

European Technical Assessment

ETA-23/0859
of 04.08.2026

General Part

**Technical Assessment Body issuing the
European Technical Assessment**

SINTEF AS by its institute SINTEF Community

**Trade name of the construction
product**

SFS Group flat roof fasteners

**Product family to which the construction
product belongs**

Fasteners for mechanically fastened flexible roof
waterproofing sheets

Manufacturer

SFS Group Schweiz AG
Segment Fastening Systems
Rosenbergsaustrasse 10
CH-9435 Heerbrugg
Switzerland,
www.sfs.com

Manufacturing plants

Factories of SFS Group

**This European Technical Assessment
contains**

39 pages including 2 Annexes which form an
integral part of this assessment

**This European Technical Assessment is
issued in accordance with Article 95(4) of
Regulation (EU) 2024/3110, on the basis
of**

EAD 030351-00-0402, Systems of Mechanically
Fastened Flexible Roof Waterproofing Sheets

This version is a corrigendum to

ETA 23/0859, issued on 14.04.2026

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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Specific parts

1. Technical description of the product

SFS Group flat roof fasteners are used as mechanical fastening of insulation, bitumen based single/multi-layer or single ply waterproofing membranes, or polymeric single ply waterproofing membranes, for flat roofing. The supporting roof structure may be of profiled steel sheets, aluminium sheets, concrete, aerated concrete, pumice panel or a timber construction as defined in EAD 030351-00-0402, February 2019, *Systems of mechanically fastened flexible roof waterproofing sheets* (MEFAWAS), paragraph 1.1.

The range of fasteners consists of washers, washers with integrated sleeve, screws, nails, and plugs as illustrated in Annex 1.

The fasteners are introduced to the market separately from the other components of roof waterproofing membrane kits, and this ETA covers only the performance characteristics of the *SFS Group flat roof fasteners*. A separate ETA according to EAD 030351-00-0402 is necessary in order to cover an entire kit for mechanically fastened roof waterproofing sheets.

2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

Installation and design:

2.1. General

The fasteners must be installed according to the manufacturer's instructions. It is the manufacturer's responsibility to provide correct information about the application of the products to the users.

Fastening with steel washers may be applied on stiff substrates, i.e. on timber roof substrate, concrete or on suitable insulation.

Plastic fasteners with integrated sleeve or step secured steel washers (steel washers together with screws equipped with a separate threading which avoid the washer to be pressed down) are recommended on thermal insulation.

Measures should be taken during design to ensure that galvanic corrosion between metal parts, especially between substrate and screw, does not occur. Likewise, use of insulation materials containing substances which can affect the performance of the fasteners must be avoided.

2.2. Fastening in steel sheets

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for steel substrates are given in table 1 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the steel sheet substrate are unknown.

2.3. Fastening in aluminium sheets

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for aluminium substrates are given in table 1 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the aluminium sheet substrate are unknown.

2.4. Fastening in timber constructions

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for timber construction substrates are given in table 2 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the timber substrate are unknown.

2.5. Fastening in concrete

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for concrete substrates are given in table 2 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the concrete substrate are unknown.

2.6. Fastening in aerated/light weight concrete

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for aerated/light-weight concrete substrates are given in table 2 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the aerated/light weight concrete substrate are unknown.

2.7. Fastening in pumice panel

Characteristic pull-out values and fixing details for the different fasteners, as well as material properties for pumice panel substrates are given in table 2 found in annex 2 of this ETA. A site pull-out test is recommended if the properties of the pumice panel substrate are unknown.

2.8. Working life/durability

The provisions made in this ETA are based on an assumed working life of the component of at least 10 years. The actual working life is also dependent on the design of the roof and the waterproofing systems.

The indications given on the working life cannot be interpreted as a guarantee given by the producer but has to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. Performance of the product and references to the methods used for its assessment

3.1. Safety in case of fire

No performance determined.

3.2. Hygiene, health, and environment

The manufacturer declares that raw material, components, production processes and surface treatment are in accordance with current, relevant national and international regulations and laws.

3.3. Safety in use

The fasteners have been tested for axial pull out performance from substrates and pull through performance between fasteners and washers, see Annex 2. The fasteners have been tested for wind uplift according to EN-16002:2010, ETA Guideline No. 006 edition March 2000, amended November 2012 and EAD 030351-00-0402. The wind uplift performance of roof waterproofing kits is mainly determined by the roofing membranes. Several full-scale wind load tests with bituminous and polymeric membranes have been executed.

The membranes are fixed with washers, washers with integrated sleeves and barbed washers in combination with fixings to substrates of steel sheets, aluminium sheets, timber, concrete, aerated

concrete, and pumice panel. The complete test reports may be obtained from SFS Group Schweiz AG.

The screws are considered safe against unwinding.

3.4. Aspects of durability

The SFS Group tube washers produced of polypropylene and polyamide satisfy the aspects of durability and have acceptable resistance to brittleness according to EAD 030351-00-0402, chapter 2.2.3.3 and A.2.3.

All metallic *SFS Group flat roof fasteners* components correspond to corrosion protection according to EAD 030351-00-0402, chapter A.2.4, see Annex 2. Test-procedure for these products is 15 exposure cycles (humid atmosphere 2 litres of sulphur dioxide). Carbon steel fasteners have a corrosion protection of Chrome 6 free Durocoat®. Stainless steel fasteners are made in grade SS304/A2 or SS316/A4.

3.5. Identification

SFS Group flat roof fasteners components are identified by dimensions, designation, drawings, performances, as given in annex 1 and 2 in this ETA. The components belonging to *SFS Group flat roof fasteners* are marked with the designation according to figures in annex 1. All packaging is marked with product type and batch number, including CE marking.

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to Decision 98/143/EC by the European Commission, the system 2+ of assessment and verification of constancy of performance applies. See Annex V to Regulation (EU) No. 305/2011.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at SINTEF AS.

Issued in Oslo on 04.08.2026

By

SINTEF AS by its institute SINTEF Community



Anne-Jorunn Enstad

Certification Manager

Annex 1

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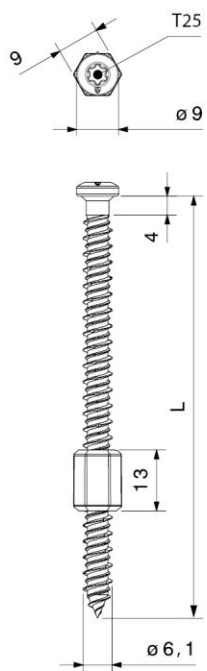
¹⁾ Single products without combinations

²⁾ For product drawing

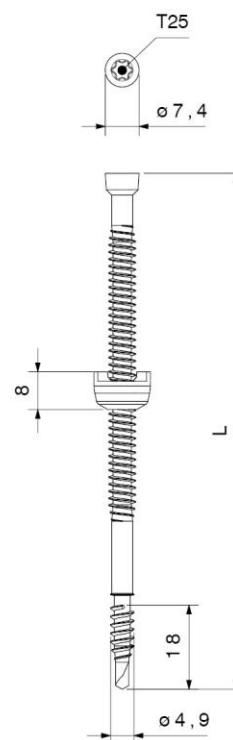
³⁾ Plastic plug or nail (fastener) incl. sleeve

Fasteners

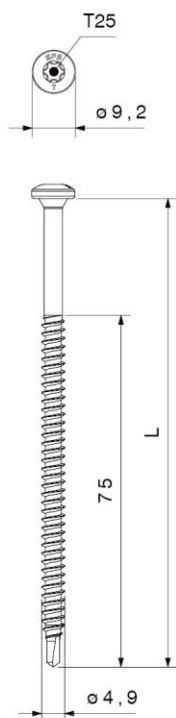
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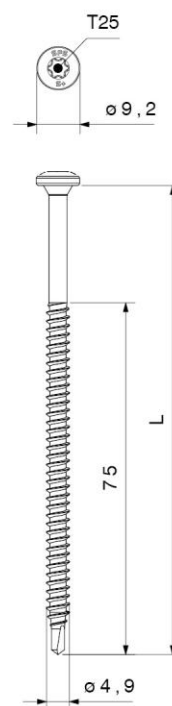
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BS-4,8



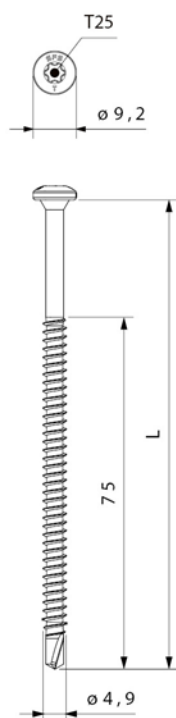
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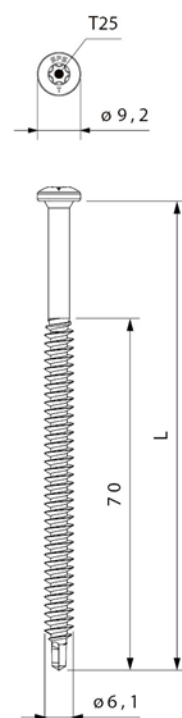
SFS Group flat roof fasteners

Fasteners

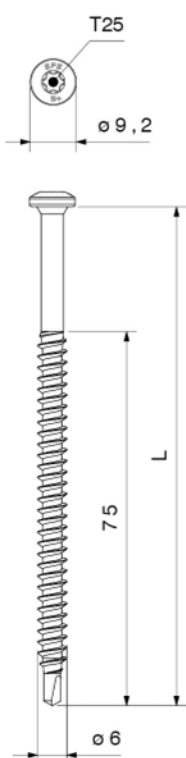
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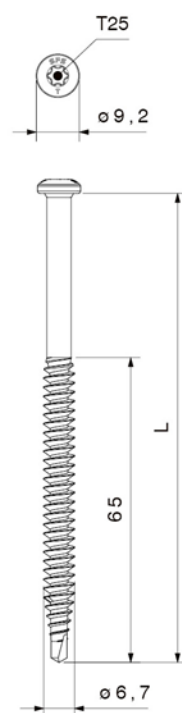
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BS-S-6,1



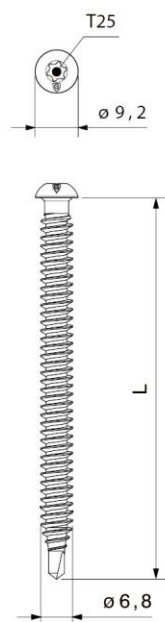
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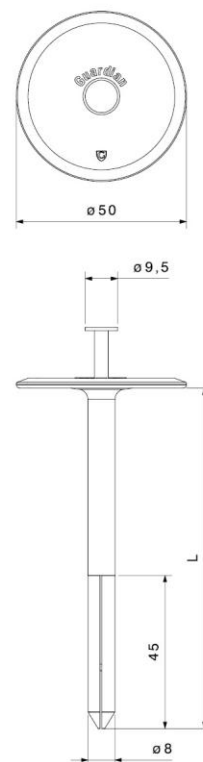
SFS Group flat roof fasteners

