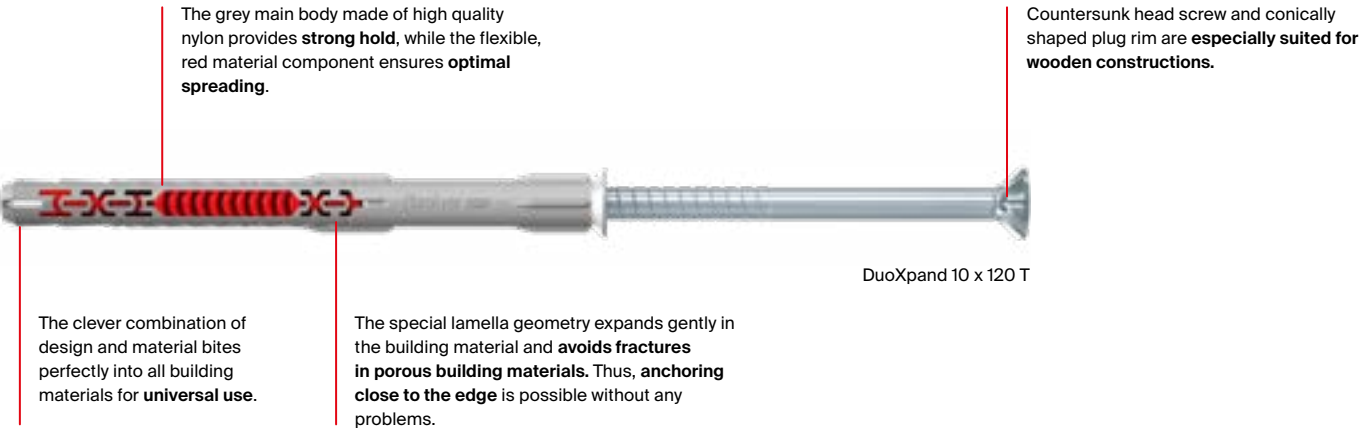
Recommendation solid building materials															
   															
Anchor-ø	ø 6	ø 8		SXRL 8			SXR 8	ø 10		SXRL 10			SXR 10	ø 14	
Product	SXR 6	DuoXpand 8						DuoXpand 10						SXRL 14	
Anchorage depth [mm]	50	50	70	50	70	90	50	50	70	50	70	90	50	70	90
Max. usable length [mm]	30	70	50	110	90	70	70	180	160	240	220	200	210	290	270
Solid brick	++	+	++	+	++		++	+	++	+	++		++	++	
Solid sand-lime brick	++	+	++	+	++		++	+	++	+	++		++	++	
Solid lightweight concrete block	++	+	++	+	++		++	+	++	+	++		++	++	
Aerated concrete			++		+	++			++		++	++		++	++
Approvals ETA/DiBt	-/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/●	●/●
++ fischer recommendation per ø ; ++ very good; + good															

Recommendation perforated building materials															
  															
Anchor-ø	ø 6	ø 8		SXRL 8			SXR 8	ø 10		SXRL 10			SXR 10	ø 14	
Product	SXR 6	DuoXpand 8						DuoXpand 10						SXRL 14	
Anchorage depth [mm]	50	50	70	50	70	90	50	50	70	50	70	90	50	70	90
Max. usable length [mm]	30	70	50	110	90	70	70	180	160	240	220	200	210	290	270
Vertically perforated brick	++	++	++	+	++	+	+	++	++	+	++	+	+	++	++
Perforated sand-lime brick	++	++	++	+	++	+	+	+	++	+	++	+	+	++	++
Hollow lightweight concrete block	++	++	++	+	++	+	+	++	++	+	++	+	+	++	++
Ceilings made of vertically perforated bricks		+	++	+	++	+	+	+	++	+	++	+	+		
Approvals ETA/DiBt	-/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-	-/-	●/-	●/●	●/●
++ fischer recommendation per ø ; ++ very good; + good															



DuoXpand

Anchor with a smart bite.



Two-component injection moulding for thermal connection of hard and soft plastic. Safety screw also made of stainless steel.

Certificates



ETA-21/0324
Multiple use for non-structural applications



ETA-22/0186
Seismic action

Advantages, functioning and installation.

The advantages at a glance

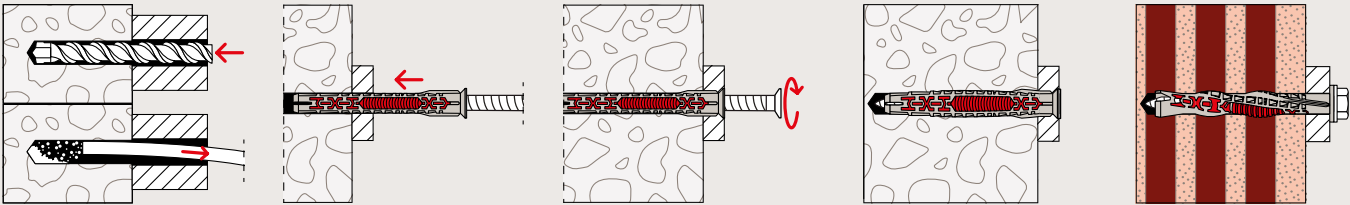
- The clever combination of design and material bites perfectly into all building materials and enables universal use.
- The special lamella geometry expands gently in the respective building material. This avoids fractures in porous building materials and enables anchoring close to the edge.
- The grey 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.

Functioning

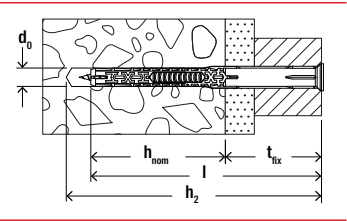
- The DuoXpand is suitable for push-through installation.
- In solid building materials, the product design guarantees equal load distribution into the substrate.
- In perforated bricks, the lamellas expand at the stone web and form an undercut in the cavity. The anchor geometry ensures that the force is transferred evenly to the material, so that porous stone webs are not destroyed.
- The version with countersunk screw is particularly suitable for fastening timber to concrete and masonry. For fixing metal applications, the version with a wide sleeve rim and a hexagon head screw with moulded washer is recommended.



