

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-08/0262
of 12 January 2021

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

SFS Flat roof fasteners

Product family
to which the construction product belongs

Systems of mechanically fastened flexible roof
waterproofing sheets

Manufacturer

SFS intec AG
Division Construction
Rosenbergsaustraße 10
9435 HEERBRUGG
SCHWEIZ

Manufacturing plant

Factories of SFS intec AG

This European Technical Assessment
contains

124 pages including 119 annexes which form an integral
part of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

EAD 030351-00-0402

This version replaces

ETA-08/0262 issued on 17 October 2017

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The construction products are mechanical fasteners. The fasteners comprise a screw, blind rivet or anchor made of coated carbon steel, aluminium or stainless steel and a washer with or without integrated sleeve. The washers without integrated sleeve are made of coated carbon steel whereas the washers with integrated sleeve are made of polypropylene or polyamide. Some fasteners include a perforated lath made of coated carbon steel.

The fasteners are shown in the Annexes to this ETA.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The fasteners are intended to be used for the fastening of flexible roof waterproofing membranes according to EAD 030351-00-0402. The possible substrates are steel or aluminium decks, concrete, aerated concrete, pumice panel or timber.

The performances given in Section 3.2 are only valid if the fasteners are used in compliance with the specifications and conditions given in sections 3.1 and 3.3 and the Annexes to this ETA.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fasteners of at least 10 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

In order to use the fasteners for systems of mechanically fastened flexible roof waterproofing membranes according to EAD 030351-00-0402 a separate ETA is necessary for the entire roof waterproofing system. The system ETA covers the wind uplift resistance of the entire system as well as the product characteristics of the components of the system.

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

3.1 Characteristics of the product

The fasteners shall correspond to the information given in Annexes 1 to 106.

Corrosion resistance of blind rivet's mandrel type TPR-L shall be provided by minimum 8µm galvanisation.

The material properties, dimensions and tolerances not indicated in Annexes 1 to 106 shall correspond to the information laid down in the technical information¹ to this European technical assessment.

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic tensile loading	See Annexes 107 to 119
Resistance to unwinding	pass
Resistance to corrosion of metallic fasteners	pass; ≤ 15 % surface corrosion

¹ The technical documentation is deposited with Deutsches Institut für Bautechnik and as far as relevant for the tasks of the approved bodies involved in the attestation of conformity procedure is handed over to the approved bodies.

Essential characteristic	Performance
Impact resistance and brittleness of plastic fasteners (before and after heat ageing ^{*)})	pass; drop height > 1,0 m
Requirements for results of Charpy tests for plastic materials (before and after heat ageing ^{*)})	pass; not any significant decline compared to the results before heat ageing
^{*)} For the components FL-R-20, RG50, RP50 and TPA50 no tests after heat ageing according to EAD 030351-00-0402, subclause 2.2.3.5 were proceeded. These components shall not be exposed to UV and water.	

The thickness and strengths of the materials listed in the tables of characteristic axial loads (Annexes 107 to 119) are minimum requirements. The values given are also applicable for materials with higher thickness and strengths. The values of axial loading shown in Annexes 107 to 119 were determined by axial loading tests according to EAD 030351-00-0402.

The fasteners are deemed to satisfy the requirements of EAD 030351-00-0402 concerning unwinding. This was evaluated on the basis of the existing field experience of the manufacturer.

The durability requirements of EAD 030351-00-0402 (resistance to corrosion of metallic fasteners, impact resistance and brittleness of plastic fasteners before and after heat ageing (also regard table above), requirements for results of Charpy tests for plastic materials before and after heat ageing (also regard table above)) are satisfied for the coated carbon steel, aluminium, stainless steel, polypropylene and polyamide components of the fasteners.

All coated carbon steel components resisted to 15 cycles of the test procedure described in EAD 030351-00-0402 (Kesternich test) and did not show more than 15 % surface corrosion.

The test results of the tests to check the impact resistance and brittleness of the polyamide components showed a drop height of more than 1.0 m before and after heat ageing of these components. Furthermore, the results of the corresponding Charpy tests after heat ageing (also regard table above) did not show any significant decline compared to the results before heat ageing.

3.3 Indications concerning installation

The installation is solely carried out according to the manufacturer's instructions. When assembling the fastener's components, the screw thread penetrating into the substrate shall not be damaged. The manufacturer hands over the assembly instructions to the assembler.

The conformity of the installed fastener with this ETA is attested by the executing company.

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1, 2, 3.1 and 3.2 is given to those who are concerned. The information may be given by reproduction of the ETA. In addition, all installation data shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

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

In accordance with EAD 030351-00-0402 the applicable European legal act is: 1998/143/EC.
The system to be applied is: 2+

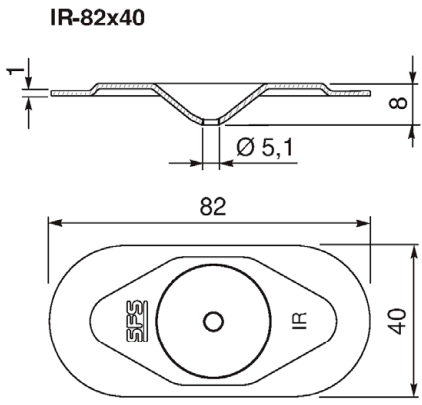
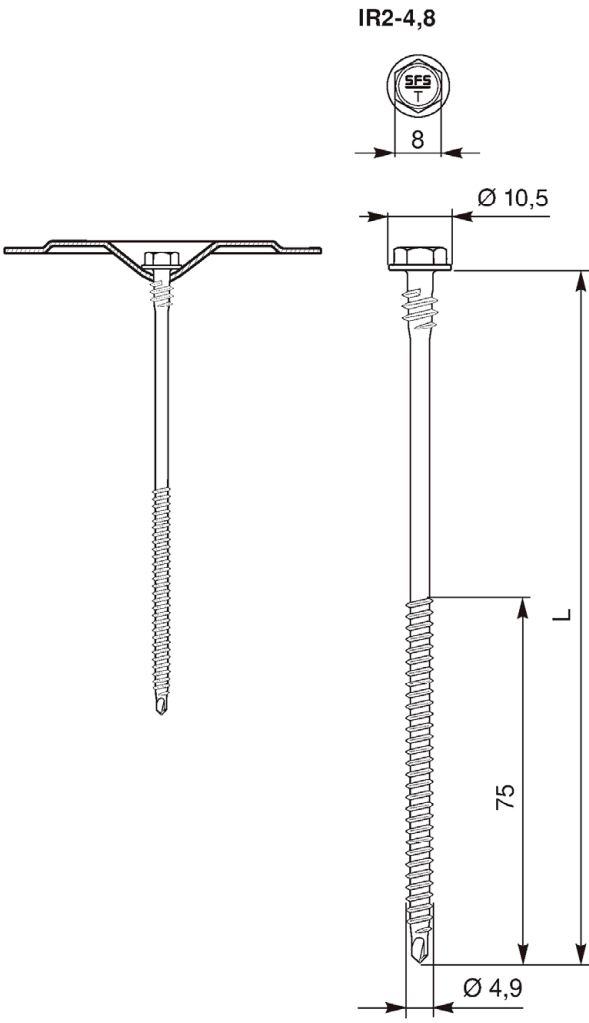
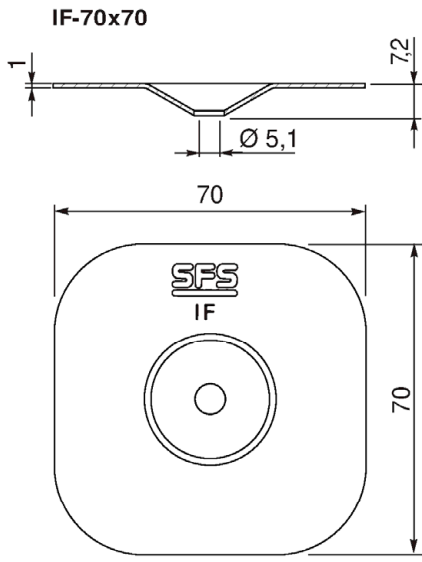
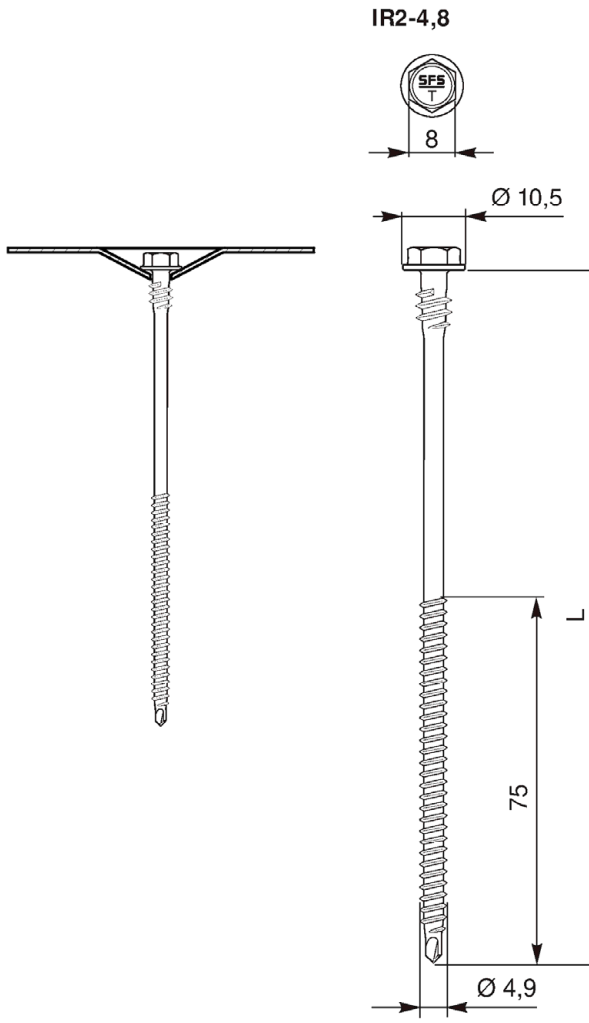
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