Fasteners

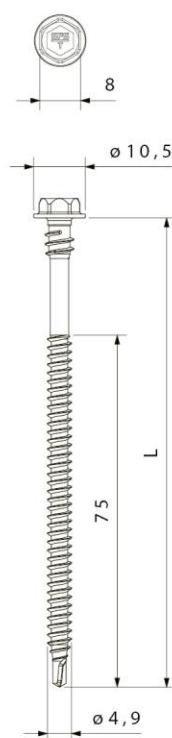
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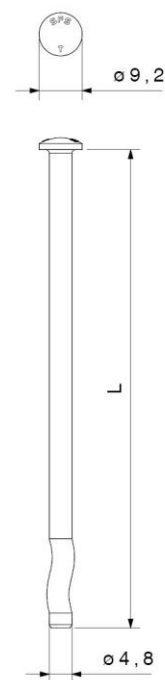
CP50



DBT-4,8



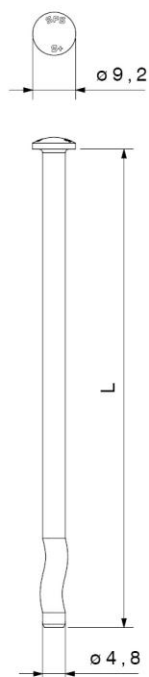
DT-4,8



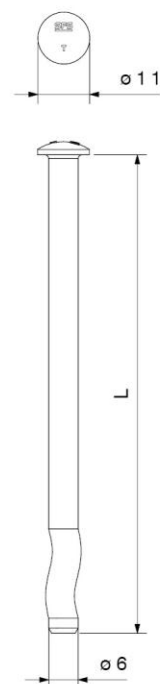
SFS Group flat roof fasteners

Fasteners

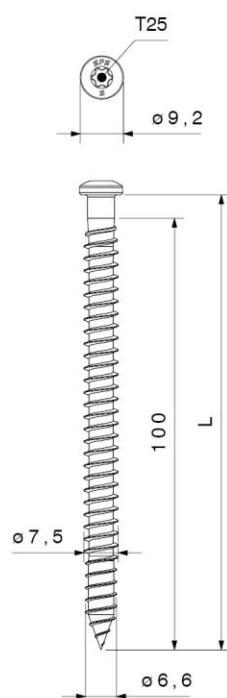
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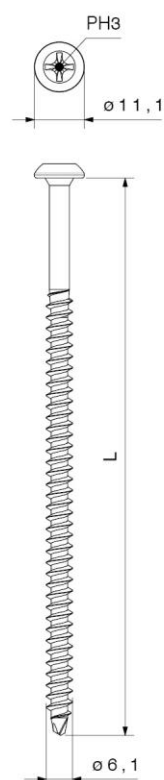
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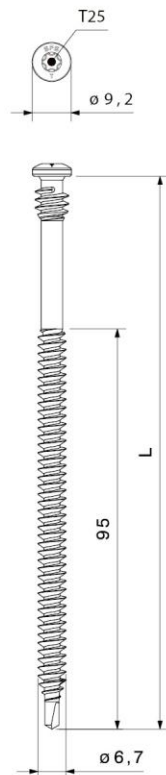
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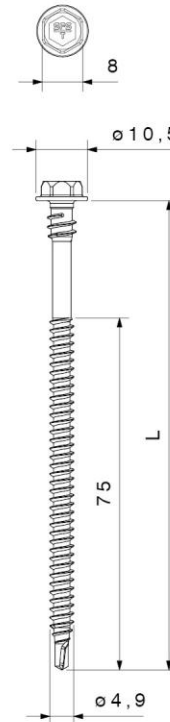
SFS Group flat roof fasteners

Fasteners

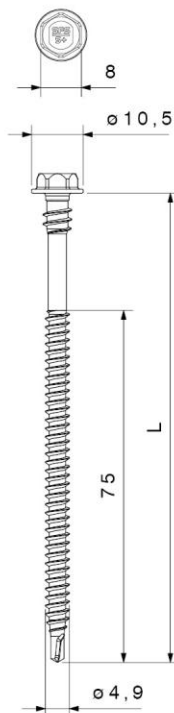
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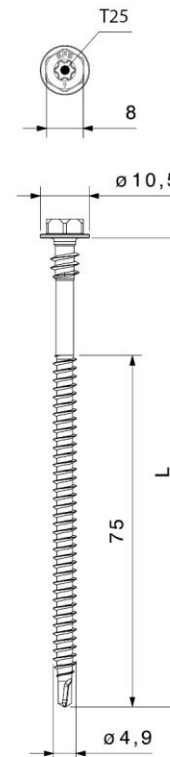
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IR2-S-4,8



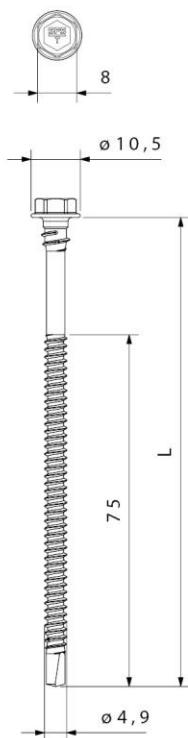
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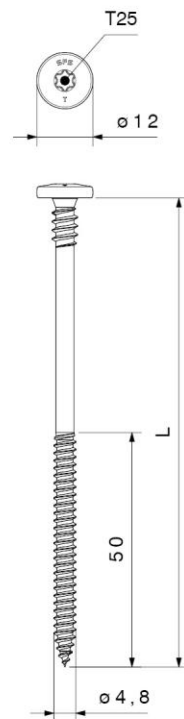
SFS Group flat roof fasteners

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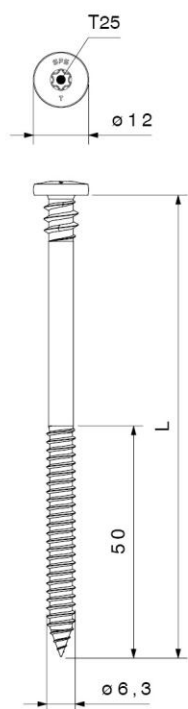
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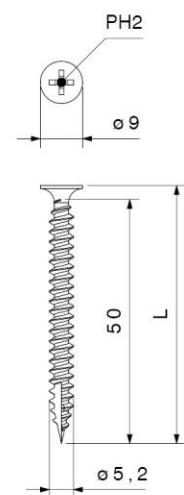
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IRFP-6,3



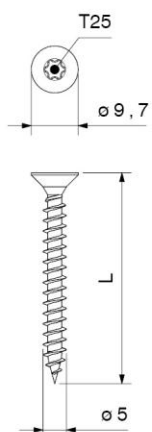
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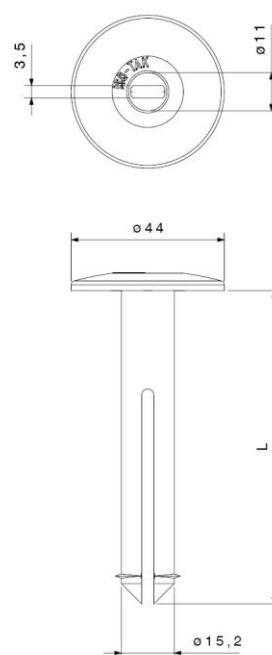
SFS Group flat roof fasteners

Fasteners

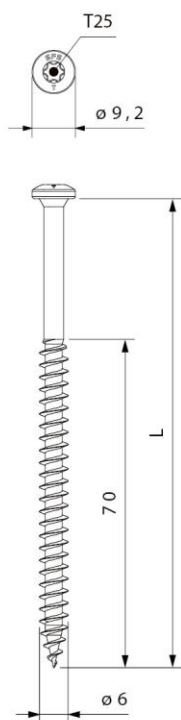
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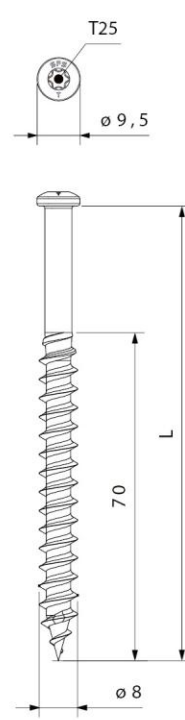
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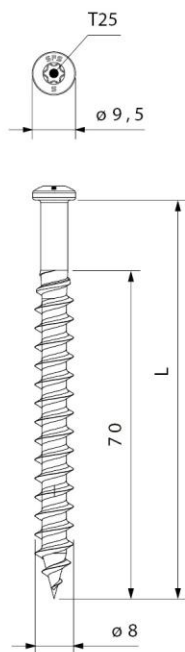
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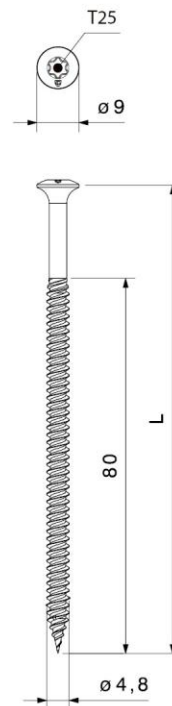
SFS Group flat roof fasteners

Fasteners

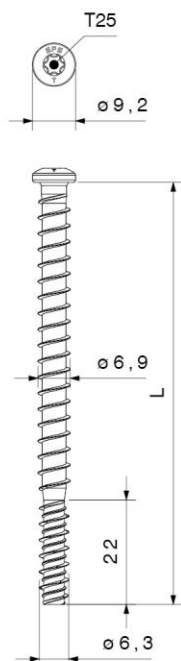
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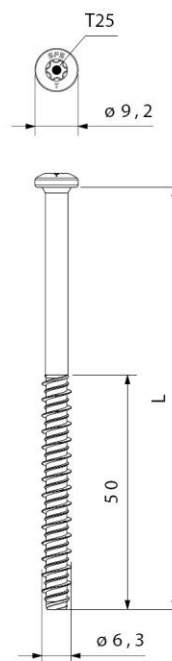
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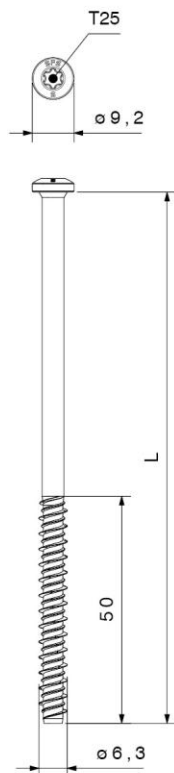
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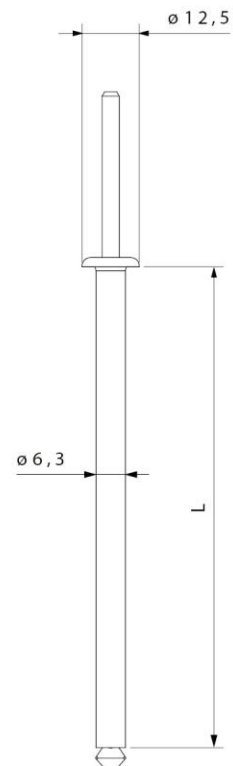
SFS Group flat roof fasteners

Fasteners

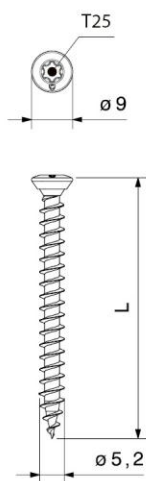
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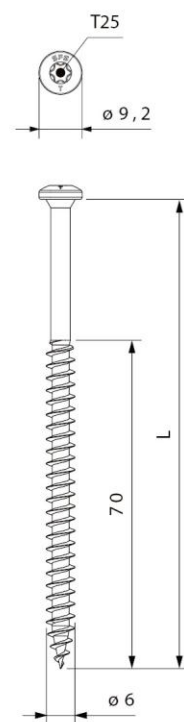
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TS-5,2