Installation



Assortment

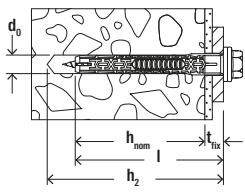


Frame fixing DuoXpand-T



DuoXpand – with fischer countersunk head safety screw

Item	Item No.	Item No.	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Usable length at anchorage depth				Anchor length	Drive	Sales unit
						t _{fix}						
						h _{nom} = 50 mm	h _{nom} = 70 mm	h _{nom} = 140 mm	h _{nom} = 160 mm			
	Zinc-plated steel	Stainless steel		d ₀	h ₂					l		
	gvz	R	ETA	[mm]	[mm]					[mm]		[pcs]
DuoXpand 8 x 80 T	562149	–	●	8	90	30	10	–	–	80	TX30	50
DuoXpand 8 x 100 T	562150	–	●	8	110	50	30	–	–	100	TX30	50
DuoXpand 8 x 120 T	562151	–	●	8	130	70	50	–	–	120	TX30	50
DuoXpand 10 x 80 T	562155	562163	●	10	90	30	10	–	–	80	TX40	50
DuoXpand 10 x 100 T	562156	562164	●	10	110	50	30	–	–	100	TX40	50
DuoXpand 10 x 120 T	562157	562165	●	10	130	70	50	–	–	120	TX40	50
DuoXpand 10 x 140 T	562158	562166	●	10	150	90	70	–	–	140	TX40	50
DuoXpand 10 x 160 T	562159	–	●	10	170	110	90	20	–	160	TX40	50
DuoXpand 10 x 180 T	562160	–	●	10	190	130	110	40	20	180	TX40	50
DuoXpand 10 x 200 T	562161	–	●	10	210	150	130	60	40	200	TX40	50
DuoXpand 10 x 230 T	562162	–	●	10	240	180	160	90	70	230	TX40	50



Frame fixing DuoXpand-FUS



DuoXpand – with fischer hexagon head safety screw with moulded washer and integrated bit recess

Item	Item No.	Item No.	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Usable length at anchorage depth				Anchor length	Drive	Sales unit
						t _{fix}						
						h _{nom} = 50 mm	h _{nom} = 70 mm	h _{nom} = 140 mm	h _{nom} = 160 mm			
	gvz	R	ETA	[mm]	[mm]					[mm]		[pcs]
DuoXpand 8 x 80 FUS	562152	–	●	8	90	30	10	–	–	80	TX30/SW10	50
DuoXpand 8 x 100 FUS	562153	–	●	8	110	50	30	–	–	100	TX30/SW10	50
DuoXpand 8 x 120 FUS	562154	–	●	8	130	70	50	–	–	120	TX30/SW10	50
DuoXpand 10 x 80 FUS	562167	562175	●	10	90	30	10	–	–	80	TX40/SW13	50
DuoXpand 10 x 100 FUS	562168	562176	●	10	110	50	30	–	–	100	TX40/SW13	50
DuoXpand 10 x 120 FUS	562169	562177	●	10	130	70	50	–	–	120	TX40/SW13	50
DuoXpand 10 x 140 FUS	562170	562178	●	10	150	90	70	–	–	140	TX40/SW13	50
DuoXpand 10 x 160 FUS	562171	–	●	10	170	110	90	20	–	160	TX40/SW13	50
DuoXpand 10 x 180 FUS	562172	–	●	10	190	130	110	40	20	180	TX40/SW13	50
DuoXpand 10 x 200 FUS	562173	–	●	10	210	150	130	60	40	200	TX40/SW13	50
DuoXpand 10 x 230 FUS	562174	–	●	10	240	180	160	90	70	230	TX40/SW13	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 of 19.10.2023 has to be considered.							
Type			DuoXpand 8		DuoXpand 10		
Anchor diameter	d ₀	[mm]	8		10		
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 with an edge distance	s _{min}	[mm]	50	50	50	50	–
	c ≥	[mm]	100	100	100	100	–
Minimum edge distance with a spacing	c _{min}	[mm]	50	50	50	50	–
	s ≥	[mm]	100	100	100	100	–
Anchorage in masonry ⁵⁾⁶⁾							
Anchorage depth	h _{nom}	[mm]	50	70	50	70	140
Permissible load F _{perm} in solid brick Mz, e.g. Ziegelwerk Nordhausen	≥ NF 10/1,8	[kN]	0.43	0.43	0.26	0.26	–
	≥ NF 20/1,8	[kN]	0.86	1.00	0.57	0.57	–
Permissible load F _{perm} in solid sand-lime brick KS, e.g. Wemding	≥ NF 10/2,0	[kN]	0.43	0.57	0.57	0.57	–
	≥ NF 20/2,0	[kN]	1.00	1.14	1.14	1.14	–
Permissible load ⁷⁾ F _{perm} in lightweight concrete block Vbl, e.g. KLB	≥ 2 DF 2/1,4	[kN]	0.11	0.17	0.09	0.17	–
	≥ 2 DF 4/1,4	[kN]	0.21	0.34	0.17	0.34	–
Permissible load ⁷⁾ F _{perm} in vertically perforated brick HLz, e.g. Schlagmann	3 DF ≥ 10/0,9	[kN]	0.21	0.34	0.21	0.34	–
	3 DF ≥ 12/0,9	[kN]	0.26	0.43	0.26	0.43	–
Permissible load F _{perm} in perforated sand-lime brick KSL, e.g. Wemding	3 DF ≥ 8/1,4	[kN]	0.26	0.21	0.17	0.26	–
	3 DF ≥ 16/1,4	[kN]	0.43	0.43	0.34	0.57	–
Permissible load ⁷⁾ F _{perm} in hollow lightweight concrete blocks Hbl, e.g. Knobel, DE	16 DF ≥ 2/0,7	[kN]	0.14	0.14	0.21	0.21	–
	16 DF ≥ 4/0,7	[kN]	0.26	0.26	0.43	0.43	–
Permissible load ⁷⁾ F _{perm} in hollow lightweight concrete blocks Hbl, eg. Sepa Parpaing, FR	≥ 2/1,0	[kN]	0.09	–	0.14	0.14	–
	≥ 4/1,0	[kN]	0.21	0.14	0.26	0.26	0.14
Minimum member thickness	h _{min}	[mm]	115	115	115	115	200
Minimum spacing (single anchor)	a _{min}	[mm]	250	250	250	250	250
Minimum spacing (anchor group)	s _{min}	[mm]	100	100	100	100	100
Minimum edge distance (anchor group)	c _{min}	[mm]	100	100	100	100	100
Anchorage in aerated concrete ⁶⁾							
Anchorage depth	h _{nom} ≥	[mm]	–	70	–	70	–
Permissible load F _{perm} in aerated concrete, acc.to EN 771-4:2011+A1:2015	AAC 2	[kN]	–	0.11	–	0.14	–
	AAC 4	[kN]	–	0.27	–	0.21	–
	AAC 6	[kN]	–	0.54	–	0.32	–
Permissible load F _{perm} in reinforced aerated concrete, acc. to EN 12602:2016	AAC 4; f _{ck} ≥ 4 N/mm ²	[kN]	–	–	–	0.18	–
	AAC 6; f _{ck} ≥ 6 N/mm ²	[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] e.g. for Mz as 10/1.8. 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.