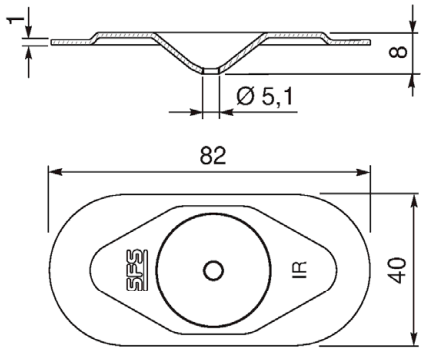
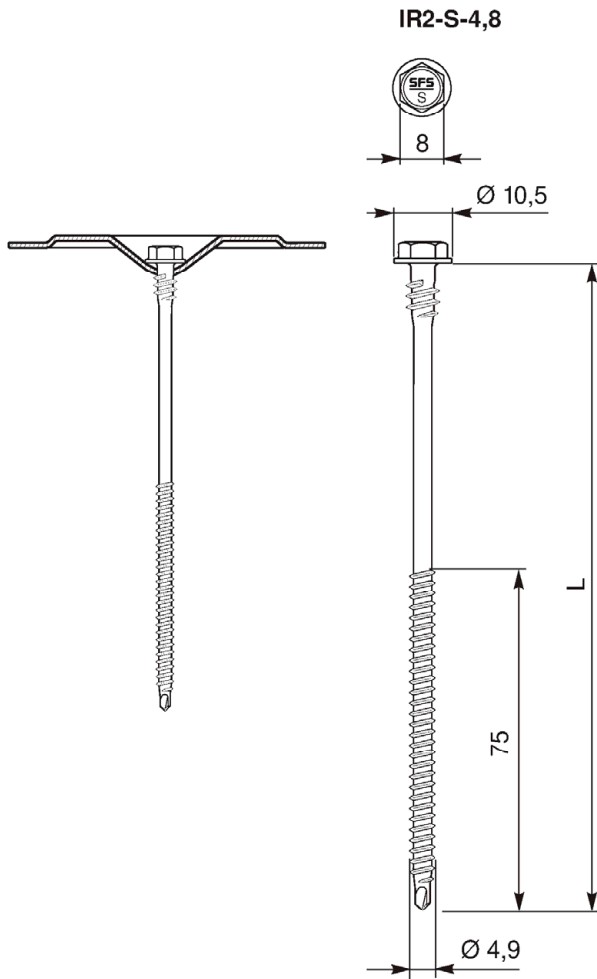
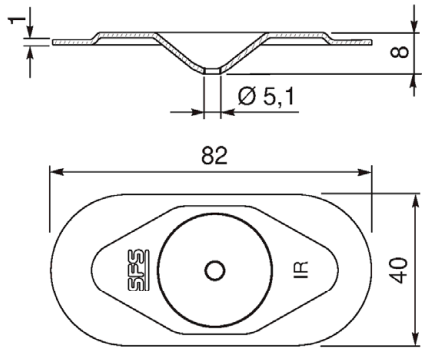
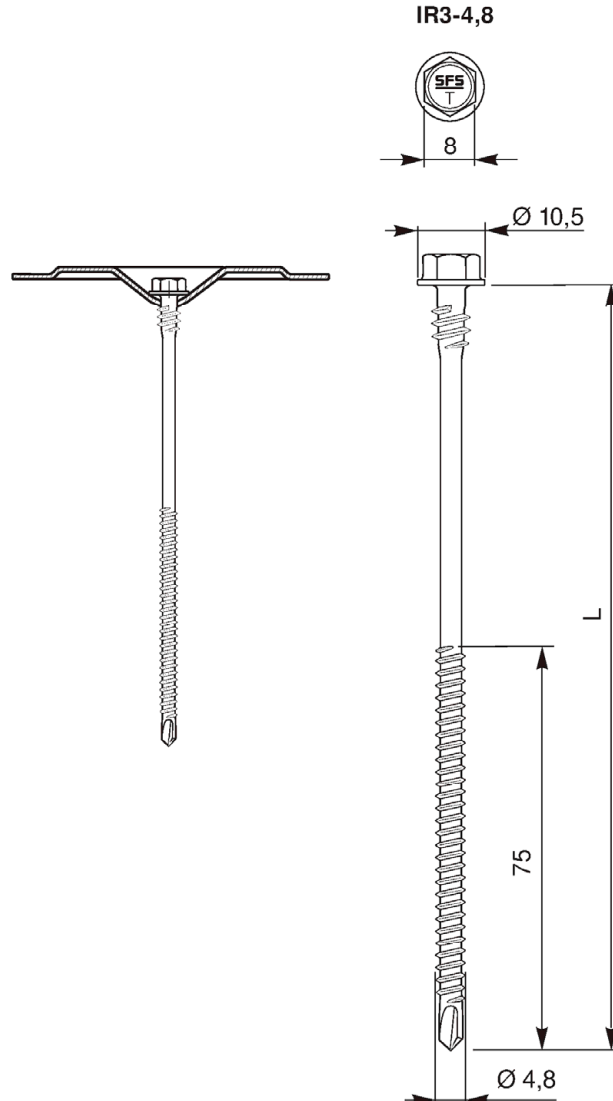
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 12 January 2021 by Deutsches Institut für Bautechnik

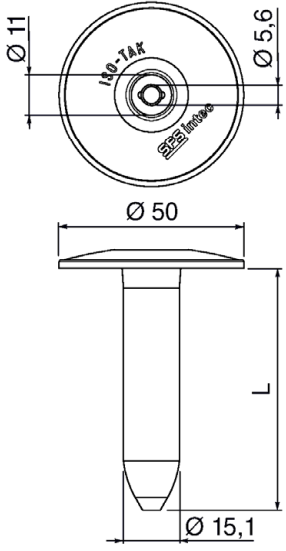
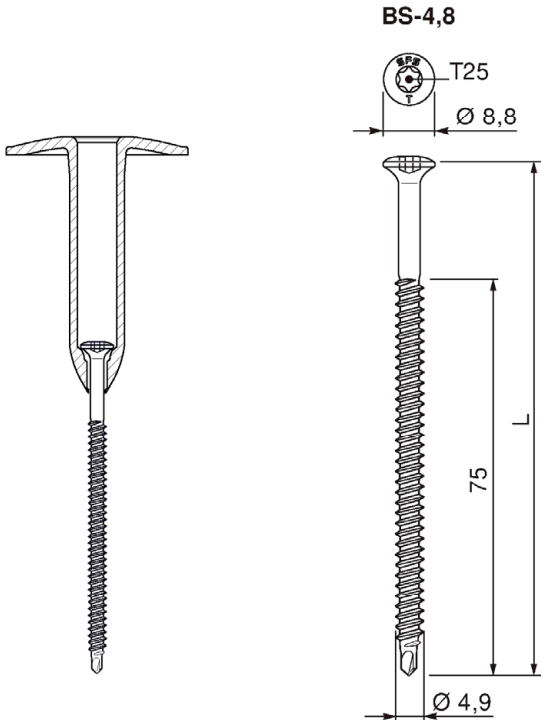
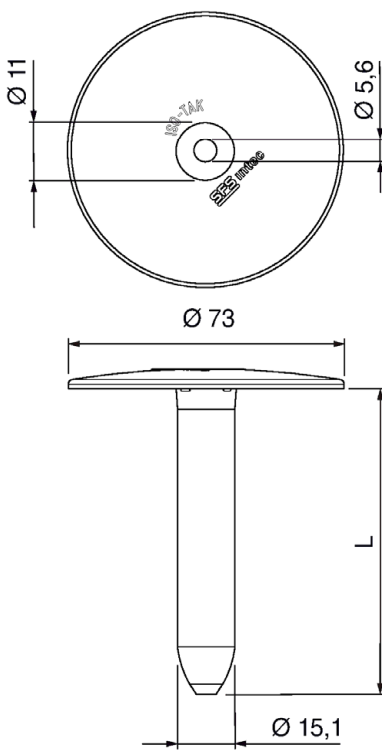
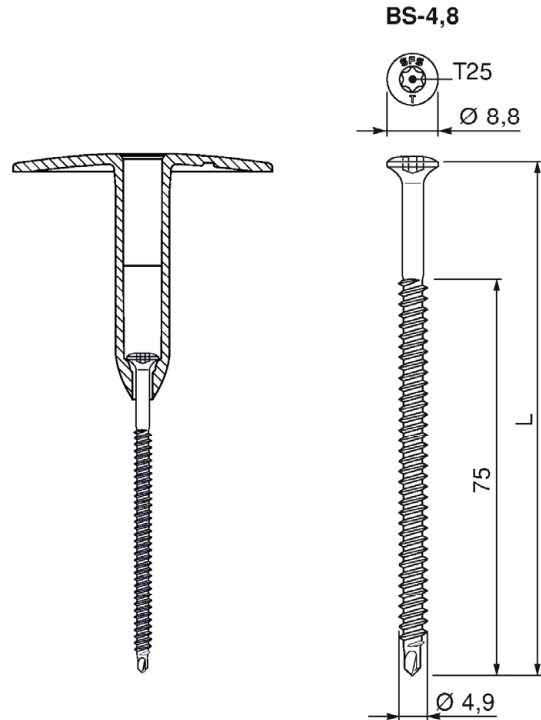
Andreas Schult
Head of Section

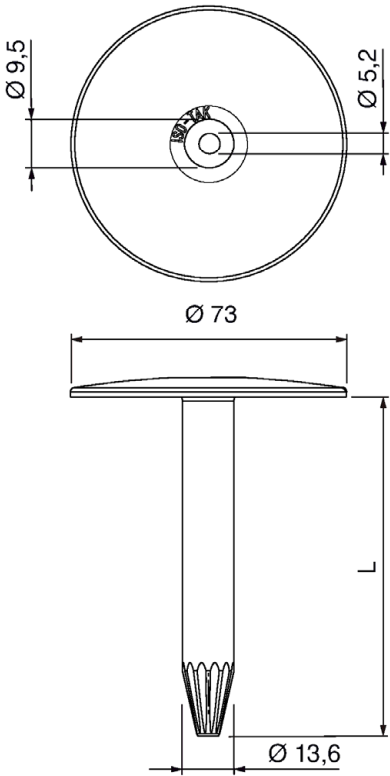
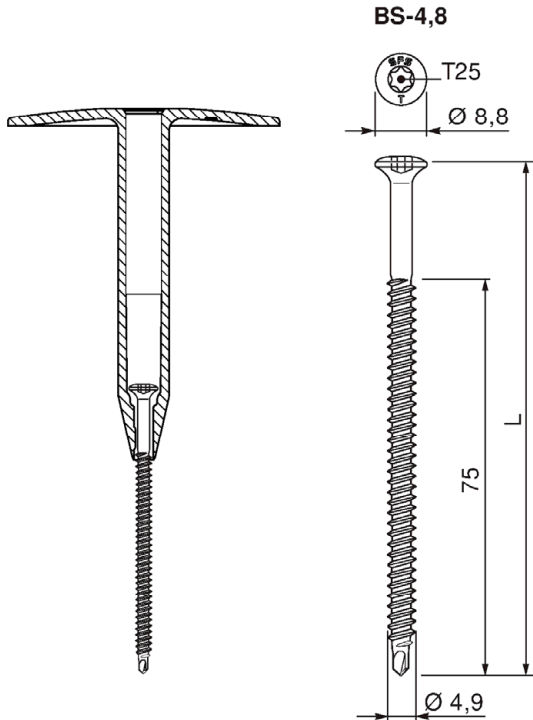
beglaubigt:
Reimuth

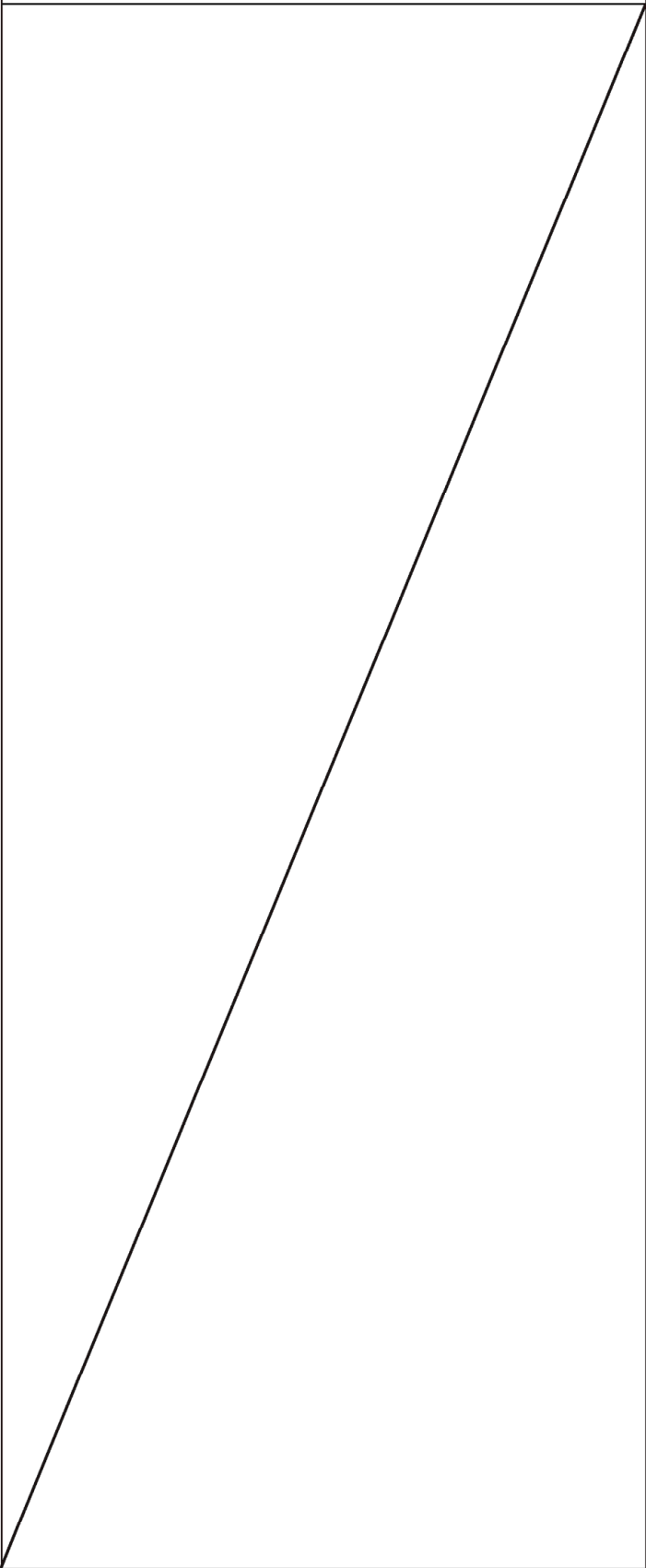
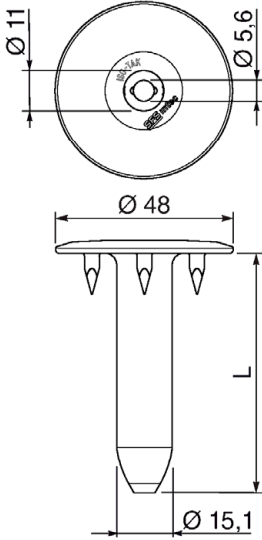
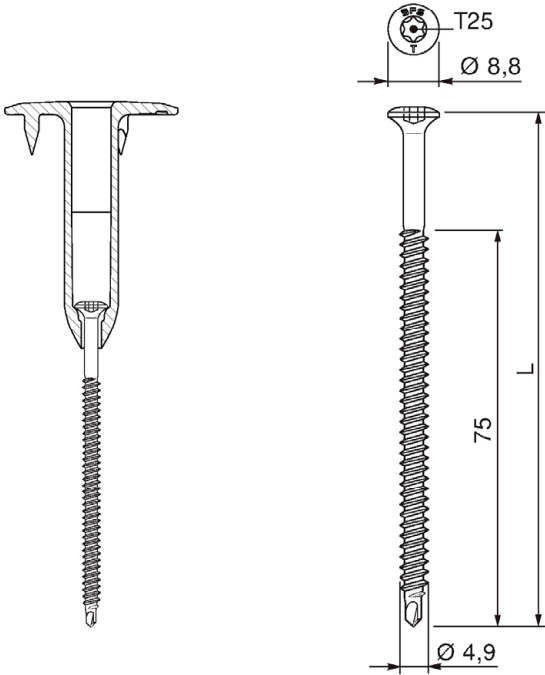
Combination 1A IR2-4,8 / IR-82x40	Combination 1B IR2-4,8 / IF-70x70
IR-82x40  IR2-4,8 	IF-70x70  IR2-4,8 
SFS Flat roof fasteners	Annex 1