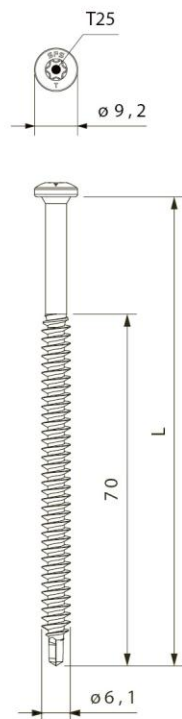
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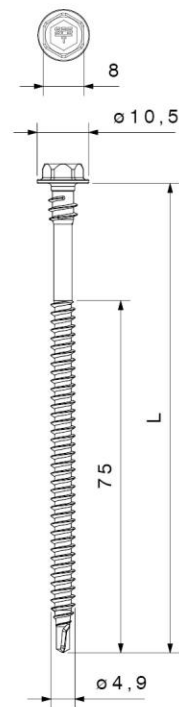
SFS Group flat roof fasteners

Fasteners

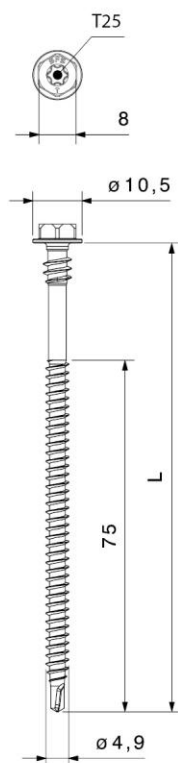
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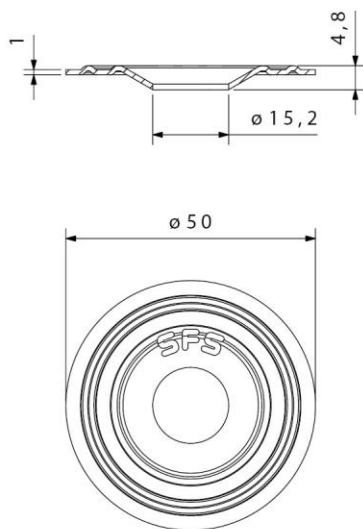
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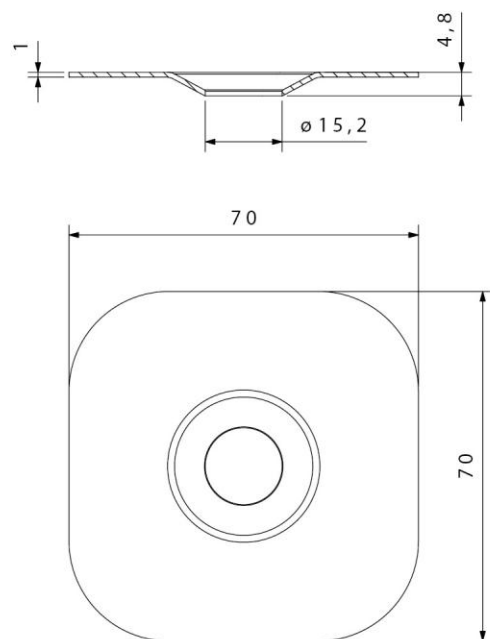
SFS Group flat roof fasteners

Stress plates

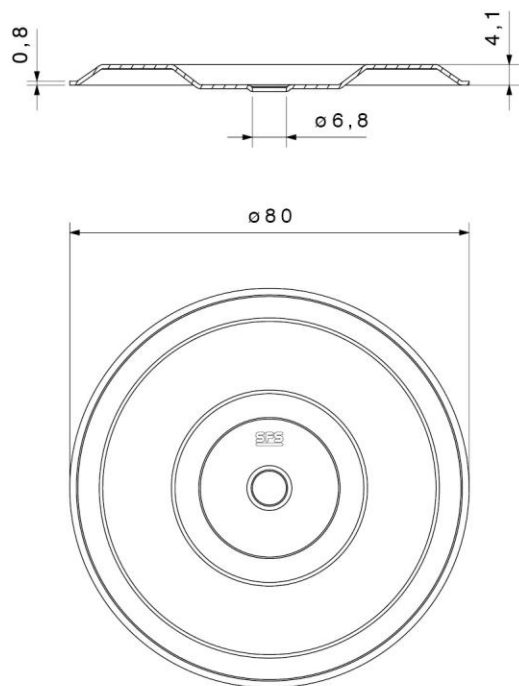
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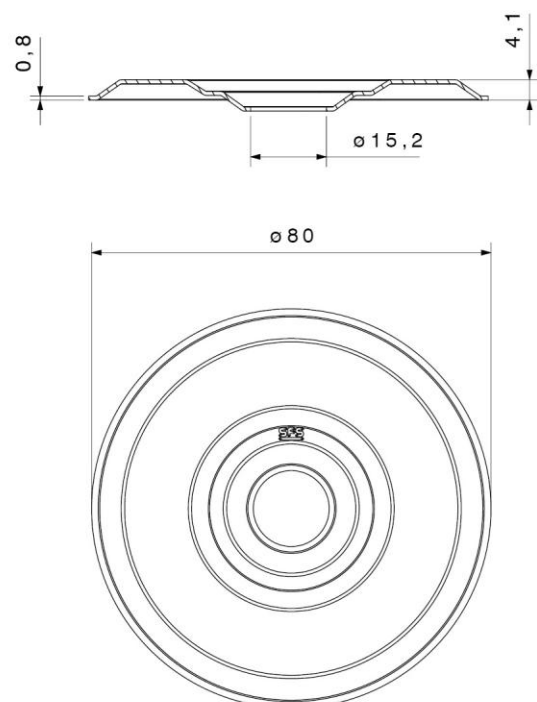
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FI-P-6,8



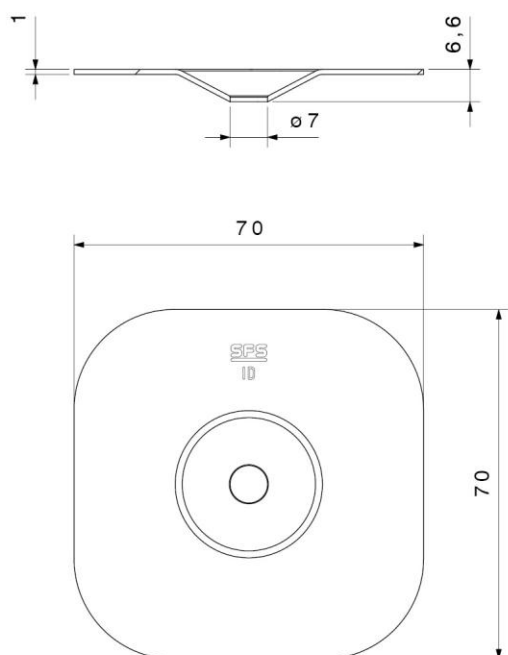
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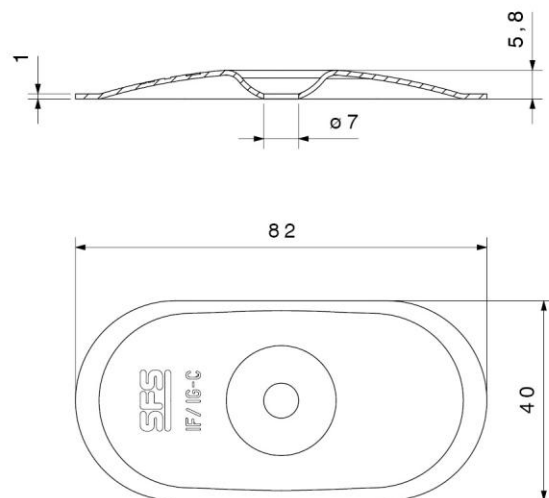
SFS Group flat roof fasteners

Stress plates

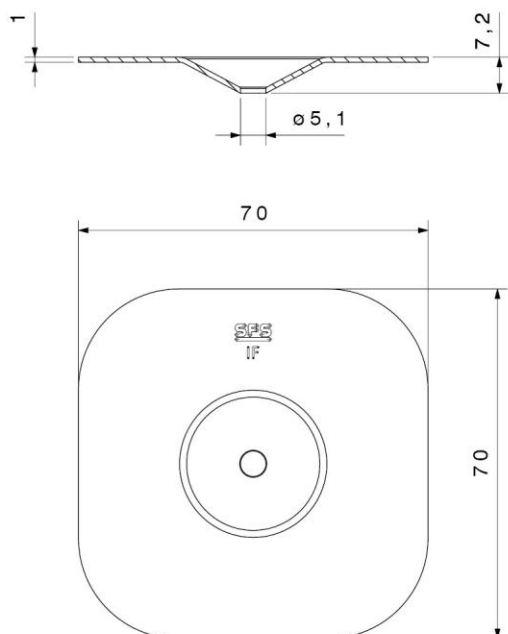
ID-70x70



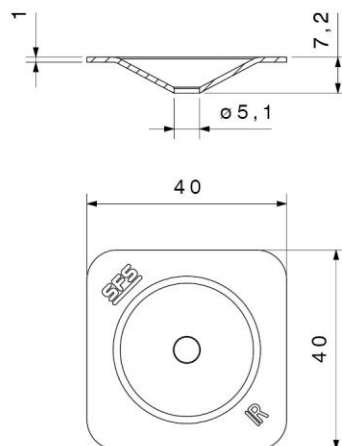
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IF-70x70



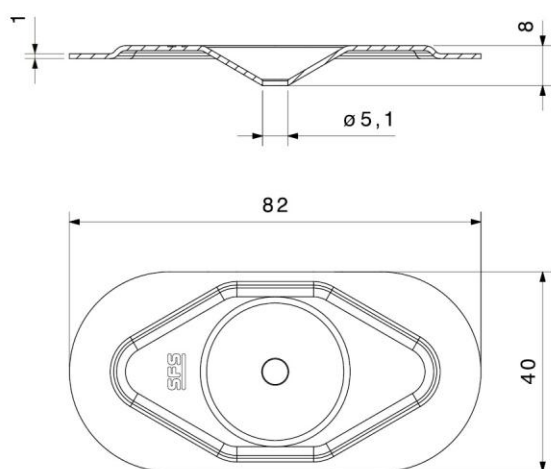
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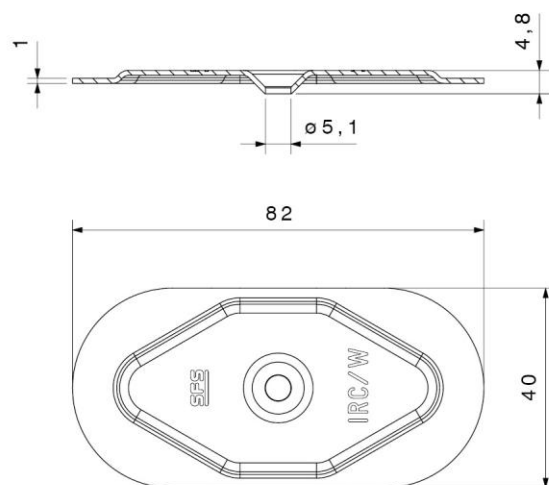
SFS Group flat roof fasteners