SXRL

The versatile with multiple anchorage depth.

The long expansion element with up to three anchorage depths makes the SXRL a flexible product and thus to the **most versatile frame fixing** in the fischer assortment.

SXRL 10 x 120 T

When the plug needs to be set deeply, the side ribs prevent the plug from turning during installation. This provides **additional security**.

The special geometry of the plug with its conical shape distributes the loads uniformly in the drill hole. It enables the **use in all building materials** with outstanding load values.

For metal structures the version FUS (hexagon head screw with moulded washer and plug with wide sleeve rim) is ideally suited. **Contact corrosion between the fixture and the screw is prevented.**

SXRL 10 x 120 FUS

Anchorage depth 90 mm
In hollow building materials and aerated concrete for SXRL 8 and SXRL 14, in aerated concrete for SXRL 10

Anchorage depth 70 mm
In all building materials – concrete, solid and hollow building materials, aerated concrete

Anchorage depth 50 mm
In concrete, solid and hollow building materials for SXRL 8 and SXRL 10

★★★★★
Nylon
Quality

Inox
Stainless
Steel

High quality nylon for a secure and durable fixing.
Safety screw also made of stainless steel.

Certificates

ETA-07/0121
Multiple use for non-structural applications

Z-21.2-2037
Z-21.2-2092

Advantages, functioning and installation.

The advantages at a glance

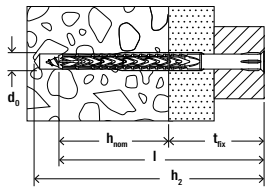
- The long expansion element with multiple anchorage depths of 50, 70 and 90 mm for SXRL 8 and SXRL 10 and 70 and 90 mm for SXRL 14 makes the SXRL a versatile product.
- Through the special geometry of the plug, the retention forces are distributed evenly in the drill hole.
- When it is to be set deep, the longer ribs prevent the plug from turning during installation.
- The approval for single-point fixing in cracked concrete makes the SXRL 10 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 14 are additionally approved for applications that are subject to pressure and can be used for façade structures that are installed without wall brackets with a spacing.

Functioning

- In hollow building materials the load is transmitted equally through the two expansion zones. The internal substrate webs are not destroyed by the expansion zones and thus transmit the load safely.
- In solid building materials and aerated concrete the two expansion zones join to form one long expansion element, providing an uniform and even distribution of the load into the substrate.
- For fastening wooden constructions, the SXRL-T with countersunk screw is recommended; for metal constructions the SXRL-FUS with a wide sleeve rim and moulded washer on the hexagon head screw is suitable.

Installation

Assortment



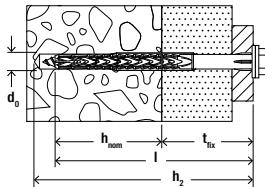
Frame fixing SXRL-T



SXRL – with fischer countersunk head screw

Item	Item No.	Item No.	Approval		Drill hole- diameter	Min. drill hole depth for through fixings	Usable length at anchorage depth			Anchor length	Drive	Sales unit
							t _{fix}	h _{nom} = 50 mm	h _{nom} = 70 mm			
			gvz	R	ETA	DIBt ²⁾				[mm]	[mm]	[mm]
SXRL 8 x 60 T	540113	540119	●	–	8	70	10	–	–	60	TX30	50
SXRL 8 x 80 T	540114	540121	●	–	8	90	30	10	–	80	TX30	50
SXRL 8 x 100 T	540115	540123	●	–	8	110	50	30	10	100	TX30	50
SXRL 8 x 120 T	540116	540124	●	–	8	130	70	50	30	120	TX30	50
SXRL 8 x 140 T	540117	540125	●	–	8	150	90	70	50	140	TX30	50
SXRL 8 x 160 T	540118	540126	●	–	8	170	110	90	70	160	TX30	50
SXRL 10 x 60 T	546477	546505	●	●	10	70	10	–	–	60	TX40	50
SXRL 10 x 80 T	522698	522709	●	●	10	90	30	10	–	80	TX40	50
SXRL 10 x 100 T	522699	522710	●	●	10	110	50	30	10	100	TX40	50
SXRL 10 x 120 T	522700	522711	●	●	10	130	70	50	30	120	TX40	50
SXRL 10 x 140 T	522701	522712	●	●	10	150	90	70	50	140	TX40	50
SXRL 10 x 160 T	522703	522713	●	●	10	170	110	90	70	160	TX40	50
SXRL 10 x 180 T	522704	522714	●	●	10	190	130	110	90	180	TX40	50
SXRL 10 x 200 T	522705	522715	●	●	10	210	150	130	110	200	TX40	50
SXRL 10 x 230 T	522706	522716	●	●	10	240	180	160	140	230	TX40	50
SXRL 10 x 260 T	522707 ¹⁾	522717 ¹⁾	●	●	10	270	210	190	170	260	TX40	50
SXRL 10 x 290 T	522708 ¹⁾	522718 ¹⁾	●	●	10	300	240	220	200	290	TX40	50
SXRL 14 x 80 T	530920	–	●	●	14	95	–	10	–	80	TX50	50
SXRL 14 x 100 T	530921	–	●	●	14	115	–	30	10	100	TX50	50
SXRL 14 x 120 T	530922	–	●	●	14	135	–	50	30	120	TX50	50
SXRL 14 x 140 T	530923	–	●	●	14	155	–	70	50	140	TX50	50
SXRL 14 x 160 T	530924	–	●	●	14	175	–	90	70	160	TX50	50
SXRL 14 x 180 T	530925	530937	●	●	14	195	–	110	90	180	TX50	50
SXRL 14 x 200 T	530926	–	●	●	14	215	–	130	110	200	TX50	50
SXRL 14 x 230 T	530927	–	●	●	14	245	–	160	140	230	TX50	50
SXRL 14 x 260 T	530928	–	●	●	14	275	–	190	170	260	TX50	50
SXRL 14 x 300 T	530929 ¹⁾	–	●	●	14	315	–	230	210	300	TX50	20
SXRL 14 x 330 T	530930 ¹⁾	–	●	●	14	345	–	260	240	330	TX50	20
SXRL 14 x 360 T	530931 ¹⁾	–	●	●	14	375	–	290	270	360	TX50	20