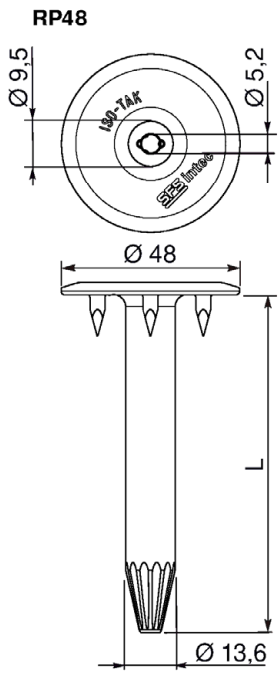
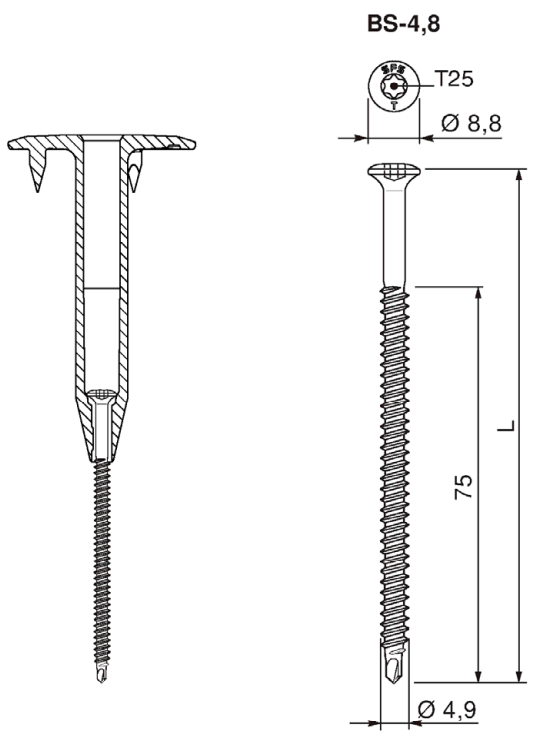
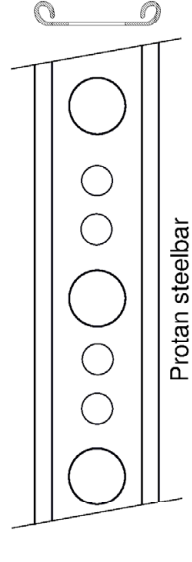
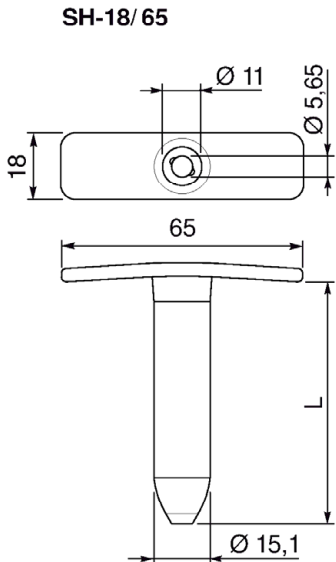
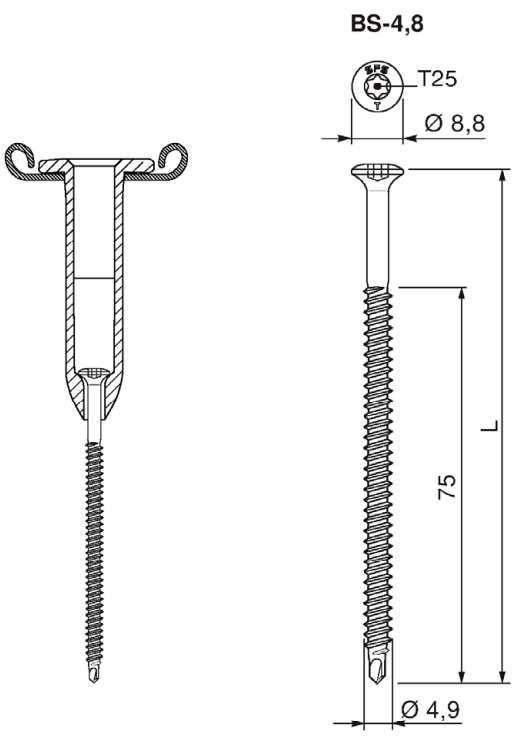
Combination 2A IR2-S-4,8 / IR-82x40	Combination 2B IR3-4,8 / IR-82x40
IR-82x40  IR2-S-4,8 	IR-82x40  IR3-4,8 
SFS Flat roof fasteners	Annex 2

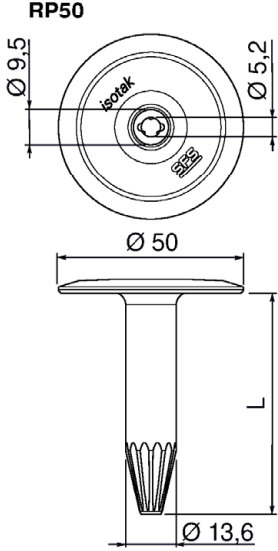
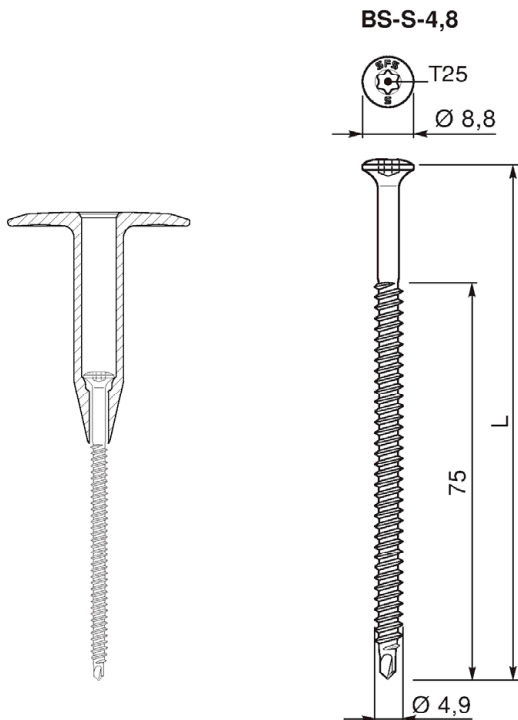
Combination 3A IR2-C-4,8 / IRC/W-82×40	Combination 3B BS-4,8 / RP50
IRC/W-82x40 IR2-C-4,8	RP50 BS-4,8
SFS Flat roof fasteners	Annex 3

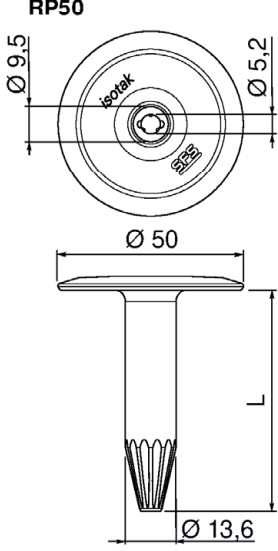
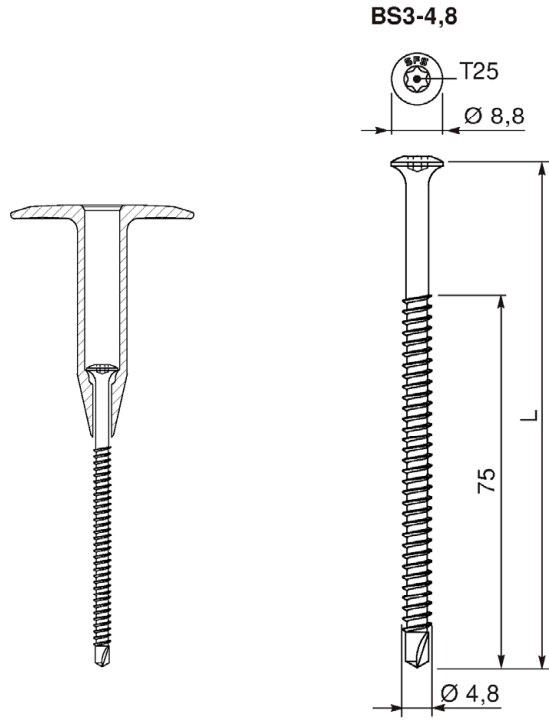
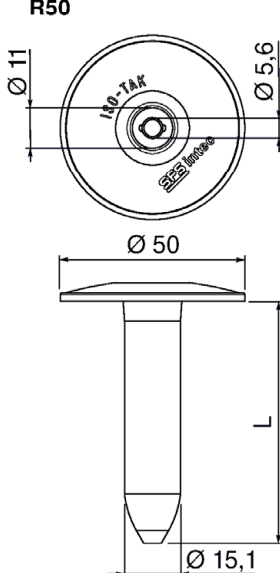
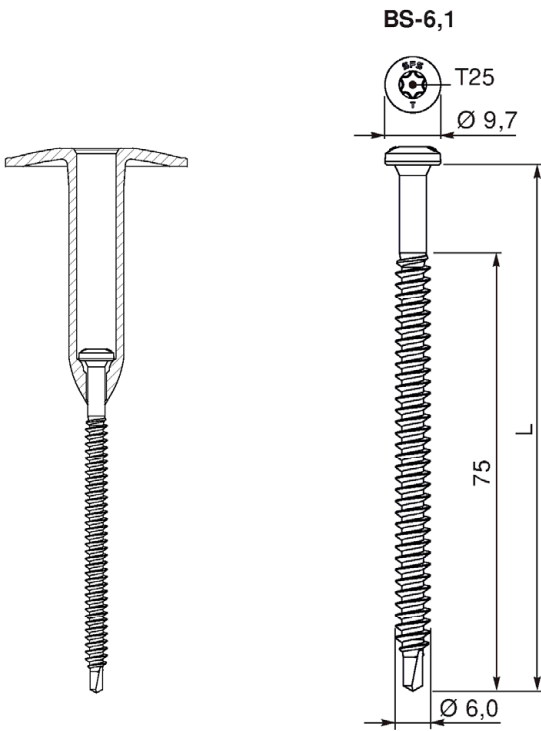
Combination 4A BS-4,8 / R50	Combination 4B BS-4,8 / R75
R50  BS-4,8 	R75  BS-4,8 
SFS Flat roof fasteners	Annex 4