Stress plates

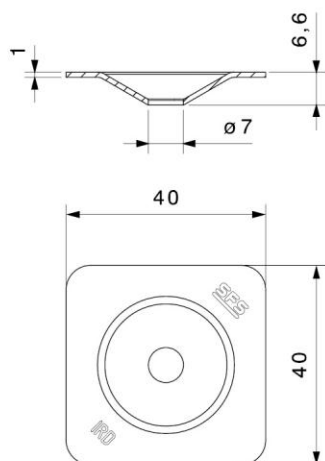
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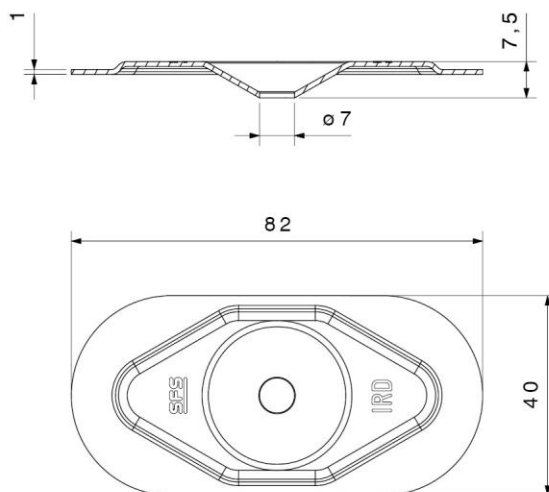
IRC/W-82x40



IRD-40x40



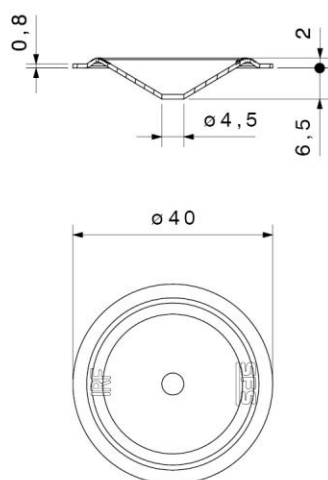
IRD-82x40



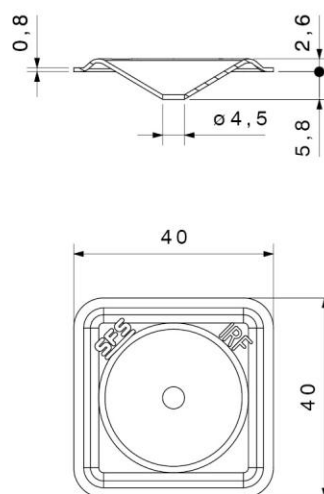
SFS Group flat roof fasteners

Stress plates

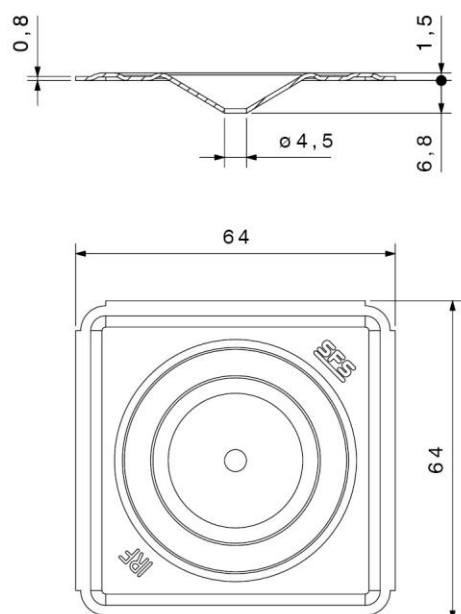
IRF-40



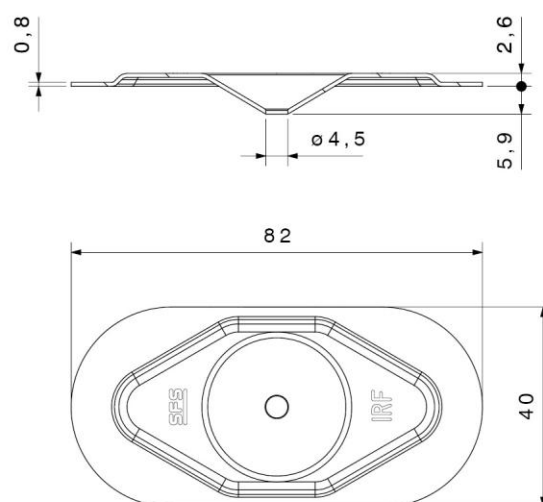
IRF-40x40



IRF-64x64



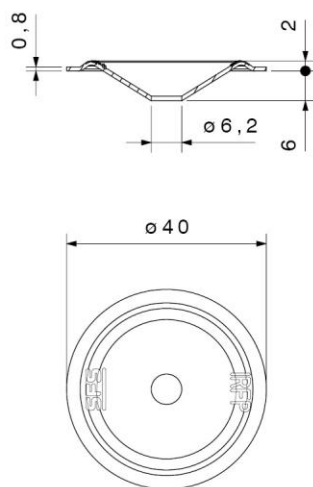
IRF-82x40



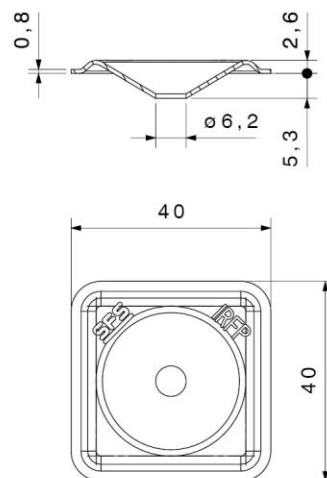
SFS Group flat roof fasteners

Stress plates

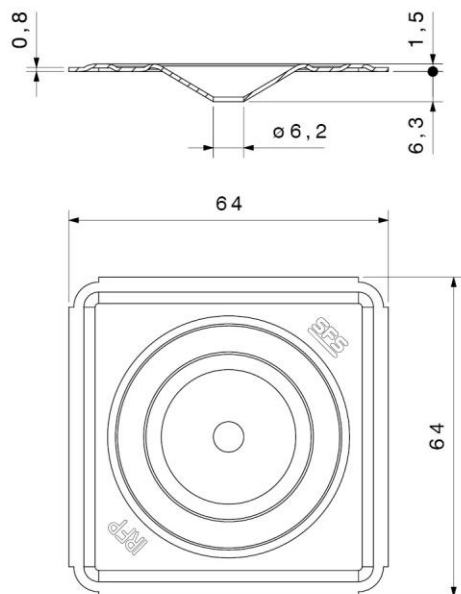
IRFP-40



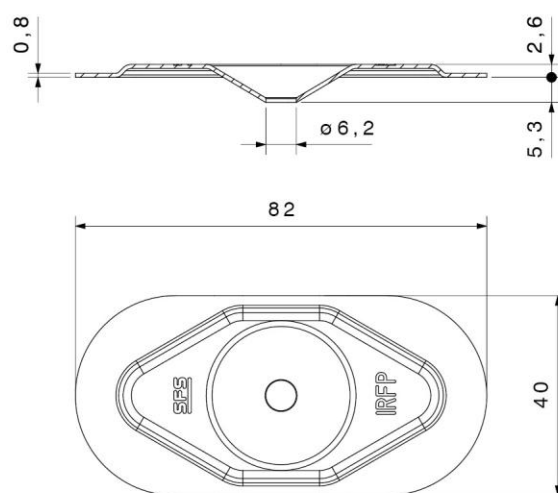
IRFP-40x40



IRFP-64x64



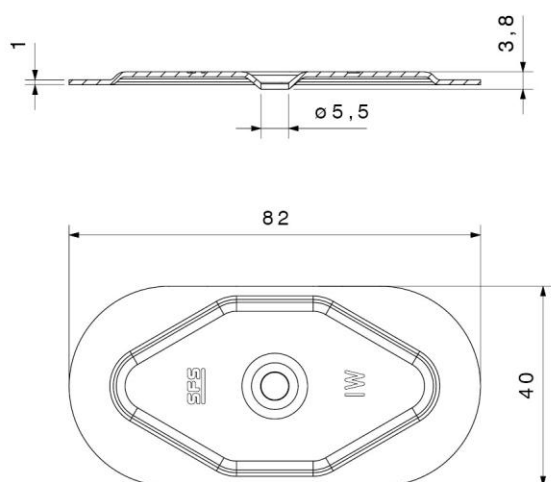
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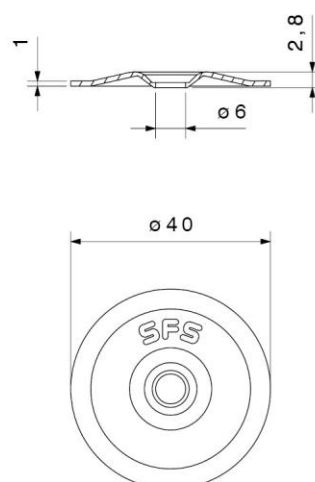
SFS Group flat roof fasteners