¹⁾ Not pre-assembled
²⁾ The scope of application and the performance values of the products can be found in the general building authority approvals Z-21.2-2092 for SXRL 10 and Z-21.2-2037 for SXRL 10 and 14.



Frame fixing SXRL-FUS

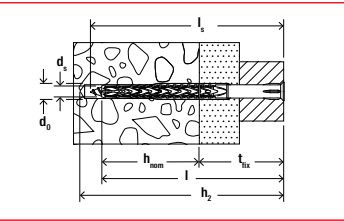


SXRL – with fischer hexagon head safety screw with moulded washer and integrated bit recess

Item	Item No.	Item No.	Approval		Drill hole diameter	Min. drill hole depth for through fixings	Usable length at anchorage depth			Anchor length	Drive	Sales unit
	Zinc-plated steel	Stainless steel					t _{fix}	h _{nom} = 50 mm	h _{nom} = 70 mm			
			gvz	R	ETA	DIBt ³⁾				[mm]	[mm]	[mm]
SXRL 8 x 60 FUS	540127	540135	●	–	8	70	10	–	–	60	TX30/SW10	50
SXRL 8 x 80 FUS	540129	540136	●	–	8	90	30	10	–	80	TX30/SW10	50
SXRL 8 x 100 FUS	540130	540137	●	–	8	110	50	30	10	100	TX30/SW10	50
SXRL 8 x 120 FUS	540131	–	●	–	8	130	70	50	30	120	TX30/SW10	50
SXRL 8 x 140 FUS	540133	–	●	–	8	150	90	70	50	140	TX30/SW10	50
SXRL 8 x 160 FUS	540134	–	●	–	8	170	110	90	70	160	TX30/SW10	50
SXRL 10 x 60 FUS	546506	546507	●	●	10	70	10	–	–	60	TX40/SW13	50
SXRL 10 x 80 FUS	522719	522730	●	●	10	90	30	10	–	80	TX40/SW13	50
SXRL 10 x 100 FUS	522720	522731	●	●	10	110	50	30	10	100	TX40/SW13	50
SXRL 10 x 120 FUS	522721	522732	●	●	10	130	70	50	30	120	TX40/SW13	50
SXRL 10 x 140 FUS	522723	522733	●	●	10	150	90	70	50	140	TX40/SW13	50
SXRL 10 x 160 FUS	522724	522734	●	●	10	170	110	90	70	160	TX40/SW13	50
SXRL 10 x 180 FUS	522725	522735	●	●	10	190	130	110	90	180	TX40/SW13	50
SXRL 10 x 200 FUS	522726	522736	●	●	10	210	150	130	110	200	TX40/SW13	50
SXRL 10 x 230 FUS	522727	522737	●	●	10	240	180	160	140	230	TX40/SW13	50
SXRL 10 x 260 FUS	522728 ¹⁾	522738 ¹⁾	●	●	10	270	210	190	170	260	TX40/SW13	50
SXRL 10 x 290 FUS	522729 ¹⁾	522739 ¹⁾	●	●	10	300	240	220	200	290	TX40/SW13	50
SXRL 14 x 80 FUS	530946	–	●	●	14	95	–	10	–	80	TX50/SW17	50
SXRL 14 x 100 FUS	530947	530956 ²⁾	●	●	14	115	–	30	10	100	TX50/SW17	50
SXRL 14 x 120 FUS	530948	–	●	●	14	135	–	50	30	120	TX50/SW17	50
SXRL 14 x 140 FUS	530949	–	●	●	14	155	–	70	50	140	TX50/SW17	50
SXRL 14 x 160 FUS	530950	–	●	●	14	175	–	90	70	160	TX50/SW17	50
SXRL 14 x 180 FUS	530951	–	●	●	14	195	–	110	90	180	TX50/SW17	50
SXRL 14 x 200 FUS	530952	–	●	●	14	215	–	130	110	200	TX50/SW17	50
SXRL 14 x 230 FUS	530953	–	●	●	14	245	–	160	140	230	TX50/SW17	50
SXRL 14 x 260 FUS	530954	–	●	●	14	275	–	190	170	260	TX50/SW17	50

¹⁾ Not pre-assembled
²⁾ Without integrated bit recess TX50
³⁾ The scope of application and the performance values of the products can be found in the general building authority approvals Z-21.2-2092 for SXRL 10 and Z-21.2-2037 for SXRL 10 and 14