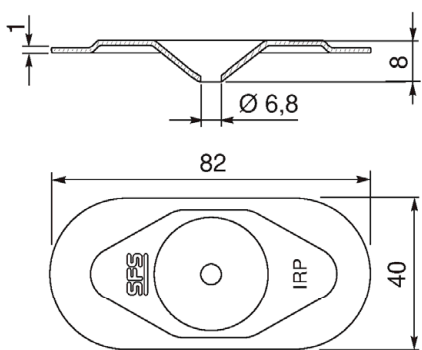
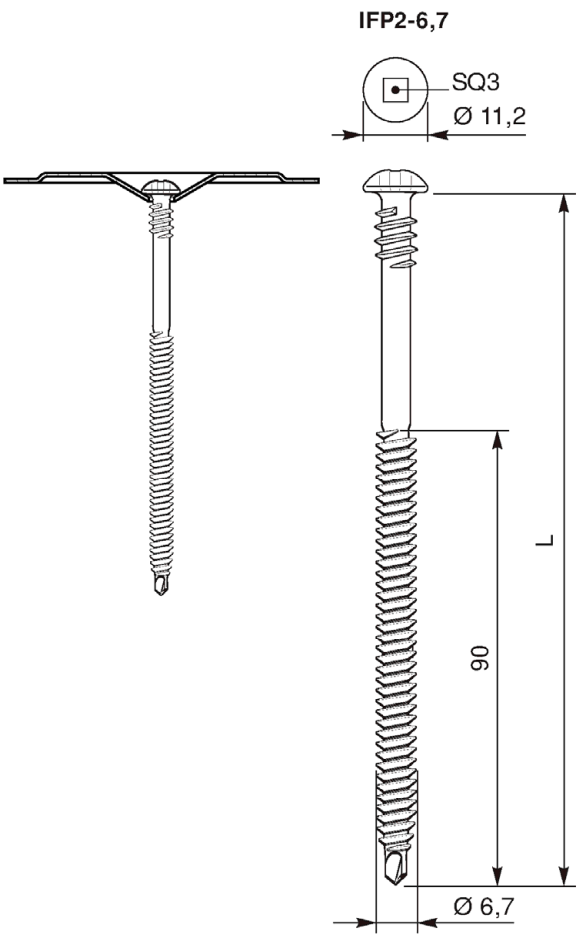
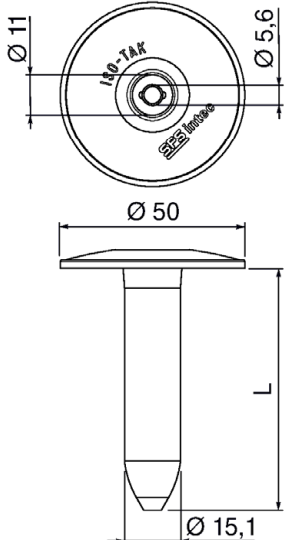
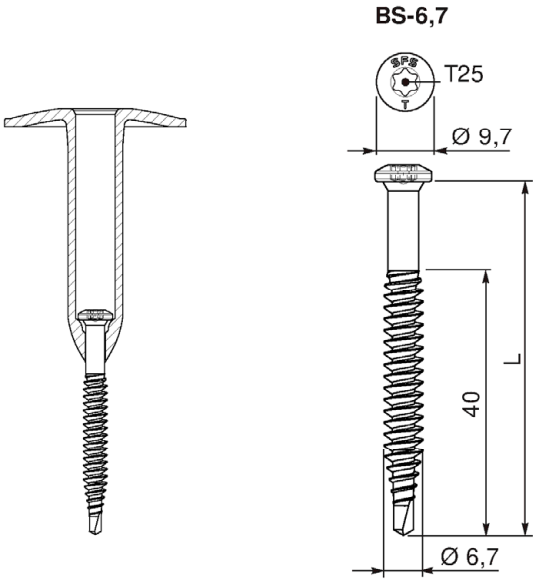
Combination 5A BS-4,8 / RP75		Combination 5B No longer in product range
RP75  BS-4,8 		
SFS Flat roof fasteners		Annex 5

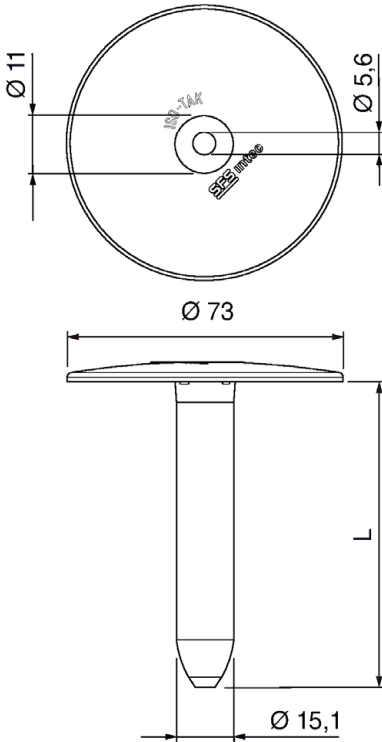
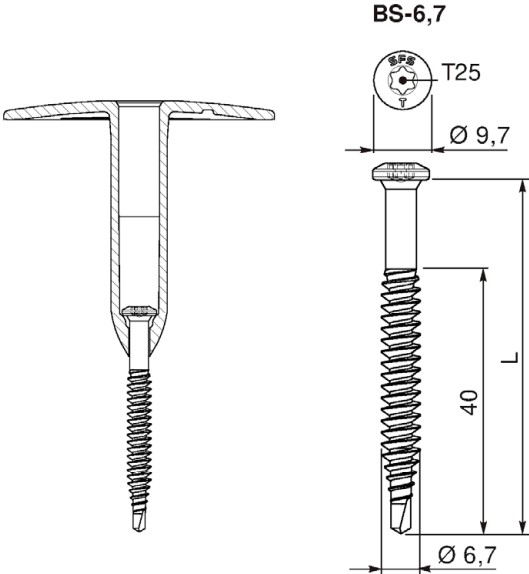
Combination 6A No longer in product range	Combination 6B BS-4,8 / R48
	R48  BS-4,8 
SFS Flat roof fasteners	Annex 6

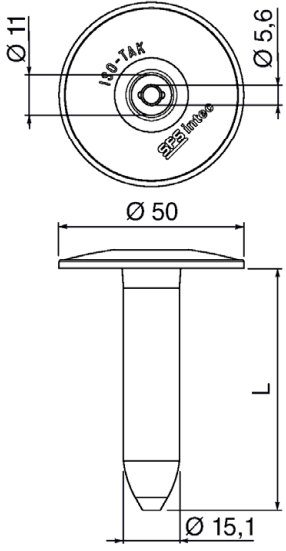
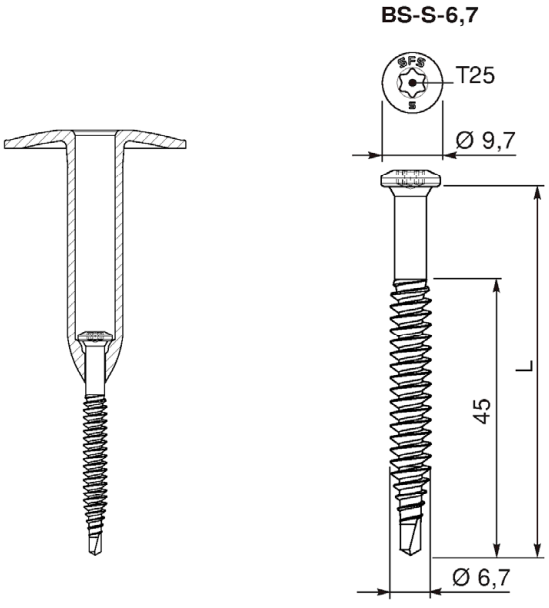
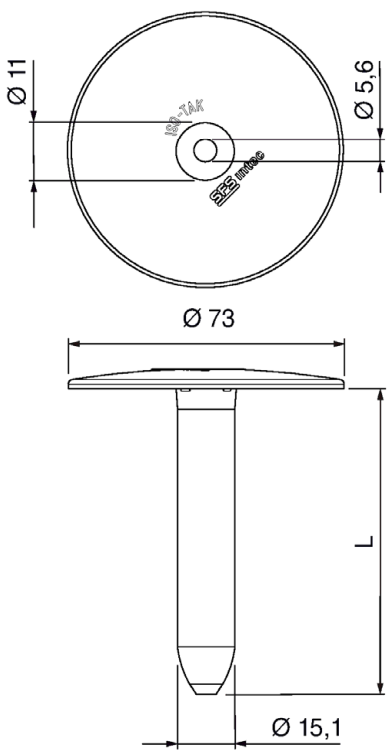
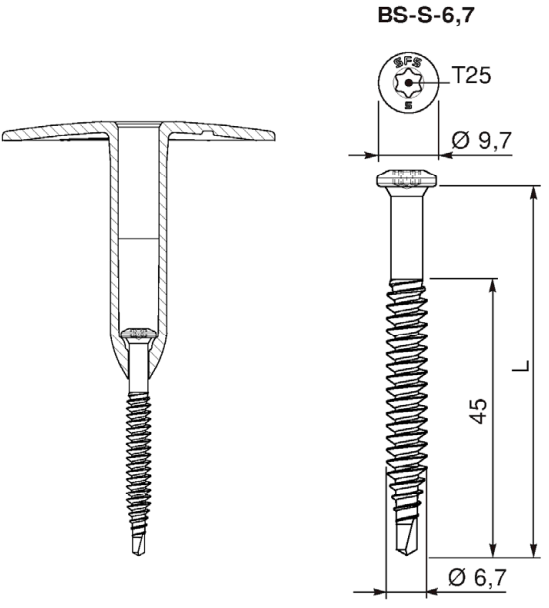
Combination 7A BS-4,8 / RP48	Combination 7B BS-4,8 / SH-18/65 / Protan steelbar
RP48  BS-4,8 	SH-18/65  Protan steelbar BS-4,8 
SFS Flat roof fasteners	Annex 7