Stress plates

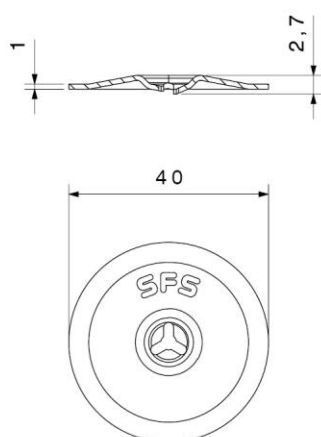
IW-82x40



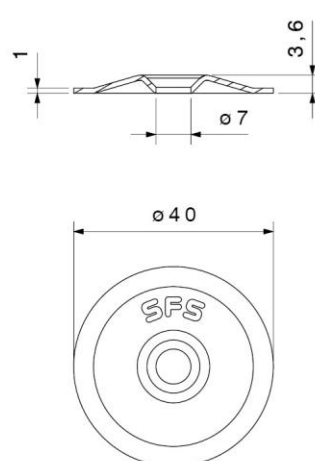
MW-40-F



MW-40-FH



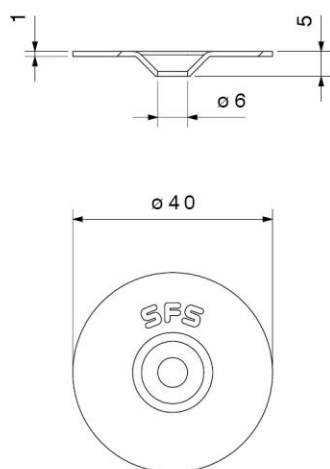
MW-40-LBS



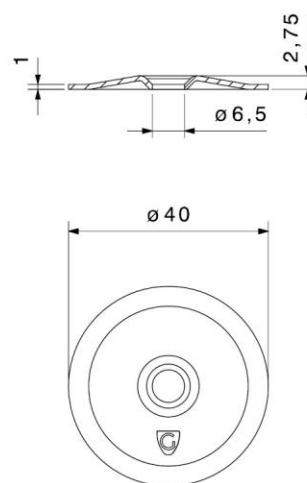
SFS Group flat roof fasteners

Stress plates

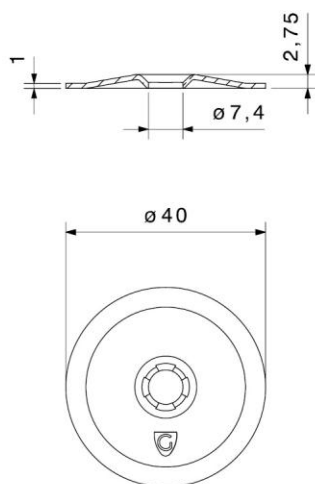
MW-40-R



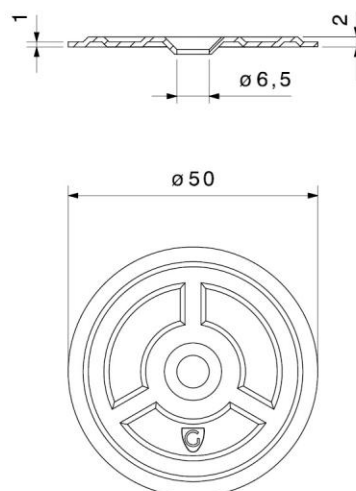
SP-40-D,F,DD,FD



SP-40-LBS



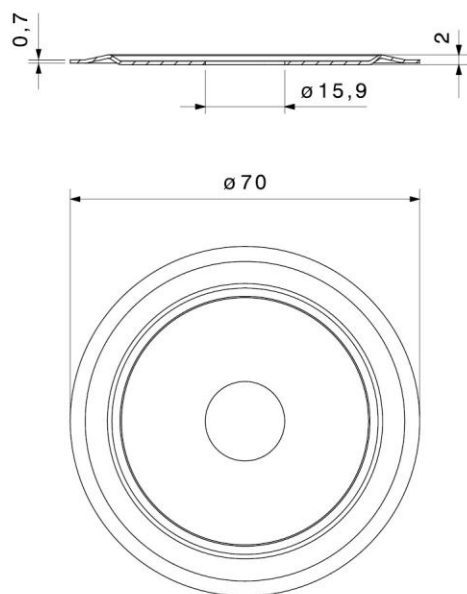
SP-50-D,F,S



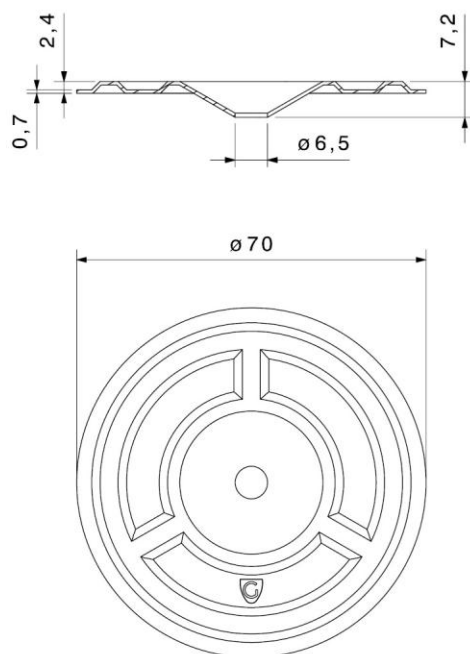
SFS Group flat roof fasteners

Stress plates

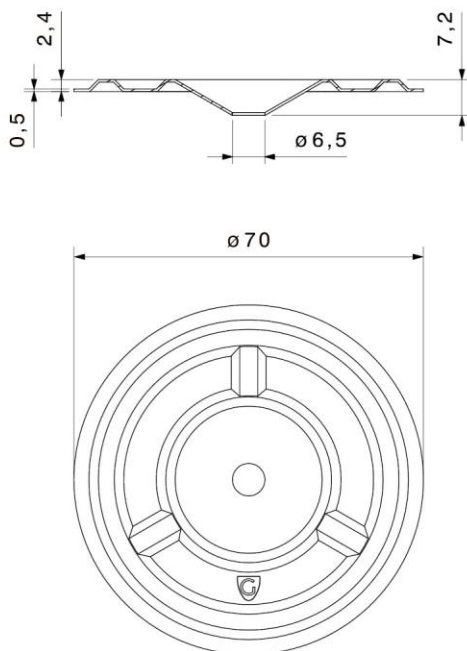
SP-70-CPE



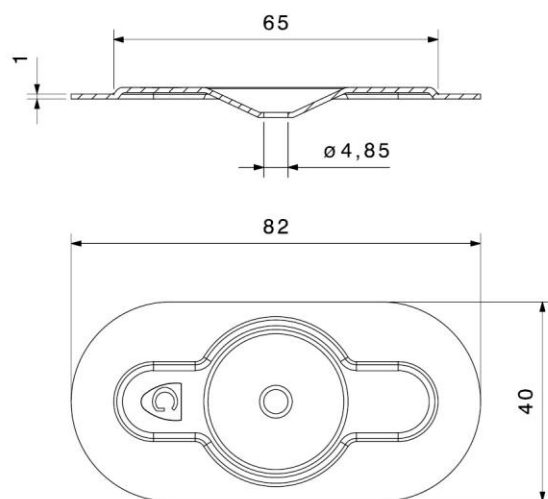
SP-70-D,F,S



SP-70-DX,SX



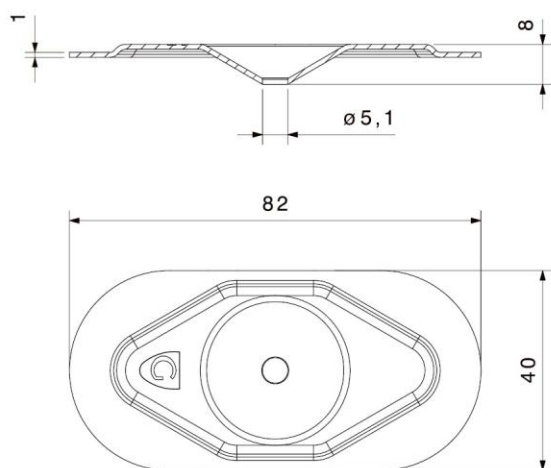
SP-8240-D,F,S



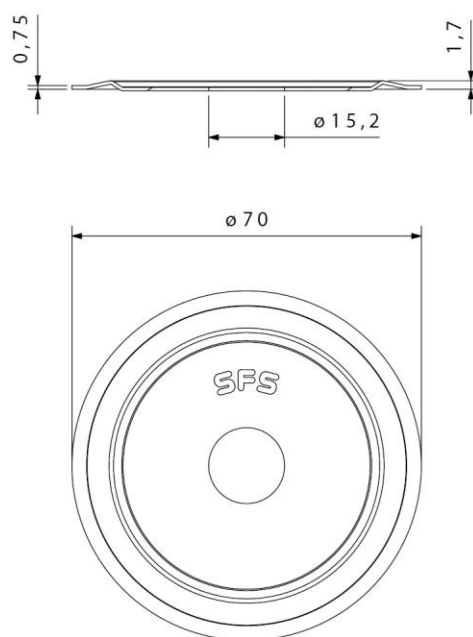
SFS Group flat roof fasteners

Stress plates

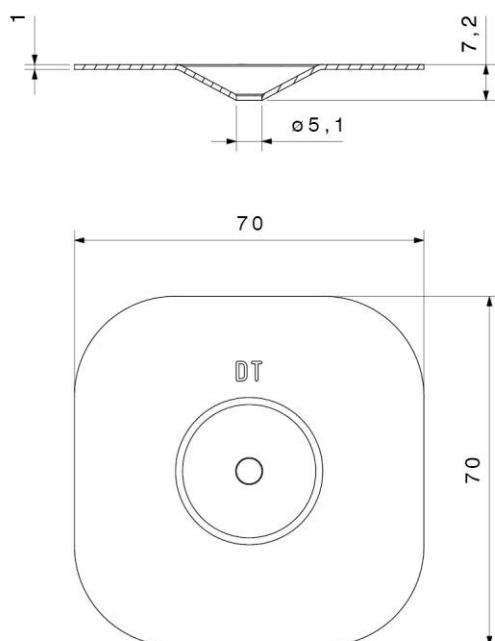
SPA-8240-D1



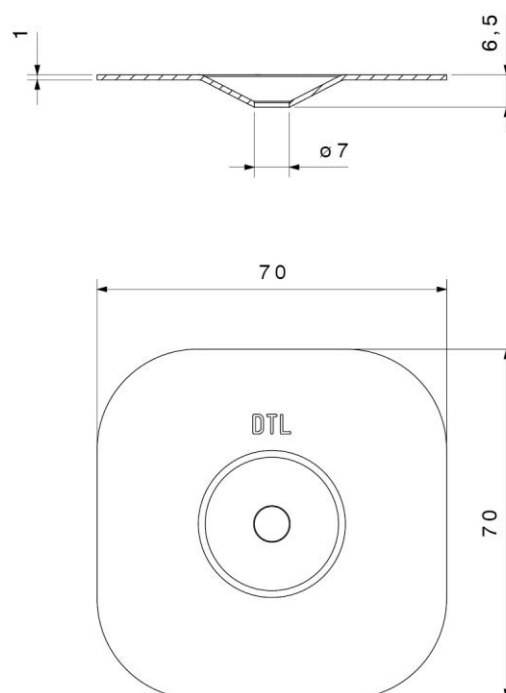
TPA-P-70



Sarnafast DT-70x70



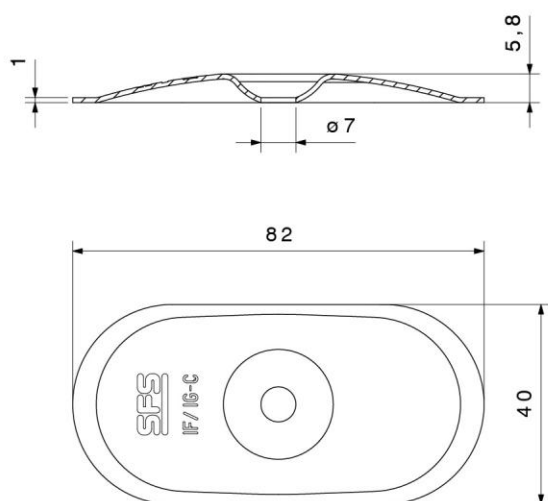
Sarnafast DTL-70x70



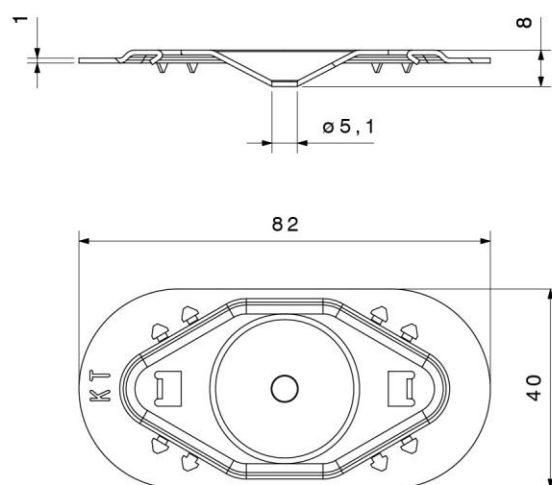
SFS Group flat roof fasteners

Stress plates

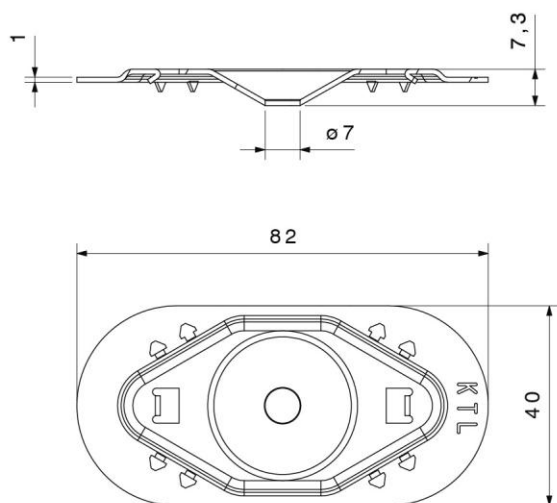
Sarnafast IF/IG-C-82×40



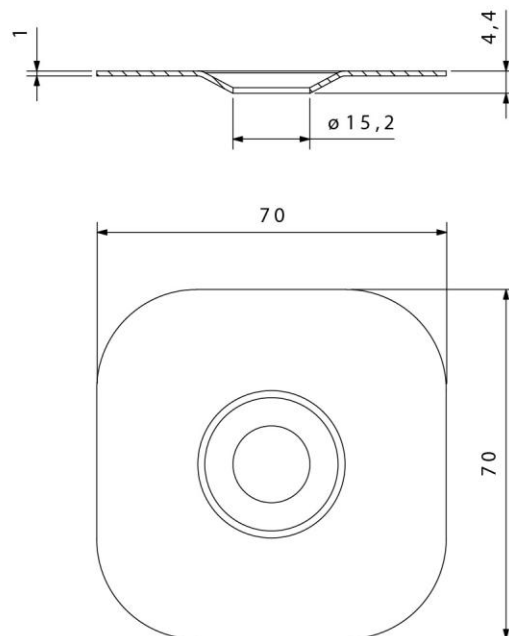
Sarnafast KT-82×40



Sarnafast KTL-82×40



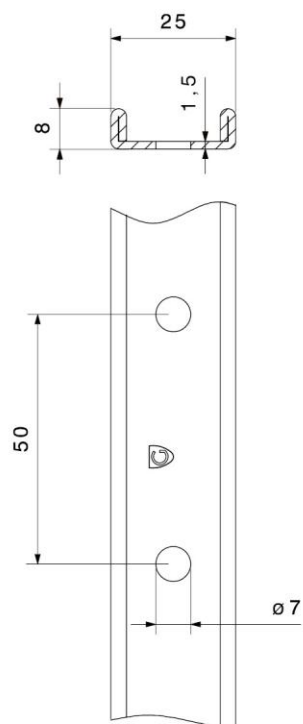
SBIW-70×70



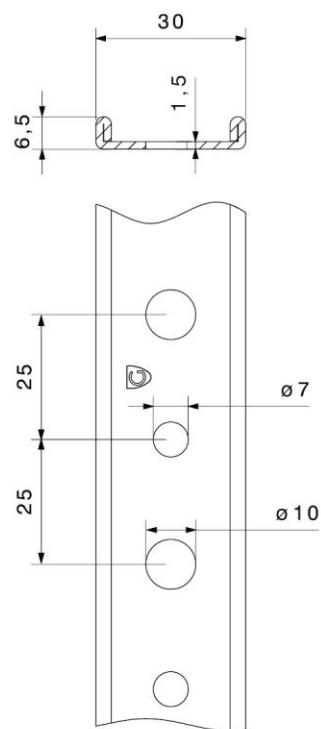
SFS Group flat roof fasteners

Steel bars

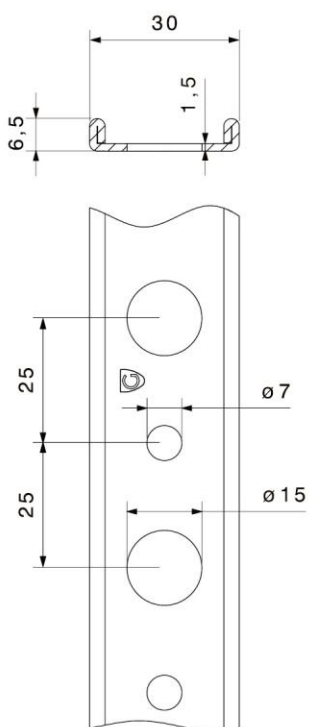
STBS



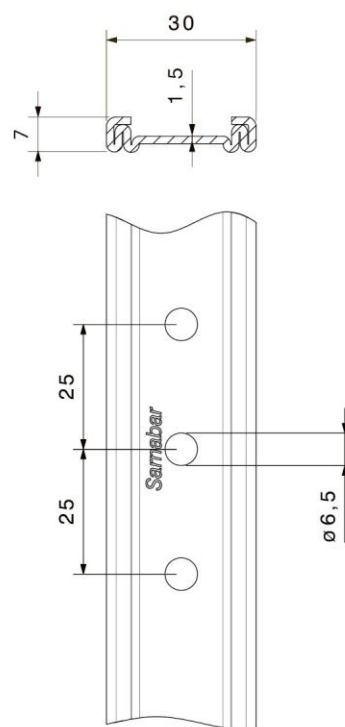
STBST



STBS7T15



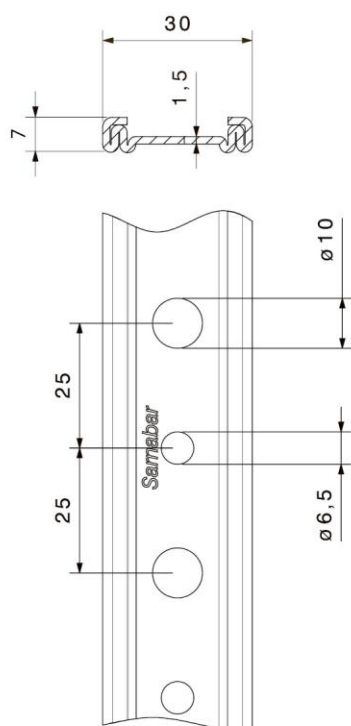
Sarnabar 6



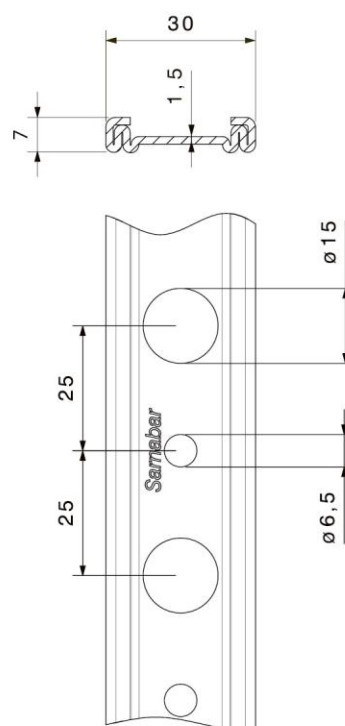
SFS Group flat roof fasteners

Steel bars

Sarnabar 6/10

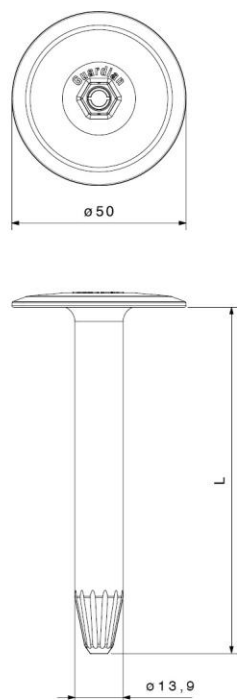


Sarnabar 6/15

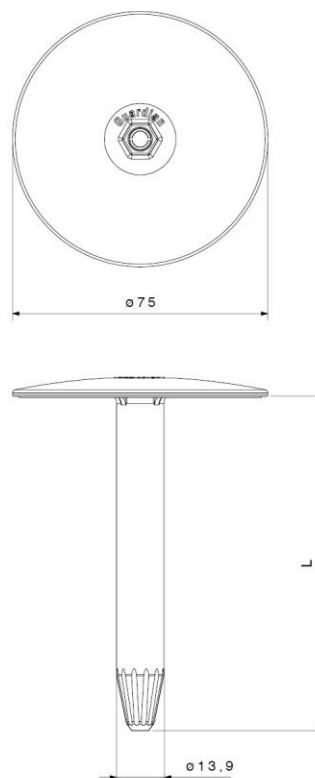


Sleeves

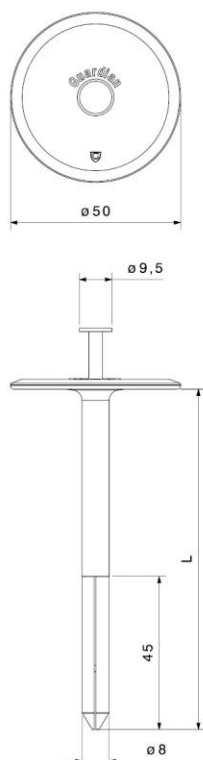
ASTL50



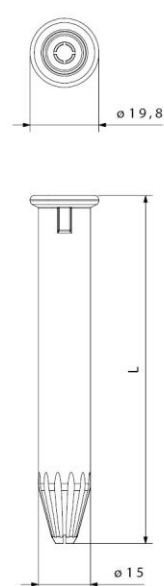
ASTL75



CP50



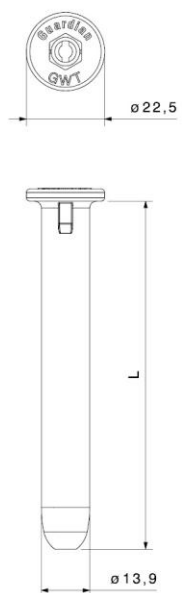
FI-R-20n



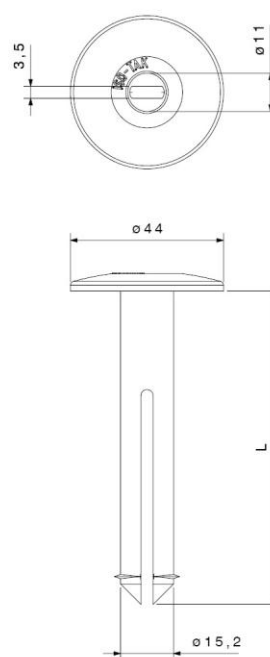
SFS Group flat roof fasteners

Sleeves

GWT



LB-45



RB48



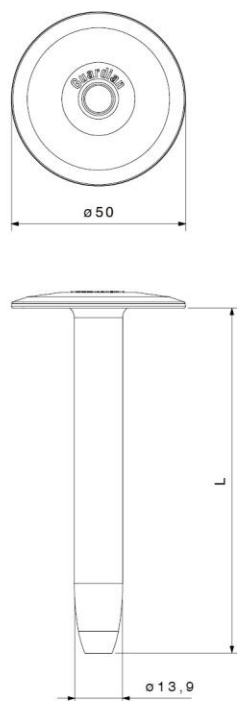
R50



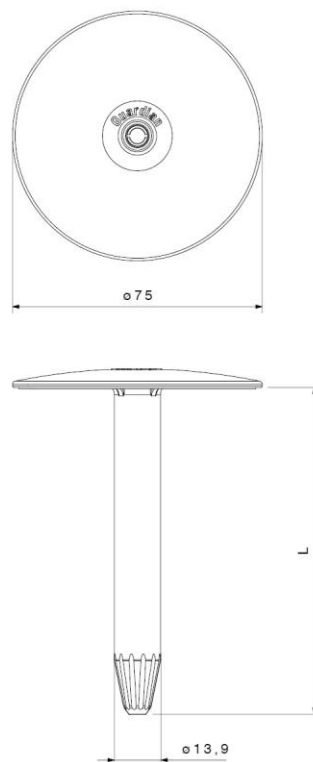
SFS Group flat roof fasteners

Sleeves

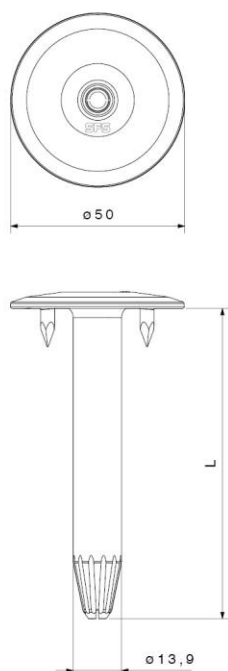
R50-LN



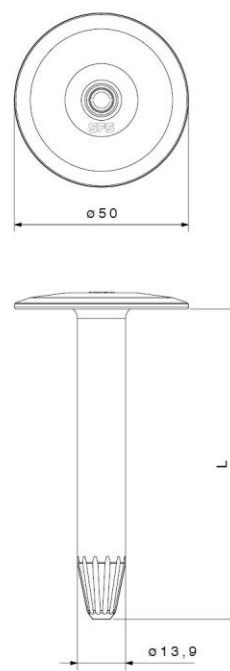
R75



RP48n



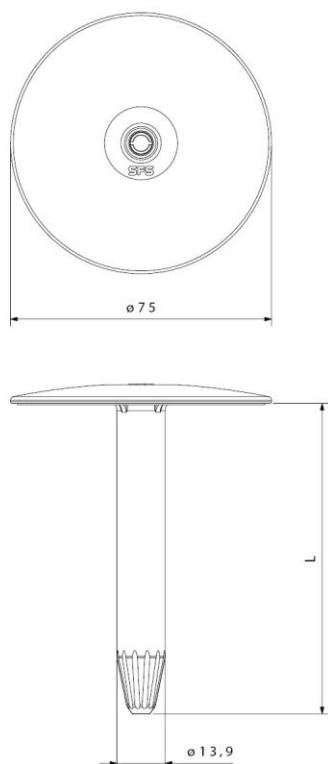