Assortment & loads



Frame fixing SXRL



Item	Item No.	Drill hole diameter	Min. drill hole depth for through fixings	Usable length at anchorage depth			Anchor length	Screw diameter	Min. screw length	Sales unit
		d ₀	h ₂	t _{fix}	h _{nom} =	h _{nom} =	l	d _s	l _s	
		[mm]	[mm]	50 mm	70 mm	90 mm	[mm]	[mm]	[mm]	
SXRL 8 x 60	540879	8	70	10	–	–	60	5,5 – 6,0	65	100
SXRL 8 x 80	540880	8	90	30	10	–	80	5,5 – 6,0	85	100
SXRL 8 x 100	540881	8	110	50	30	10	100	5,5 – 6,0	105	100
SXRL 8 x 120	540882	8	130	70	50	30	120	5,5 – 6,0	125	100

Frame fixing SXRL 8

Recommended loads¹⁾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
Anchorage depth	h _{nom}	[mm]	50	70
Minimum edge distance concrete	c _{min}	[mm]	60	80
Recommended loads in the respective base material F _{rec} ²⁾				
Concrete	≥ C20/25	[kN]	0.60	1.00
Solid brick	≥ Mz 12	[kN]	0.45	0.60
Solid sand-lime brick	≥ KS 12	[kN]	0.40	0.50
Vertically perforated brick	≥ HLz 12; ρ ≥ 1.0 [kg/dm³]	[kN]	0.15	0.15
Perforated sand-lime brick	≥ KSL 12	[kN]	0.10	0.40
Aerated concrete	AAC 2	[kN]	–	0.10
Aerated concrete	AAC 4	[kN]	–	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.

Frame fixing SXRL 10

Permissible loads of a single anchor¹⁾ 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				
Type	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			
				N _{perm} ³⁾	V _{perm} ³⁾	s _{min} ³⁾	c _{min} ³⁾		N _{perm} ³⁾	V _{perm} ³⁾	s _{min} ³⁾	c _{min} ³⁾
				[kN]	[kN]	[mm]	[mm]		[kN]	[kN]	[mm]	[mm]
SXRL 10	gvz	70	100	1.5	3.6	50	50	110	2.6	6.0	80	80
	R	70	100	1.5	3.6	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 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.

Loads

Frame fixing SXRL

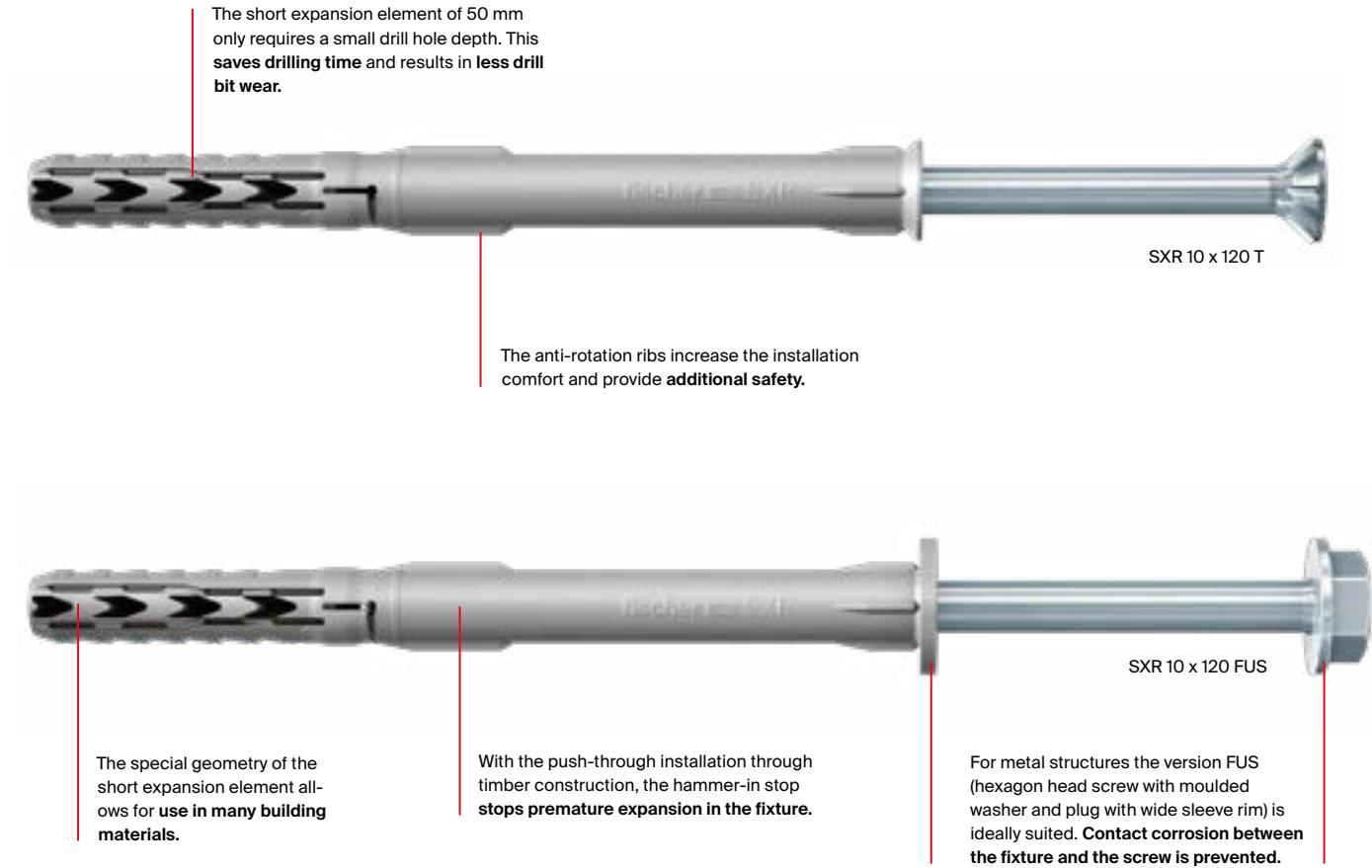
Permissible loads¹⁾²⁾³⁾ of a single anchor as part of a multiple fixing of non-structural systems.
For the design the complete assessment ETA-07/0121 of 20.12.2022 has to be considered.