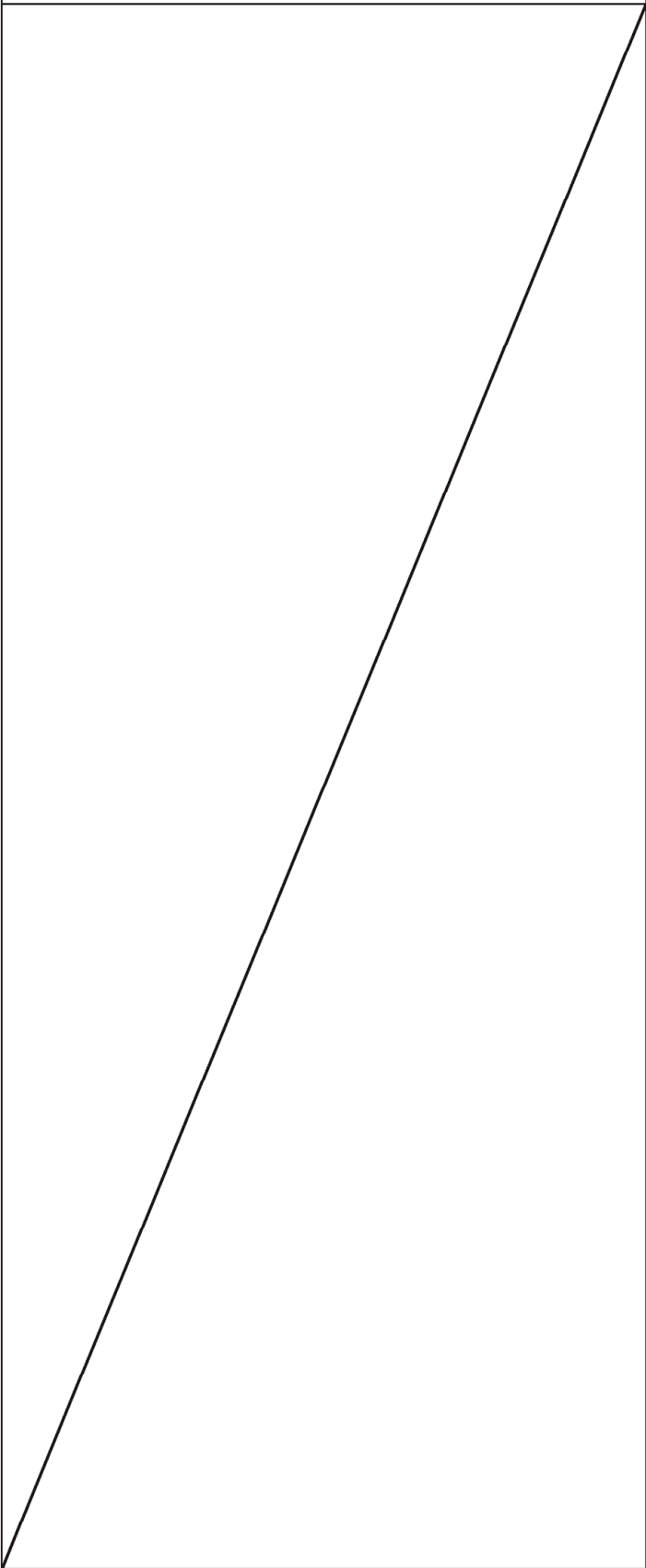
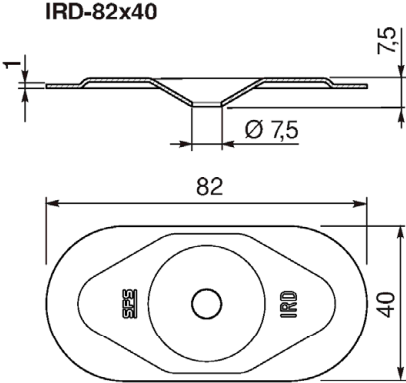
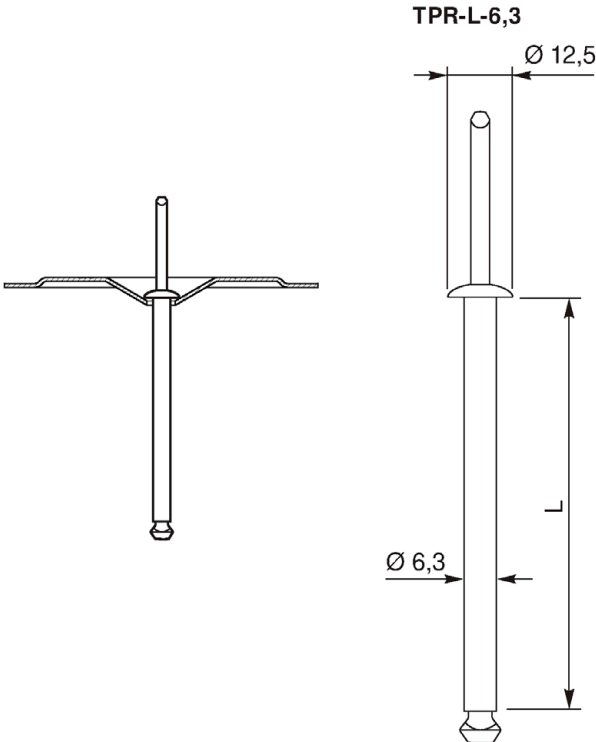
Combination 8A BS-S-4,8 / RP50		Combination 8B No longer in product range	
RP50  BS-S-4,8 			
SFS Flat roof fasteners			

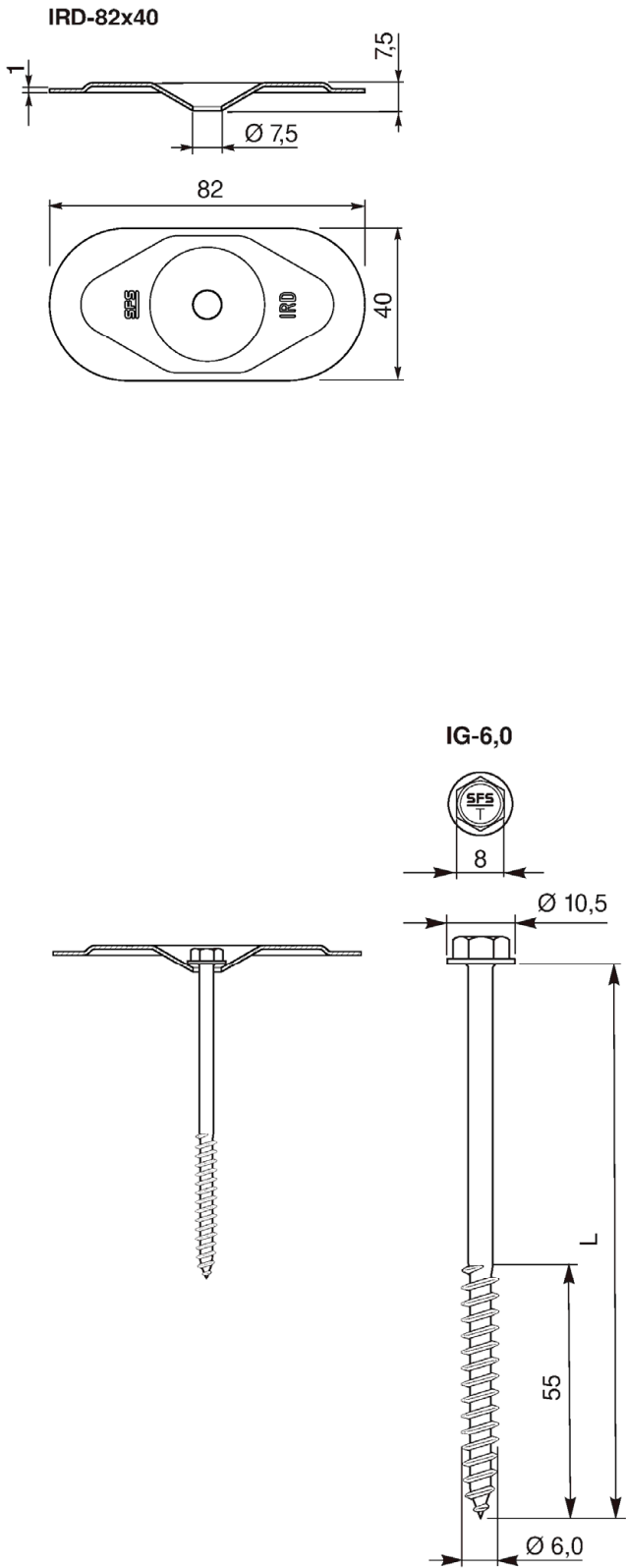
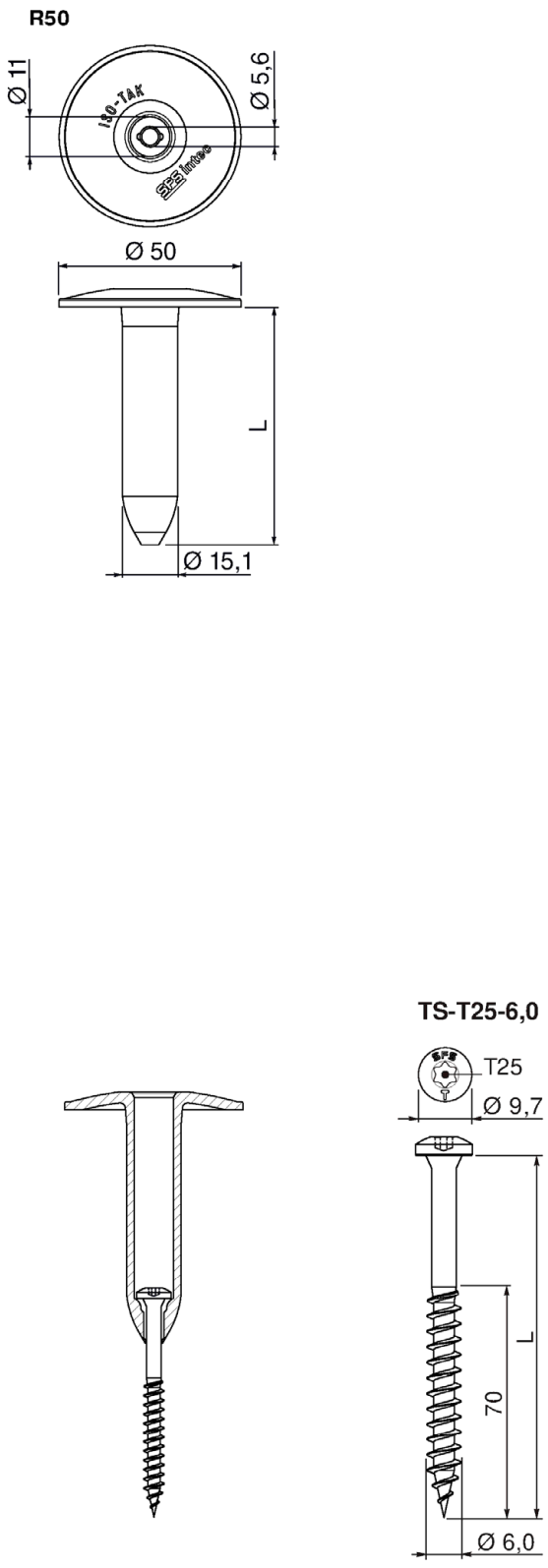
Combination 9A BS3-4,8 / RP50	Combination 9B BS-6,1 / R50
RP50  BS3-4,8 	R50  BS-6,1 
SFS Flat roof fasteners	Annex 9

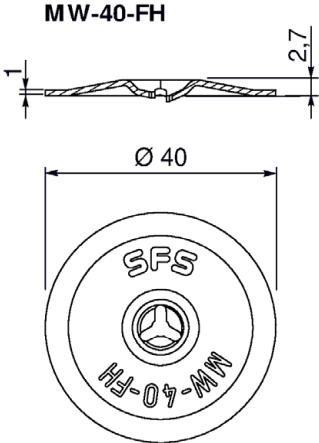
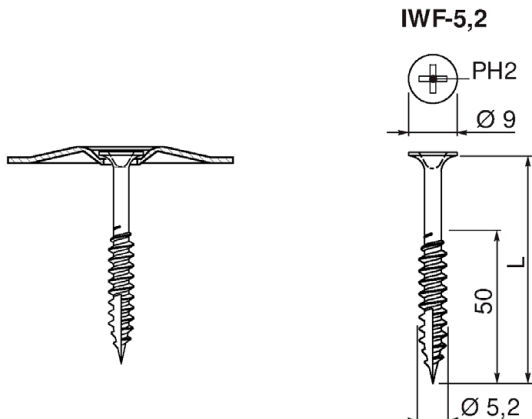
Combination 10A IFP2-6,7 / IRP-82×40	Combination 10B BS-6,7 / R50
IRP-82x40  IFP2-6,7 	R50  BS-6,7 
SFS Flat roof fasteners	Annex 10