RP50n



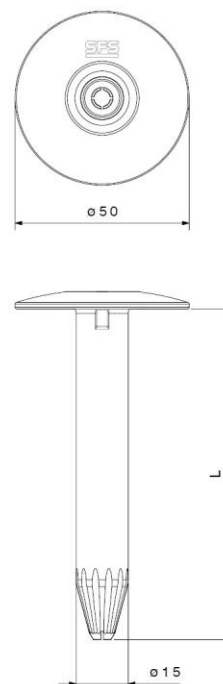
SFS Group flat roof fasteners

Sleeves

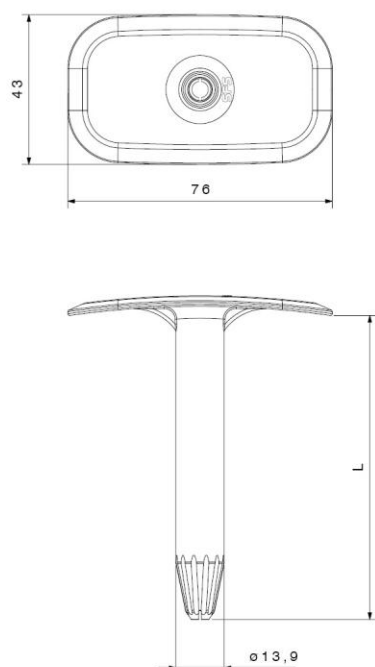
RP75n



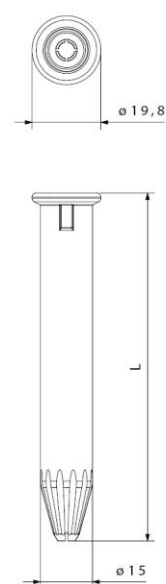
TPA50n



TSU



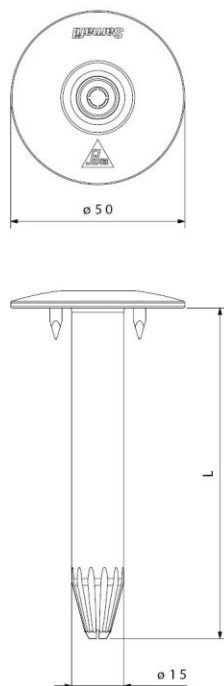
Sarnabar Tube SBT-20



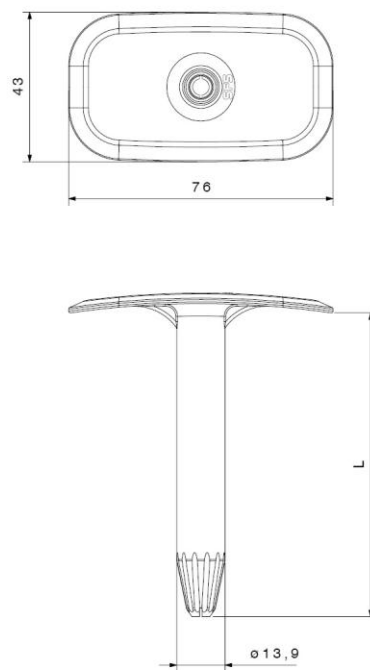
SFS Group flat roof fasteners

Sleeves

Sarnafast Tube SFT-50



SUT



SFS Group flat roof fasteners

Annex 2

Table 1: Characteristic pull-out values of fasteners acc. EAD 030351-00-0402 Figure 3 for metallic substrates [kN]

Fastener	Steel (EN 10346)																	Aluminium (EN 755-2)
	S320GD ³⁾										S350GD		S420GD		Perforated S320GD ⁴⁾		R _m ≥ 195 N/mm ²	
	t [mm]																	
	0,50	0,60	0,63	0,70	0,75	0,80	0,88	1,00	1,25	1,50	0,60	0,70	1,00	0,60	0,65	0,75	0,75	0,60
ACS-N-6,1																		
BSA-N-4,8		0.97	1.06	1.27	1.42	1.53	1.71	1.98	2.80									
BS-4,8				1.35	1.53	1.63	1.79	2.03	2.03									
BS-S-4,8				1.31	1.48	1.58	1.74	1.98										
BS3-4,8										2.10								
BS-6,1		1.53	1.80	2.00	2.14	2.44	2.68	3.05	4.12									
BS-S-6,1	1.00	1.21	1.21	1.47	1.66	1.81	2.04	2.39										0.50
BS-6,7	1.47	1.47															0.87	0.54
BS-6,8	1.29	1.75	1.83	2.04	2.18													
CP50 ¹⁾																		
DBT-4,8				1.32	1.54	1.64	1.80	2.05	2.05									
DT-4,8																		
DT-S-4,8																		
DT-6,3																		
FB-S-T25-7,5																		
IF2-6,1			1.11					1.16										
IFP2-T25-6,7																	0.87	
IR2-4,8				1.32	1.54	1.64	1.80	2.05	2.05									
IR2-S-4,8				1.31	1.48	1.58	1.74	1.98										
IR2-T25-4,8		1.03	1.09	1.34	1.52	1.67	1.91	2.27	3.15		1.32	1.44	2.27	1.44	1.44	1.74		
IR3-4,8										2.10								
IRF-4,8					1.30	1.31	1.33	1.35										
IRFP-6,3																	0.91	
IWF-5,2																		
IW-S-5,0																		
LB-45 ¹⁾																		
LBS-6,0																		
LBS-8,0																		
LBS-S-8,0																		
PS-4,8				1.47	1.61	1.75	1.98											
TIA-T25-6,3																		
TI-T25-6,3																		
TI-S-T25-6,3																		
TPR-6,3 ²⁾	0.99																	0.69
TS-5,2																		
TS-6,0																		
Sarnafast SBF-6,0		1.53	1.80	2.00	2.14	2.44	2.68	3.05	4.12									
Sarnafast SF-4,8				1.32	1.54	1.64	1.80	2.05	2.05									