Type		SXRL 8			SXRL 10			SXRL 14	
Drill hole diameter	d ₀	[mm]	8	8	8	10	10	10	14
Anchorage depth	h _{nom} ≥	[mm]	50	70	90	50	70	90	70
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
Permissible shear load V _{perm}	zinc coated screw (gvz)	[kN]	4.23	4.23	4.23	5.98	5.98	5.98	12.40
	stainless steel screw (R)	[kN]	3.93	3.93	3.93	5.98	5.98	5.98	11.63
Minimum member thickness	h _{min}	[mm]	80	100	120	100	100	120	110
Characteristic edge distance	c _{cr,N}	[mm]	85	85	85	140	140	140	140
Characteristic spacing	a resp. s _{cr,N}	[mm]	90	105	105	120	120	120	135
Minimum spacing	s _{min}	[mm]	85	85	85	70	70	70	85
with an edge distance	c ≥	[mm]	85	85	85	140	140	140	140
Minimum edge distance	c _{min}	[mm]	85	85	85	70	70	70	85
with a spacing	s ≥	[mm]	85	85	85	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⁾									
Permissible 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
	≥ NF 28/1.8	[kN]	0.86	1.29	1.29	1.29 ⁶⁾	1.43 ⁶⁾	1.43 ⁶⁾	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
	≥ NF 28/1.8	[kN]	0.57	0.57	0.57	–	1.57	1.57	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⁾
	≥ 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⁾
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⁾
	≥ 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
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⁾
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
Minimum spacing (single anchor)	a _{min}	[mm]	250	250	250	250	250	250	250
Minimum spacing (anchor group)	s _{min}	[mm]	100	100	100	100	100	100	100
Minimum edge distance (anchor group)	c _{min}	[mm]	100	100	100	100	100	100	100
Anchorage in aerated concrete ⁴⁾									
Permissible load F _{perm} in aerated concrete	AAC ≥ 2 N/mm²	[kN]	–	0.14	0.21	–	0.18	0.21 ⁶⁾	0.32
	AAC ≥ 6 N/mm²	[kN]	–	0.54	0.71	–	0.89	1.10 ⁶⁾	1.43
Permissible load F _{perm} in reinforced aerated concrete	AAC ≥ 2 N/mm²	[kN]	–	–	–	–	0.18 ⁹⁾	0.18 ⁹⁾	–
	AAC ≥ 6 N/mm²	[kN]	–	–	–	–	1.07 ¹⁰⁾	1.25 ¹⁰⁾	–
Minimum member thickness	h _{min}	[mm]	–	175	175	–	100	120	175
Minimum spacing (single anchor)	a _{min}	[mm]	–	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
Minimum edge distance (anchor group)	c _{min}	[mm]	–	90/110 ¹¹⁾	90/110 ¹¹⁾	–	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} ≥ 240 mm and s_{2,min} ≥ 250 mm.
⁹⁾ Valid for member thickness h_{min} ≥ 175 mm. Minimum spacing and edge distances see ETA.
¹⁰⁾ Valid for member thickness h_{min} ≥ 240 mm. Minimum spacing and edge distances see ETA.
¹¹⁾ Valid for AAC with compression strength ≥ 6 N/mm².

SXR

The efficient with short expansion element.



★★★★★
Nylon Quality

★
Inox
Stainless Steel

High quality nylon for a secure and durable fixing.
Safety screw also made of stainless steel.

Certificates

ETA CE

ETA-07/0121
Multiple use for non-structural applications

R 90

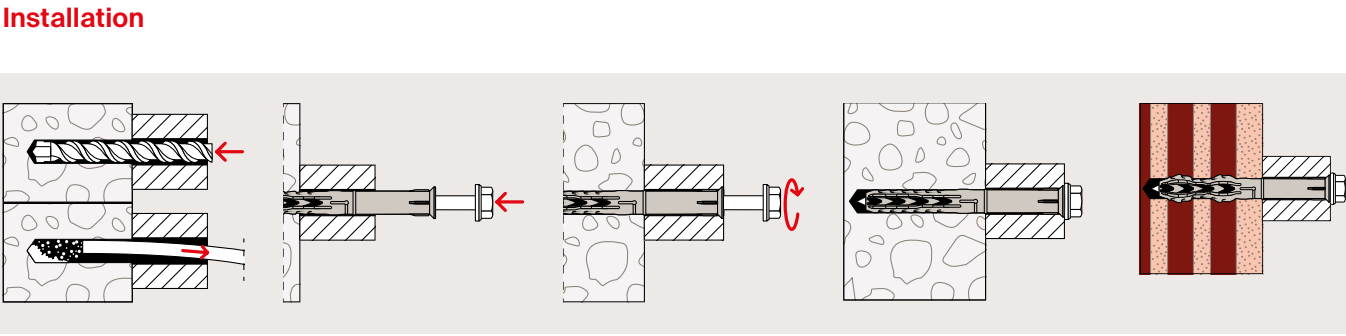
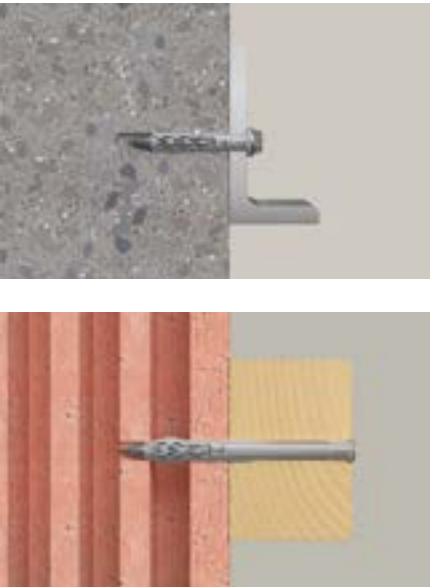
Advantages, functioning and installation.

The advantages at a glance

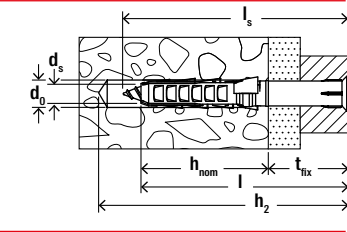
- With an anchorage depth of only 50 mm, the specific functionality enables the use in solid and perforated building materials and thus ensures an economic fastening.
- The European Technical Assessment (ETA) for SXR 8 and 10 covers the use in various solid and hollow building materials and thus guarantees a secure fixing.
- The specially developed combination of plug and safety screw ensures optimal handling. The plug pulls noticeably and thus offers more installation comfort.