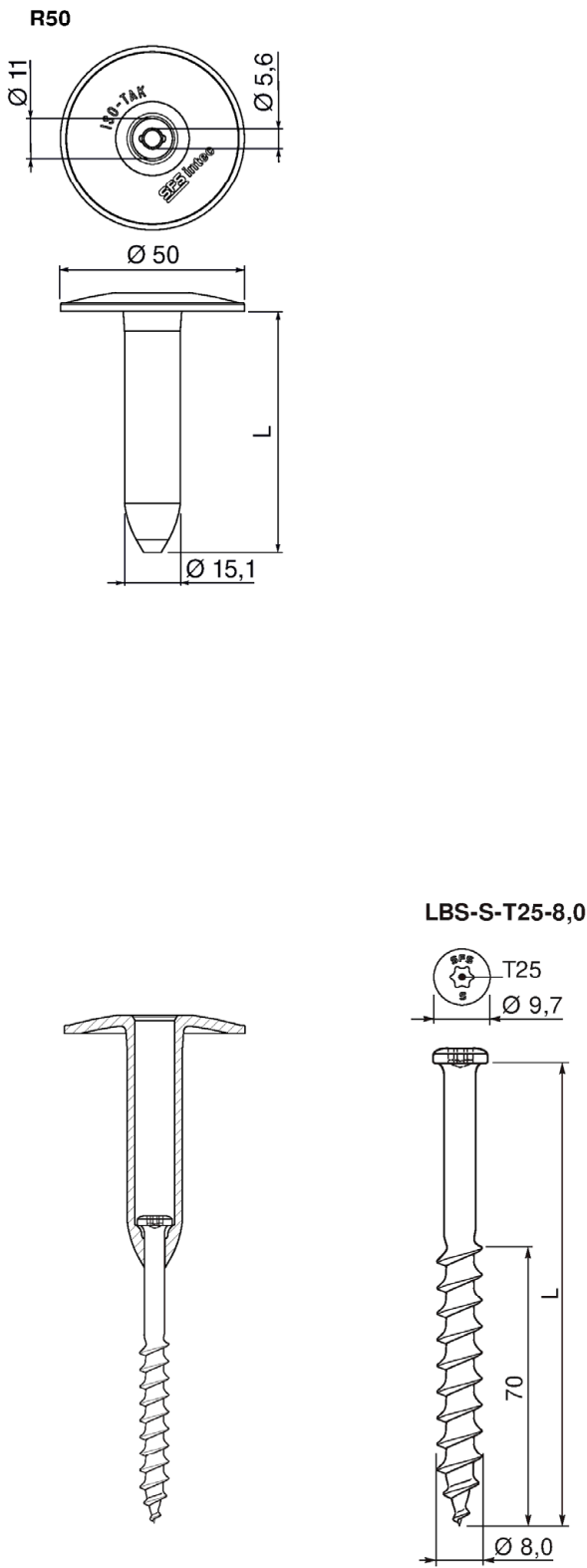
Combination 11A BS-6,7 / R75	Combination 11B No longer in product range
R75  BS-6,7 	
SFS Flat roof fasteners	

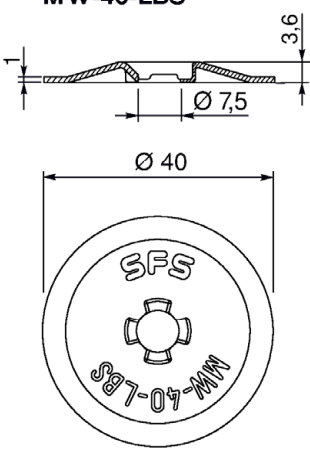
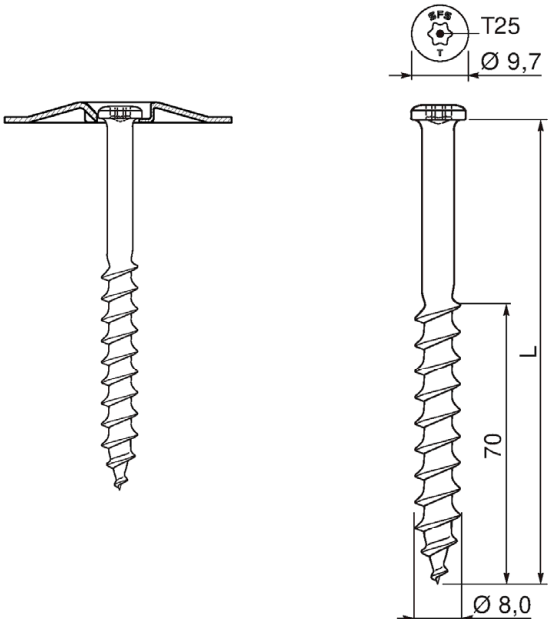
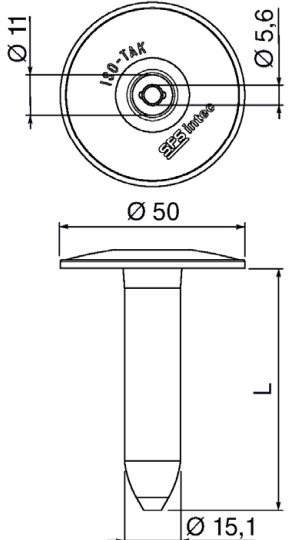
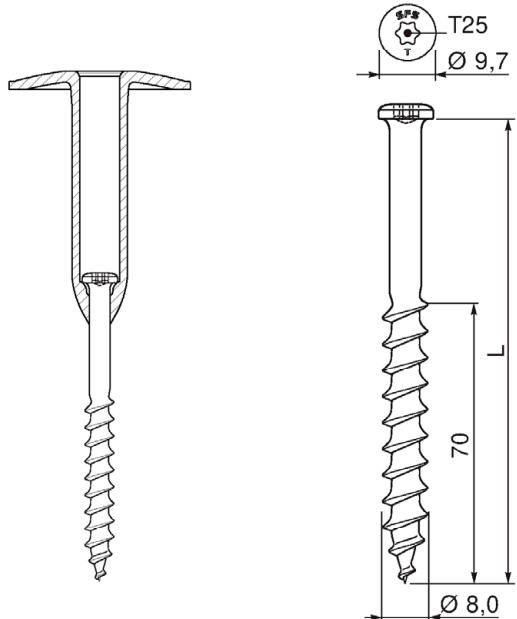
Combination 12A BS-S-6,7 / R50		Combination 12B BS-S-6,7 / R75	
R50  BS-S-6,7 		R75  BS-S-6,7 	
SFS Flat roof fasteners		Annex	12

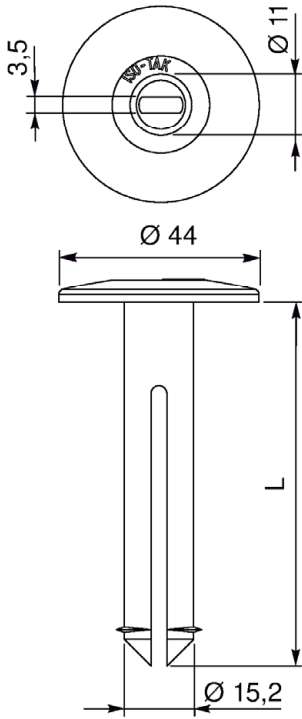
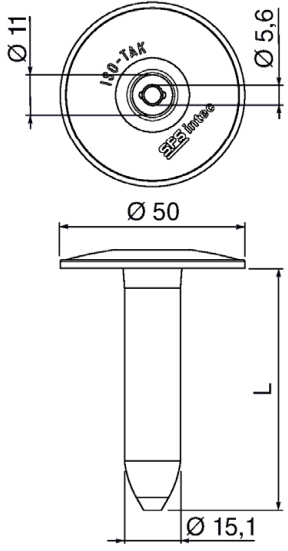
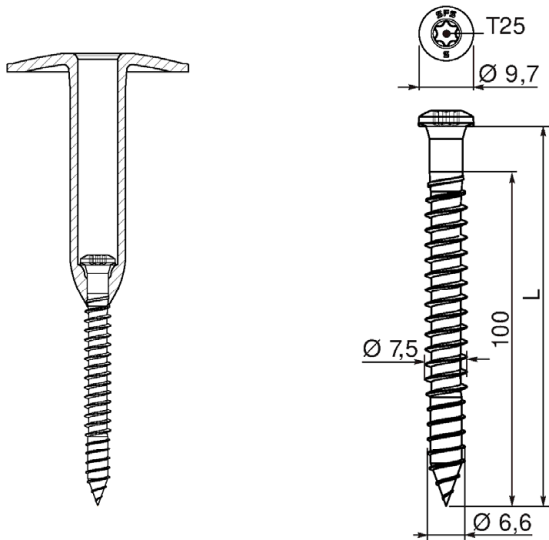
Combination 13A No longer in product range	Combination 13B TPR-L-6,3 / IRD-82x40
	IRD-82x40  TPR-L-6,3 
SFS Flat roof fasteners	Annex 13

Combination 14A IG-6,0 / IRD-82x40	Combination 14B TS-T25-6,0 / R50
 IRD-82x40 IG-6,0	 R50 TS-T25-6,0
SFS Flat roof fasteners	Annex 14

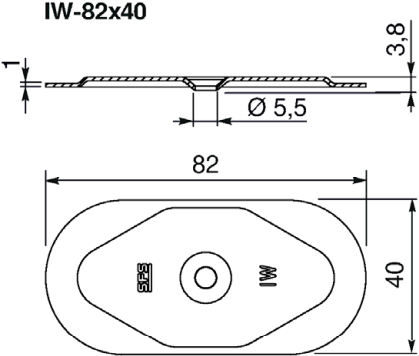
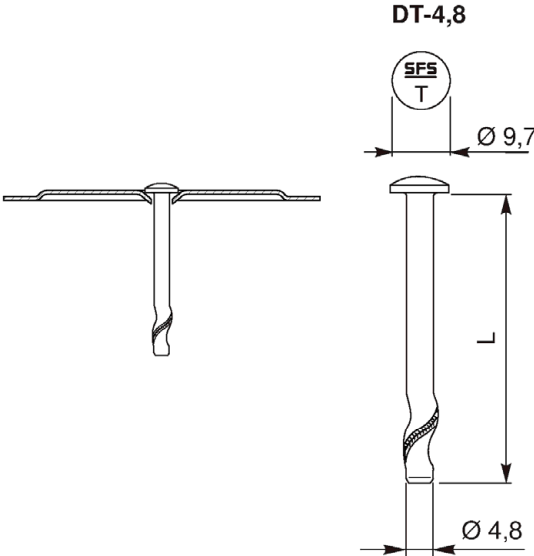
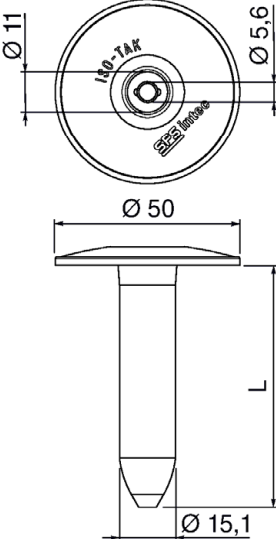
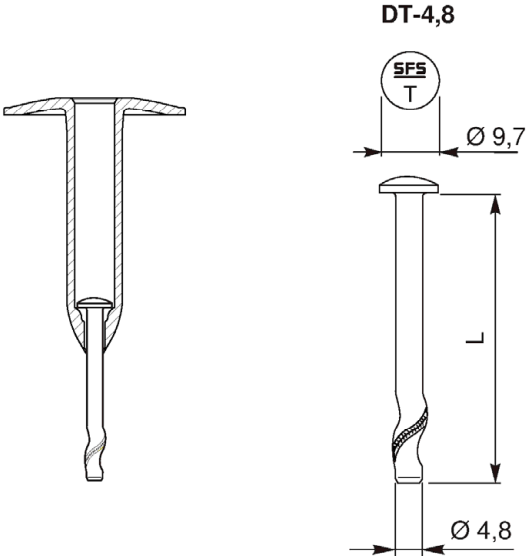
Combination 15A IWF-5,2 / MW-40-FH		Combination 15B No longer in product range	
MW-40-FH  IWF-5,2 			
SFS Flat roof fasteners			