Sarnafast SF-T25-4,8		1.03	1.09	1.34	1.52	1.67	1.91	2.27	3.15		1.32	1.44	2.27	1.44	1.44	1.74		

¹⁾Plastic plug or nail (fastener) incl. sleeve

³⁾For steel S280GD reduction of values to 92%

²⁾Pre-drill Ø 7,0 mm

⁴⁾Perforated steel sheet, triangular array of holes, hole diameter 5,0 mm, distance of holes 12,5 mm

Table 2: Characteristic pull-out values of fasteners acc. EAD 030351-00-0402 Figure 3 for non-metallic substrates [kN]

Fastener	Timber				Concrete (EN 206-1)					Aerated concrete (EN 12602)				Pumice Panel (EN 1520)		
	OSB/3 ³⁾ 18 mm	C24 ⁴⁾ 22 mm	Plywood ⁵⁾ 18 mm	SD min ⁶⁾ [mm]	C12/15	C20/25	C25/30	SD min ⁶⁾ [mm]	Pre-drill Ø [mm]	Density 450 kg/m³	Density 550 kg/m³	Density 600 kg/m³	SD min ⁶⁾ [mm]	LAC 6, D 1,0	SD min ⁶⁾ [mm]	Pre-drill Ø [mm]
ACS-N-6,1						3.59		25	5.00							
BSA-N-4,8																
BS-4,8	1.24	2.09	1.70	30												
BS-S-4,8	1.26	2.04	1.87	30												
BS3-4,8																
BS-6,1	1.22	2.24	2.14	30		2.17		32	5.00							
BS-S-6,1	1.25	2.02	2.22	30						0.82	1.37		75			
BS-6,7																
BS-6,8																
CP50 ¹⁾							1.57	30	8.00							
DBT-4,8	1.32	2.00	1.76	30												
DT-4,8					2.40		3.34	25	4.80							
DT-S-4,8					2.65		3.69	25	4.80							
DT-6,3					2.93		4.07	32	6.30							
FB-S-T25-7,5														0.59	50	4.80
IF2-6,1	1.07	2.04	2.40	30	1.56		3.12	32	5.00	1.27	2.11		75			
IFP2-T25-6,7																
IR2-4,8	1.32	2.00	1.76	30												
IR2-S-4,8	1.26	2.04	1.87	30												
IR2-T25-4,8	1.45	1.32	2.18	30												
IR3-4,8																
IRF-4,8																
IRFP-6,3																
IWF-5,2	1.35	1.94	2.20	25												
IW-S-5,0	1.08	1.12	2.04	25												
LB-45 ^{1) 2)}										1.44	1.44		65			
LBS-6,0	1.40	2.00	2.30	25		2.92	3.26	40	5.00	- / 1.07	- / 1.78	2.07 / -	60 / 75			
LBS-8,0										1.40	1.62	2.65	60			
LBS-S-8,0										1.44	1.67	1.87	60			
PS-4,8	1.35	1.83	1.86	25												
TIA-T25-6,3					1.83		1.83	20	5.00							
TI-T25-6,3					1.83 / 2.73		1.83 / 3.79	20 / 30	5.00							
TI-S-T25-6,3					0.53		1.05	20	5.00							
TPR-6,3																
TS-5,2	1.35	1.90	1.89	25												
TS-6,0	1.40	2.00	2.30	25		2.92	3.26	40	5.00	- / 1.07	- / 1.78	2.07 / -	60 / 75			
Sarnafast SBF-6,0	1.22	2.24	2.14	30		2.17		32	5.00							
Sarnafast SF-4,8	1.32	2.00	1.76	30												
Sarnafast SF-T25-4,8	1.45	1.32	2.18	30												