Functioning

- The SXR is suitable for push-through installation.
- In solid building materials the SXR expands.
- In hollow building materials the loads are transmitted to the substrate webs.
- In vertically perforated bricks, drill only in rotary mode (without impact).
- Countersunk screws are recommended for fastening wooden constructions. For metal constructions plugs with a wide sleeve rim and hexagon head screws with moulded washer are suitable.



Assortment

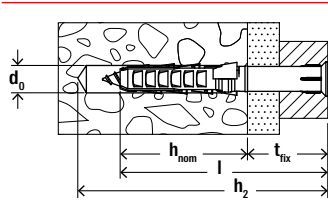


Frame fixing SXR



SXR – without screw

Item	Item No.	Drill hole diameter	Min. drill hole depth for through fixings	Min. anchorage depth	Anchor length	Max. fixture thickness	Screw diameter	Min. screw length	Sales unit
		d ₀ [mm]	h ₂ [mm]	h _{nom} [mm]	l [mm]	t _{fix} [mm]	d _s [mm]	l _s [mm]	[pcs]
SXR 6 x 60	503230	6	70	30	60	30	4,5	65	100
SXR 8 x 60	506194	8	70	50	60	10	5,5 – 6,0	65	100
SXR 8 x 80	506196	8	90	50	80	30	5,5 – 6,0	85	100
SXR 8 x 100	506198	8	110	50	100	50	5,5 – 6,0	125	100
SXR 8 x 120	506199	8	130	50	120	70	5,5 – 6,0	105	100

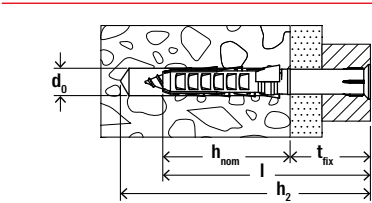


Frame fixing SXR-Z



SXR – with fischer countersunk head screw

Item	Item No.	Drill hole diameter	Min. drill hole depth for through fixings	Min. anchorage depth	Anchor length	Max. fixture thickness	Drive	Sales unit
	Zinc-plated steel	d ₀	h ₂	h _{nom}	l	t _{fix}		
	gvz	[mm]	[mm]	[mm]	[mm]	[mm]		[pcs]
SXR 6 x 60 Z	503233	6	70	30	60	30	PZ2	50



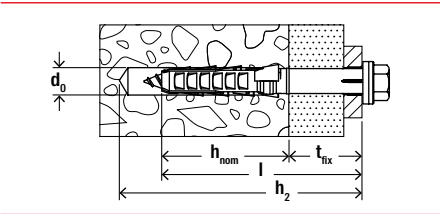
Frame fixing SXR-T



SXR – with fischer countersunk head safety screw

Item	Item No.	Item No.	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Min. anchorage depth	Anchor length	Max. fixture thickness	Drive	Sales unit
	Zinc-plated steel	Stainless steel		d ₀	h ₂	h _{nom}	l	t _{fix}		
	gvz	R	ETA	[mm]	[mm]	[mm]	[mm]	[mm]		[pcs]
SXR 8 x 60 T	502999	—	●	8	70	50	60	10	TX30	50
SXR 8 x 80 T	503000	—	●	8	90	50	80	30	TX30	50
SXR 8 x 100 T	503001	—	●	8	110	50	100	50	TX30	50
SXR 8 x 120 T	503002	—	●	8	130	50	120	70	TX30	50
SXR 10 x 80 T	046263	046272	●	10	90	50	80	30	TX40	50
SXR 10 x 100 T	046264	046274	●	10	110	50	100	50	TX40	50
SXR 10 x 120 T	046265	046278	●	10	130	50	120	70	TX40	50
SXR 10 x 140 T	046266	046279	●	10	150	50	140	90	TX40	50
SXR 10 x 160 T	046267	046283	●	10	170	50	160	110	TX40	50
SXR 10 x 180 T	046268	046285	●	10	190	50	180	130	TX40	50
SXR 10 x 200 T	046269	046286	●	10	210	50	200	150	TX40	50
SXR 10 x 230 T	046270	—	●	10	240	50	230	180	TX40	50
SXR 10 x 260 T	046271	—	●	10	270	50	260	210	TX40	50

Assortment



Frame fixing SXR-FUS



SXR – with fischer hexagon head safety screw, moulded washer and integrated bit recess

Item	Item No.	Item No.	Approval	Drill hole diameter	Min. drill hole depth for through fixings	Min. anchor-age depth	Anchor length	Max. fixture thickness	Drive	Sales unit
	Zinc-plated steel	Stainless steel		d ₀	h ₂	h _{nom}	l	t _{fix}		
	gvz	R	ETA	[mm]	[mm]	[mm]	[mm]	[mm]		[pcs]
SXR 10 x 52 FUS	502456 ¹⁾	—	●	10	62	50	52	2	TX40/SW13	50
SXR 10 x 60 FUS	046329	046339	●	10	70	50	60	10	TX40/SW13	50
SXR 10 x 80 FUS	046330	046340	●	10	90	50	80	30	TX40/SW13	50
SXR 10 x 100 FUS	046331	046342	●	10	110	50	100	50	TX40/SW13	50
SXR 10 x 120 FUS	046332	046343	●	10	130	50	120	70	TX40/SW13	50
SXR 10 x 140 FUS	046333	046344	●	10	150	50	140	90	TX40/SW13	50
SXR 10 x 160 FUS	046334	046345	●	10	170	50	160	110	TX40/SW13	50
SXR 10 x 180 FUS	046335	046361	●	10	190	50	180	130	TX40/SW13	50
SXR 10 x 200 FUS	046336	046362	●	10	210	50	200	150	TX40/SW13	50
SXR 10 x 230 FUS	046337	—	●	10	240	50	230	180	TX40/SW13	50
SXR 10 x 260 FUS	046338	—	●	10	270	50	260	210	TX40/SW13	50