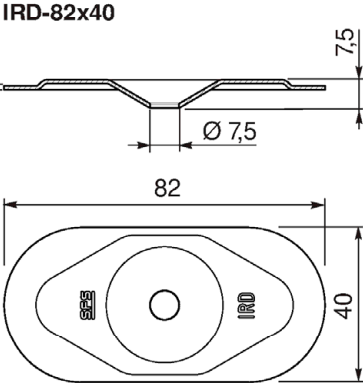
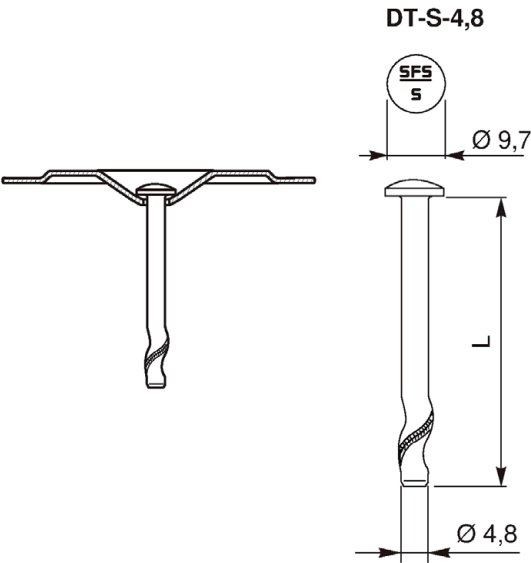
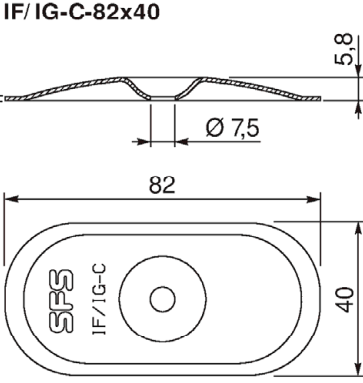
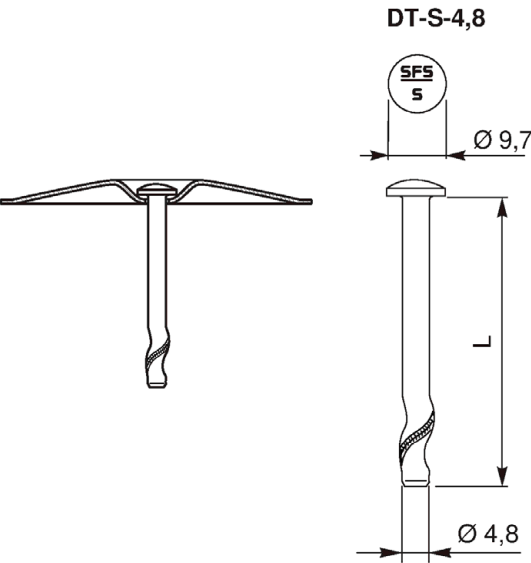
Combination 16A IW-S-5,0 / IRC/W-82x40 	Combination 16B LBS-S-T25-8,0 / R50 
SFS Flat roof fasteners	Annex 16

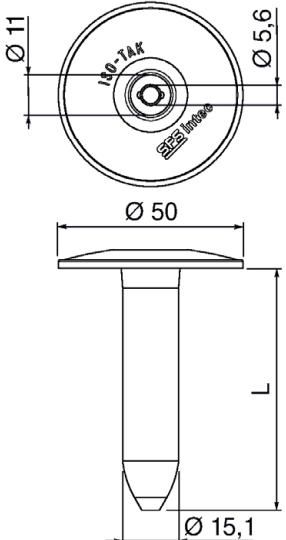
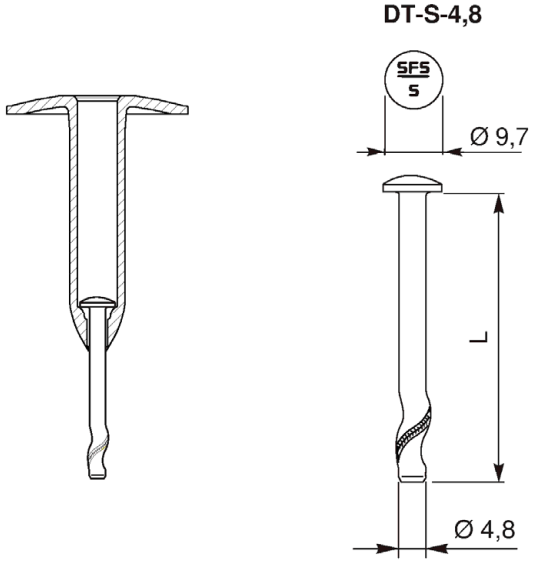
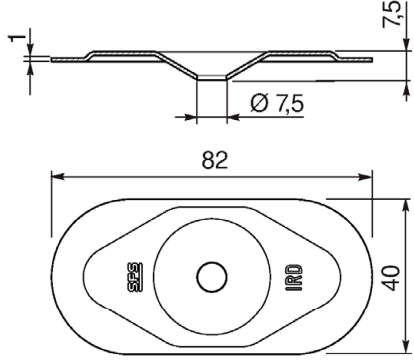
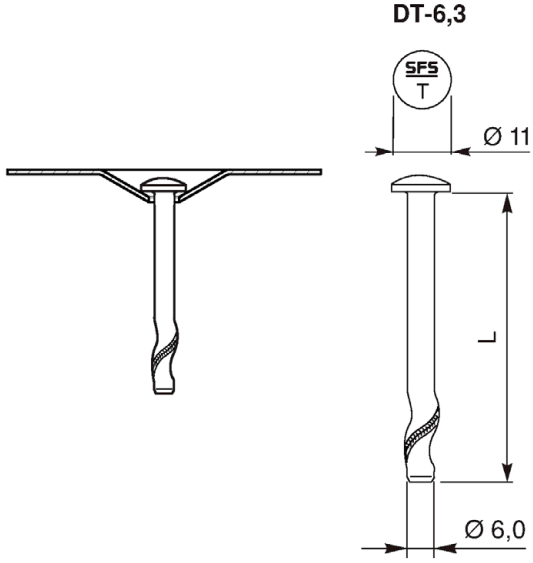
Combination 17A LBS-T25-8,0 / MW-40-LBS	Combination 17B LBS-T25-8,0 / R50
MW-40-LBS  LBS-T25-8,0 	R50  LBS-T25-8,0 
SFS Flat roof fasteners	Annex 17

Combination 18A LB45	Combination 18B FB-S-T25-7,5 / R50
LB45 	R50  FB-S-T25-7,5 
SFS Flat roof fasteners	Annex 18

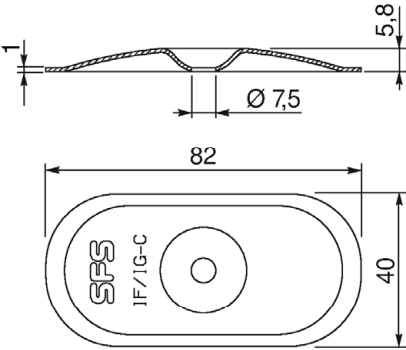
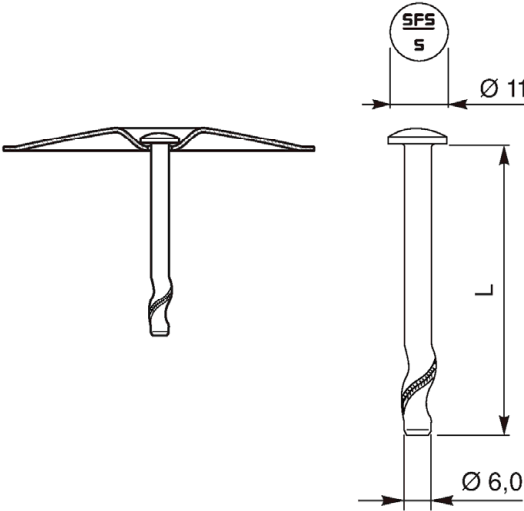
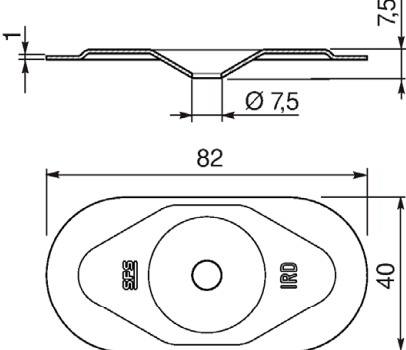
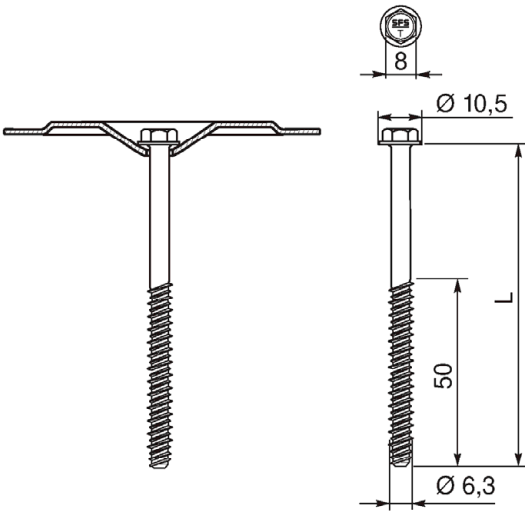
Combination 19A DT-4,8 / IRD-82x40	Combination 19B DT-4,8 / IF/IG-C-82x40
IRD-82x40 DT-4,8	IF/IG-C-82x40 DT-4,8
SFS Flat roof fasteners	Annex 19

Combination 20A DT-4,8 / IW-82x40	Combination 20B DT-4,8 / R50
IW-82x40  DT-4,8 	R50  DT-4,8 
SFS Flat roof fasteners	Annex 20

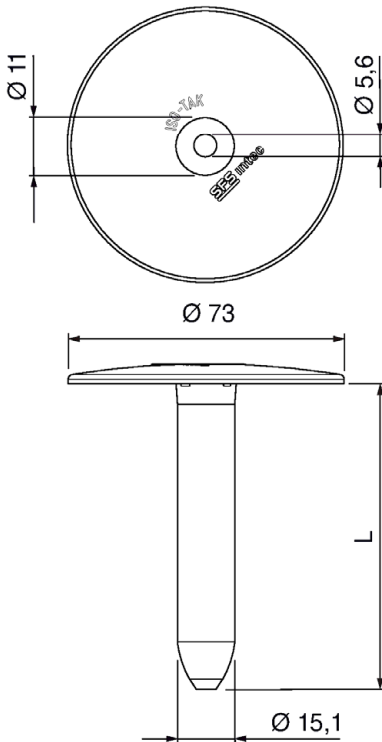
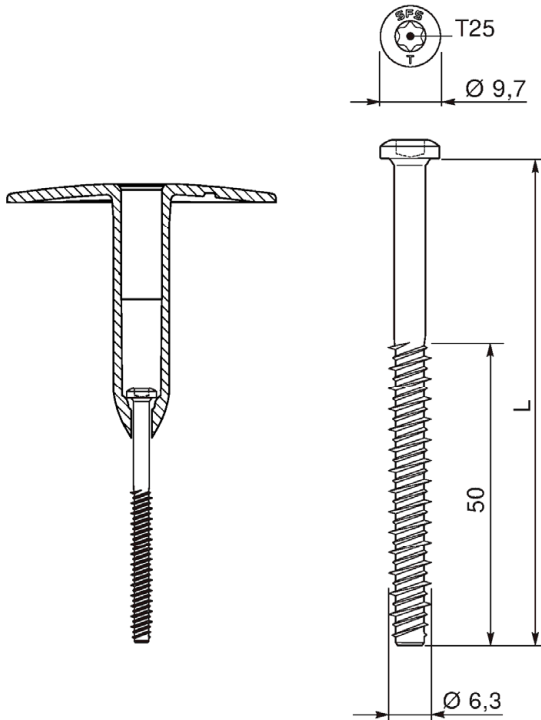
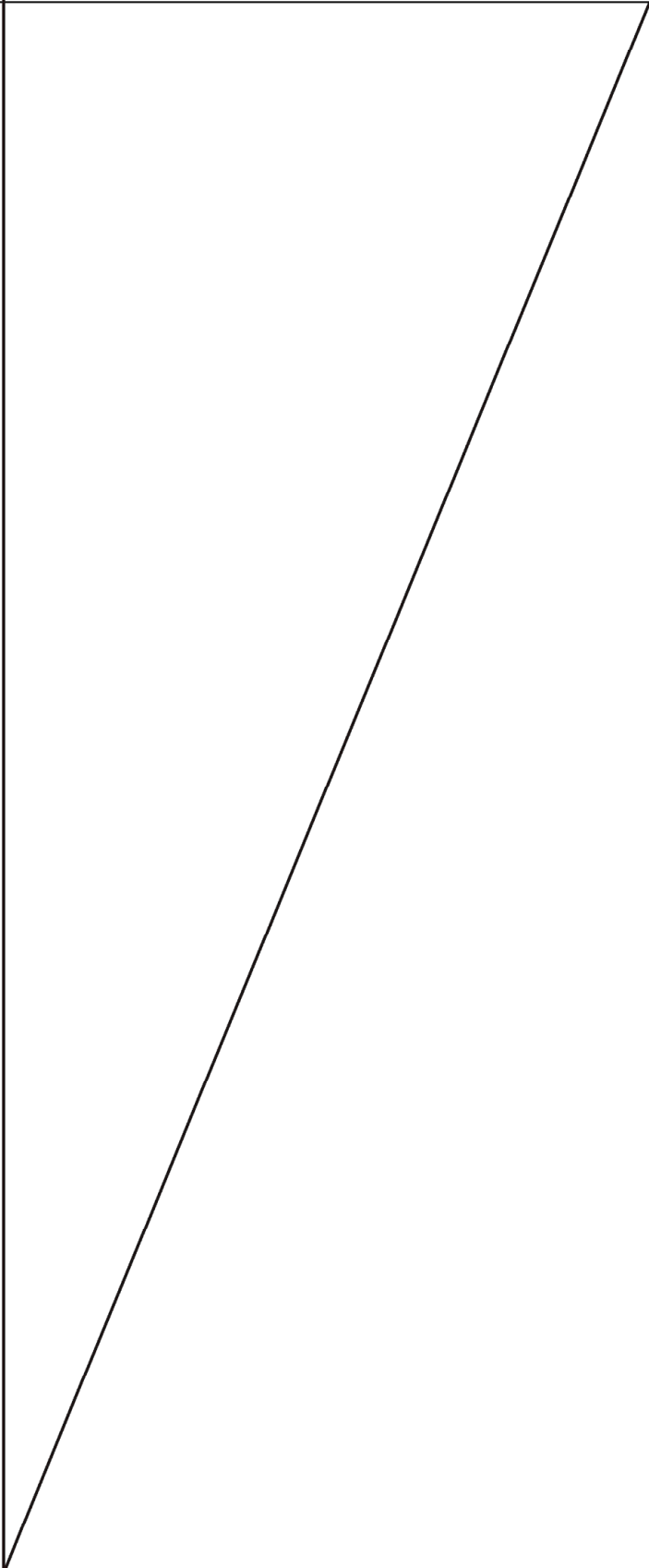
Combination 21A DT-S-4,8 / IRD-82x40 IRD-82x40  DT-S-4,8 	Combination 21B DT-S-4,8 / IF/IG-C-82x40 IF/IG-C-82x40  DT-S-4,8 
SFS Flat roof fasteners	Annex 21