¹⁾ Plastic plug or nail (fastener) incl. sleeve

²⁾ Pre-drill Ø 15.0 mm

³⁾ OSB/3 (EN 300), minimum density 550 kg/m³

⁴⁾ C24/Structural timber (EN 338), minimum density 350 kg/m³

⁵⁾ Plywood (EN 636), minimum density 400 kg/m³

⁶⁾ Setting depth minimum

Table 3: Characteristic pull-through values of stress plates acc. EAD 030351-00-0402 Figure 5 [kN]

Component	Product	Characteristic pull-through value ²⁾	Fastener																																															
			ACS-N-6,1	BSA-N-4,8	BS-4,8	BS-S-4,8	BS3-4,8	BS-6,1	BS-S-6,1	BS-6,7	BS-6,8	CP50 ¹⁾	DBT-4,8	DT-4,8	DT-S-4,8	DT-6,3	FB-S-T25-7,5	IF2-6,1	IFP2-T25-6,7	IR2-4,8	IR2-S-4,8	IR2-T25-4,8	IR3-4,8	IRF-4,8	IRFP-6,3	IWF-5,2	IW-S-5,0	LB-45 ¹⁾	LBS-6,0	LBS-8,0	LBS-S-8,0	PS-4,8	TIA-T25-6,3	TI-T25-6,3	TI-S-T25-6,3	TPR-6,3	TS-5,2	TS-6,0	Sarnafast SBF-6,0	Sarnafast SF-4,8	Sarnafast SF-T25-4,8									
Stress plate	FI-P-6,8	2.87			•	•	•	•	•	•			•	•	•	•										•	•			•				•	•	•														
	ID-70×70	3.96			•	•	•	•	•	•			•	•	•	•	•		•							•				•	•	•	•			•	•													
	IF/IG-C-82×40	3.73			•	•	•	•	•	•			•	•	•	•	•			•	•	•	•						•	•	•	•			•	•					•	•								
	IF-70×70	5.34			•	•	•						•							•	•	•	•														•					•	•							
	IR-40×40	5.34			•	•	•						•							•	•	•	•			•																	•	•						
	IR-82×40	5.34			•	•	•						•							•	•	•	•			•																	•	•						
	IRC/W-82×40	5.18			•	•	•													•	•	•	•			•																								
	IRD-40×40	3.96			•	•	•	•	•	•	•			•	•	•	•	•	•							•																								
	IRD-82×40	3.96			•	•	•	•	•	•	•			•	•	•	•	•	•							•																								
	IRF-40	5.06																																																
	IRF-40×40	5.06																																																
	IRF-64×64	5.06																																																
	IRF-82×40	5.06																																																
	IRFP-40	4.48																																																
	IRFP-40×40	4.48																																																
	IRFP-64×64	4.48																																																
	IRFP-82×40	4.48																																																
	IWF-82×40	4.60			•	•	•	•	•					•	•												•		•																					
	MW-40-F	2.85			•	•	•	•	•	•	•			•	•												•		•																					
	MW-40-FH	1.74																									•																							
	MW-40-LBS	3.54																																																
	MW-40-R	3.92			•	•	•	•	•	•	•			•	•												•		•																					
	SP-40-D/F/DD/FD	3.88			•	•	•	•	•	•	•																																							
	SP-40-LBS	4.29																																																
	SP-50-D/F/S	4.83			•	•	•	•	•	•	•																																							
	SP-70-D/F/S	2.88			•	•	•	•	•	•	•																																							
	SP-70-DX/SX	1.22			•	•	•	•	•	•	•																																							
	SP-8240-D/F/S	5.30			•	•	•	•	•	•	•																																							
	SPA-8240-D1	5.34			•	•	•						•							•	•	•	•					•																						
	Sarnafast DT-70×70	5.34			•	•	•						•							•	•	•	•					•																						
	Sarnafast DTL-70×70	3.96			•	•	•	•	•	•	•			•	•	•	•	•	•																															
	Sarnafast IF/IG-C-82×40	3.73			•	•	•	•	•	•	•			•	•	•	•	•		•	•	•	•																											
	Sarnafast KT-82×40	5.34			•	•	•						•							•	•	•	•					•																						
	Sarnafast KTL-82×40	3.96			•	•	•	•	•	•	•			•	•	•	•	•	•																															

• Defined combination

¹⁾ Plastic plug or nail (fastener) incl. sleeve

²⁾ Lowest characteristic pull-through value of defined combinations

Table 4: Characteristic pull-through values of steel bars acc. EAD 030351-00-0402 Figure 5 [kN]

Component	Product	Characteristic pull-through value ²⁾	Fastener																																										
			ACS-N-6,1	BSA-N-4,8	BS-4,8	BS-S-4,8	BS3-4,8	BS-6,1	BS-S-6,1	BS-6,7	BS-6,8	CP50 ¹⁾	DBT-4,8	DT-4,8	DT-S-4,8	DT-6,3	FB-S-T25-7,5	IF2-6,1	IFP2-T25-6,7	IR2-4,8	IR2-S-4,8	IR2-T25-4,8	IR3-4,8	IRF-4,8	IRFP-6,3	IWF-5,2	IW-S-5,0	LB-45 ¹⁾	LBS-6,0	LBS-8,0	LBS-S-8,0	PS-4,8	TIA-T25-6,3	TI-T25-6,3	TI-S-T25-6,3	TPR-6,3	TS-5,2	TS-6,0	Sarnafast SBF-6,0	Sarnafast SF-4,8	Sarnafast SF-T25-4,8				
Steel bar	STBS	3.68			•	•	•	•	•	•		•	•	•	•	•			•	•	•	•							•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	
	STBST	3.68			•	•	•	•	•	•		•	•	•	•	•				•	•	•	•						•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	
	STBS7T15	3.68			•	•	•	•	•	•		•	•	•	•	•			•	•	•	•							•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•
	Sarnabar 6	5.00			•	•	•	•	•	•		•	•	•	•	•			•	•	•	•				•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	
	Sarnabar 6/10	5.00			•	•	•	•	•	•		•	•	•	•	•			•	•	•	•				•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	
	Sarnabar 6/15	4.80			•	•	•	•	•	•		•	•	•	•	•			•	•	•	•				•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•

• Defined combination

¹⁾ Plastic plug or nail (fastener) incl. sleeve

²⁾ Lowest characteristic pull-through value of defined combinations

Table 5: Characteristic pull-through values of sleeves and combinations of stress plates or steel bars and sleeves acc. EAD 030351-00-0402 Figure 4 [kN]

			Fastener																																												
Component	Product	Characteristic pull-through value ²⁾	ACS-N-6,1	BSA-N-4,8	BS-4,8	BS-S-4,8	BS3-4,8	BS-6,1	BS-S-6,1	BS-6,7	BS-6,8	CP50 ¹⁾	DBT-4,8	DT-4,8	DT-S-4,8	DT-6,3	FB-S-T25-7,5	IF2-6,1	IFP2-T25-6,7	IR2-4,8	IR2-S-4,8	IR2-T25-4,8	IR3-4,8	IRF-4,8	IRFP-6,3	IWF-5,2	IW-S-5,0	LB-45 ¹⁾	LBS-6,0	LBS-8,0	LBS-S-8,0	PS-4,8	TIA-T25-6,3	TI-T25-6,3	TI-S-T25-6,3	TPR-6,3	TS-5,2	TS-6,0	Sarnafast SBF-6,0	Sarnafast SF-4,8	Sarnafast SF-T25-4,8						
Sleeve	ASTL50	1.58	•																																												
	ASTL75	1.58	•																																												
	CP50 ¹⁾	1.57										•																																			
	LB-45 ¹⁾	1.44																											•																		
	RB48	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	R50	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	R50-LN	1.58																													•			•													
	R75	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	RP48n	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	RP50n	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	RP75n	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
	TPA50n	2.77		•	•	•	•	•	•	•	•	•			•	•															•			•	•	•		•	•	•							
	TSU	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•							
Sarnafast Tube SFT-50	2.77		•	•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•								
SUT	1.58			•	•	•	•	•	•	•	•			•	•		•													•			•	•	•		•	•	•								
Combination Stress plate + Sleeve	BSA-P-50 / FI-R-20n	2.10		•	•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					
	BSA-P-70×70 / FI-R-20n	2.10		•	•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					
	FI-P-16,0 / FI-R-20n	2.10		•	•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					
	FI-P-16,0 / GWT	3.17	•		•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					
	SP-70-CPE / CP50	1.57										•			•	•														•			•														
	SP-70-CPE / R50-LN	1.58																													•			•													
	TPA-P-70 / TPA50n	2.77		•	•	•	•	•	•	•	•	•			•	•														•			•	•	•					•	•	•					
	BSA-P-50 / Sarnabar Tube SBT-20	2.10		•	•	•	•	•	•	•	•	•			•	•														•			•	•	•					•	•	•					
	SBIW-70×70 / Sarnabar Tube SBT-20	2.10		•	•	•	•	•	•	•	•	•			•	•														•			•	•	•					•	•	•					
Combination Steel bar + Sleeve	STBS7T15 / GWT	3.17	•		•	•	•	•	•	•	•			•	•															•			•			•	•	•		•	•	•					
	Sarnabar 6/15 / FI-R-20n	2.10		•	•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					
	Sarnabar 6/15 / Sarnabar Tube SBT-20	2.10		•	•	•	•	•	•	•	•			•	•															•			•	•	•					•	•	•					

• Defined combination

¹⁾ Plastic plug or nail (fastener) incl. sleeve

²⁾ Lowest characteristic pull-through value of defined combinations

Figure 3 of EAD 030351-00-0402
Principle of fastener pull-out test

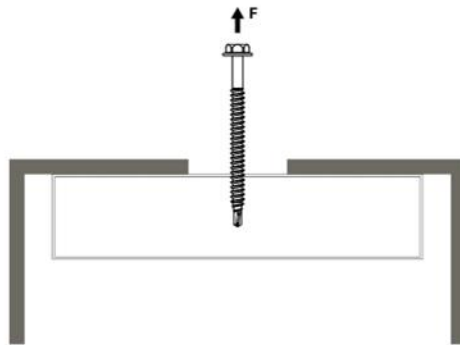


Figure 4 of EAD 030351-00-0402
Principle of plastic washer pull-through test

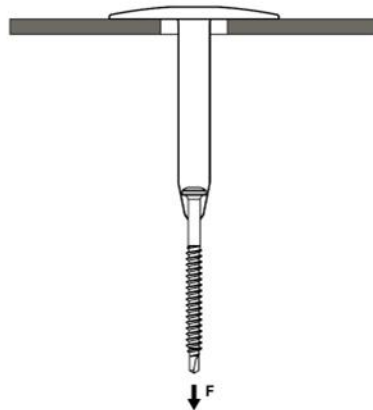


Figure 5 of EAD 030351-00-0402
Principle of metallic washer pull-through test