¹⁾ Not pre-assembled

Loads

Frame fixing SXR				
Permissible loads ¹⁾²⁾ of a single anchor as part of a multiple fixing of non-structural systems. For the design the complete current assessment ETA-07/0121 has to be considered.				
Type			SXR 8	SXR 10
Drill hole diameter	d ₀	[mm]	8	10
Anchorage depth	h _{nom} ≥	[mm]	50	50
Anchorage in concrete ≥ C12/15				
Permissible tensile load N _{perm}		[kN]	0.99	1.79
Permissible shear load V _{perm}	zinc coated screws (gvz)	[kN]	4.23	5.98
	stainless steel screw (R)	[kN]	3.93	5.98
Minimum member thickness	h _{min}	[mm]	100	100
Characteristic edge distance	c _{cr,N}	[mm]	70	140
Characteristic spacing	a resp. s _{cr,N}	[mm]	70	100
Minimum spacing	s _{min}	[mm]	70	70
with an edge distance	c ≥	[mm]	70	210
Minimum edge distance	c _{min}	[mm]	70	85
with a spacing	s ≥	[mm]	70	100
Anchorage in narrow concrete members (h ≥ 40 mm) made of concrete ≥ C12/15, e. g. weather shells of triple-skin outer wall panels				
Permissible tensile load N _{perm}		[kN]	–	1.19
Permissible shear load V _{perm}		[kN]	–	5.98
Anchorage in masonry ⁴⁾				
Anchorage depth	h _{nom}	[mm]	50	50
Permissible load F _{perm} in solid brick Mz	≥ NF 12/1.8	[kN]	0.34 ⁶⁾	0.34 ⁶⁾
	≥ NF 20/1.8	[kN]	0.57 ⁶⁾	0.57 ⁶⁾
Permissible load F _{perm} in solid sand-lime brick KS	≥ NF 12/1.8	[kN]	0.43	0.43 ⁶⁾
	≥ NF 20/1.8	[kN]	0.71	0.71 ⁶⁾
Permissible load F _{perm} in solid sand-lime brick Vbl	≥ 2 DF 2/1.2	[kN]	0.14 ⁶⁾	0.21 ⁶⁾
	≥ 8 DF 6/1.4	[kN]	0.21 ⁶⁾	0.71 ⁶⁾
Permissible load ⁵⁾ F _{perm} in vertically perforated brick HLz	≥ 2 DF 12/1.2	[kN]	0.17 ⁶⁾	0.43 ⁶⁾
	≥ 2 DF 20/1.2	[kN]	0.34 ⁶⁾	0.71 ⁶⁾
Permissible load F _{perm} in perforated sand-lime brick KSL	≥ 2 DF 8/1.4	[kN]	0.26 ⁶⁾	0.34 ⁶⁾
	≥ 2 DF 12/1.4	[kN]	0.43 ⁶⁾	0.57 ⁶⁾
Permissible load F _{perm} in hollow lightweight concrete blocks Hbl	≥ 2/1.2	[kN]	0.21 ⁶⁾	0.26 ⁶⁾
	≥ 8/1.2	[kN]	0.71 ⁶⁾	0.71 ⁶⁾
Minimum member thickness	h _{min}	[mm]	100	100
Minimum spacing (single anchor)	a _{min}	[mm]	250	250
Minimum spacing (anchor group)	s _{min}	[mm]	100	100
Minimum edge distance (anchor group)	c _{min}	[mm]	100	100
Anchorage in aerated concrete ⁴⁾				
Anchorage depth	h _{nom} ≥	[mm]	50	50
Permissible load F _{perm} in aerated concrete	AAC ≥ 2 N/mm ²	[kN]	–	0.14
	AAC ≥ 4 N/mm ²	[kN]	–	0.27
	AAC ≥ 6 N/mm ²	[kN]	–	0.27
Minimum member thickness	h _{min}	[mm]	–	100
Minimum spacing (single anchor)	a _{min}	[mm]	–	400
Minimum spacing (anchor group)	s _{min}	[mm]	–	400
Minimum edge distance (anchor group)	c _{min}	[mm]	–	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 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 according to 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⁾ For axial spacing s ≥ 250 mm.

Loads

Frame fixing SXR				
Recommended loads ¹⁾²⁾ for a single anchor as part of a multiple fixing of non-structural systems. The given loads are valid for wood screws with the specified diameter.				
Type			SXR 6	SXR 8
Screw diameter		[mm]	4.5	6.0
Anchorage depth	h_{nom}	[mm]	30	50
Minimum edge distance concrete	c_{min}	[mm]	50	60
Recommended loads in the respective base material $F_{rec}^{2)}$				
Concrete	$\geq C20/25$	[kN]	0.25	0.40
Solid brick	$\geq Mz\ 12$	[kN]	0.20	0.30
Solid sand-lime brick	$\geq KS\ 12$	[kN]	0.20	0.30
Vertically perforated brick	$\geq HLz\ 12; \rho \geq 1.0\ [kg/dm^3]$	[kN]	0.10	0.10
Perforated sand-lime brick	$\geq KSL\ 12$	[kN]	0.20	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⁾ 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.

Accessories

Anti-corrosion spray FTC-CP				
 FTC-CP professionally prevents the penetration of moisture into the anchor shaft and securely protects the connection from corrosion.				
Item	Item No.	Colour	Content per can [ml]	Sales unit [pcs]
FTC-CP	511440	black	500 ¹⁾	12

¹⁾ With one can about 300 screw heads can be coated.

Bits					
 					
FPB ProfiBit		FMB II Bit			
Item	Item No.	Drive	Length [mm]	Content	Sales unit [pcs]
FPB TX30 ProfiBit W10	557849	TX30	25	10	10
FPB TX40 ProfiBit W10	557850	TX40	25	10	10
FPB TX50 ProfiBit W1	557844	TX50	35	1	1
FMB II TX30 Bit W5	564314	TX30	25	5	5
FMB II TX40 Bit W5	564315	TX40	25	5	5

Bit holder					
					
FBH BitHolder W 1					
Item	Item No.	Drive	Length [mm]	Content	Sales unit [pcs]
FBH BitHolder W 1	558178	1/4"	58	1	1

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fischer stands for

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