Combination 22A DT-S-4,8 / R50		Combination 22B DT-6,3 / IRD-82x40	
R50  DT-S-4,8 		IRD-82x40  DT-6,3 	
SFS Flat roof fasteners		Annex	22

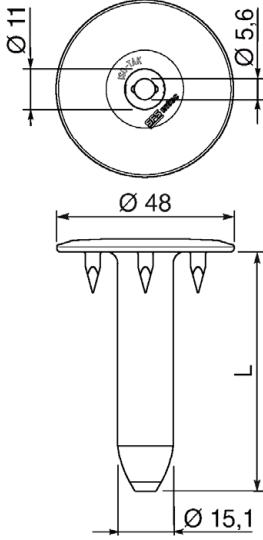
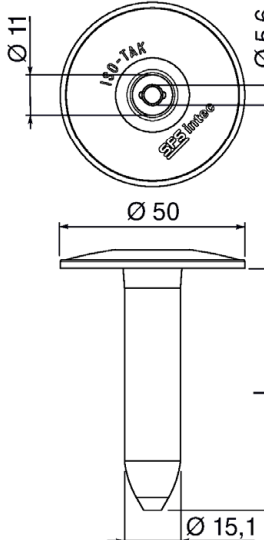
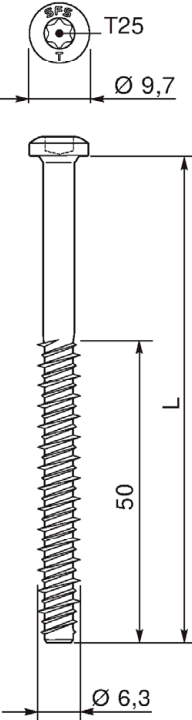
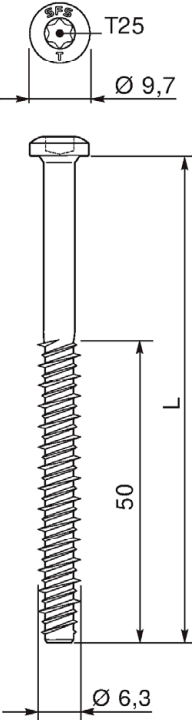
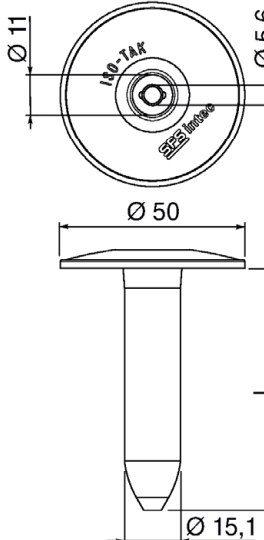
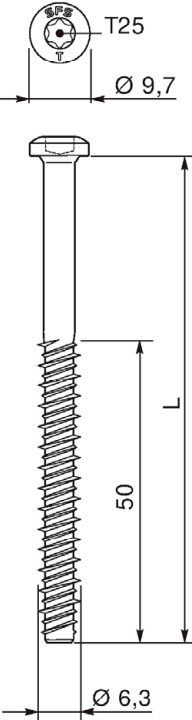
Combination 23A DT-6,3 / IF/IG-C-82x40	Combination 23B DT-S-6,3 / IRD-82x40
IF/IG-C-82x40 DT-6,3	IRD-82x40 DT-S-6,3
SFS Flat roof fasteners	Annex 23

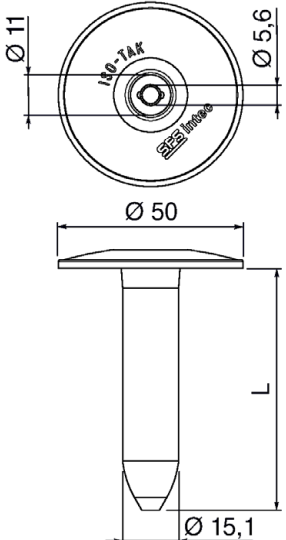
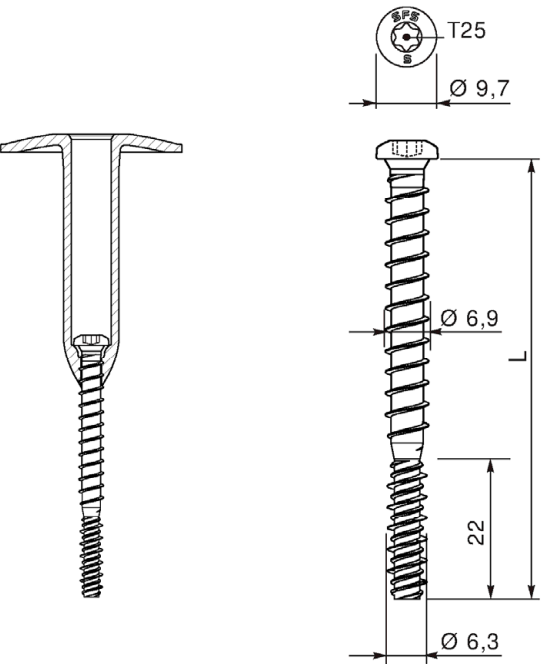
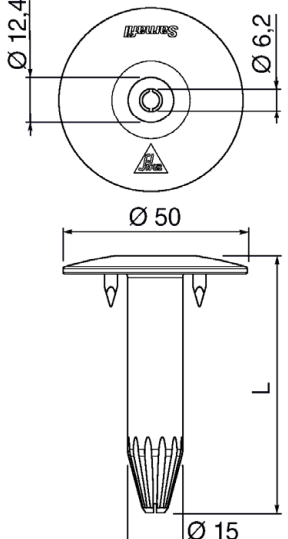
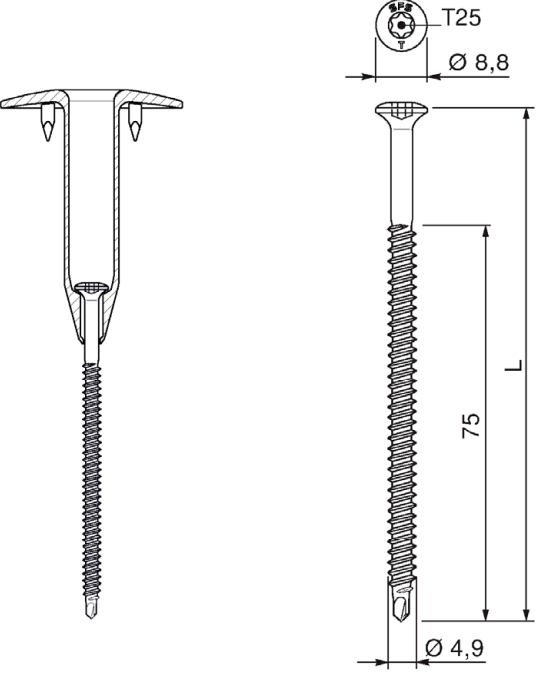
Combination 24A DT-S-6,3 / IF/IG-C-82x40	Combination 24B TI-6,3 / IRD-82x40
IF/IG-C-82x40  DT-S-6,3 	IRD-82x40  TI-6,3 
SFS Flat roof fasteners	Annex 24

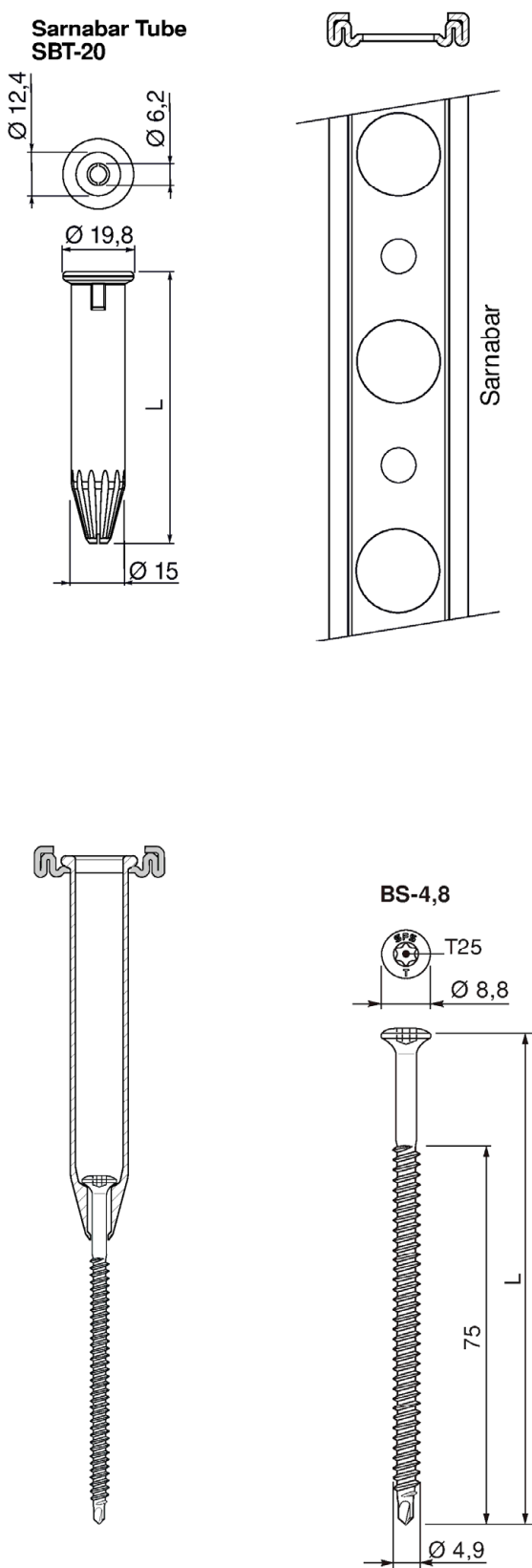
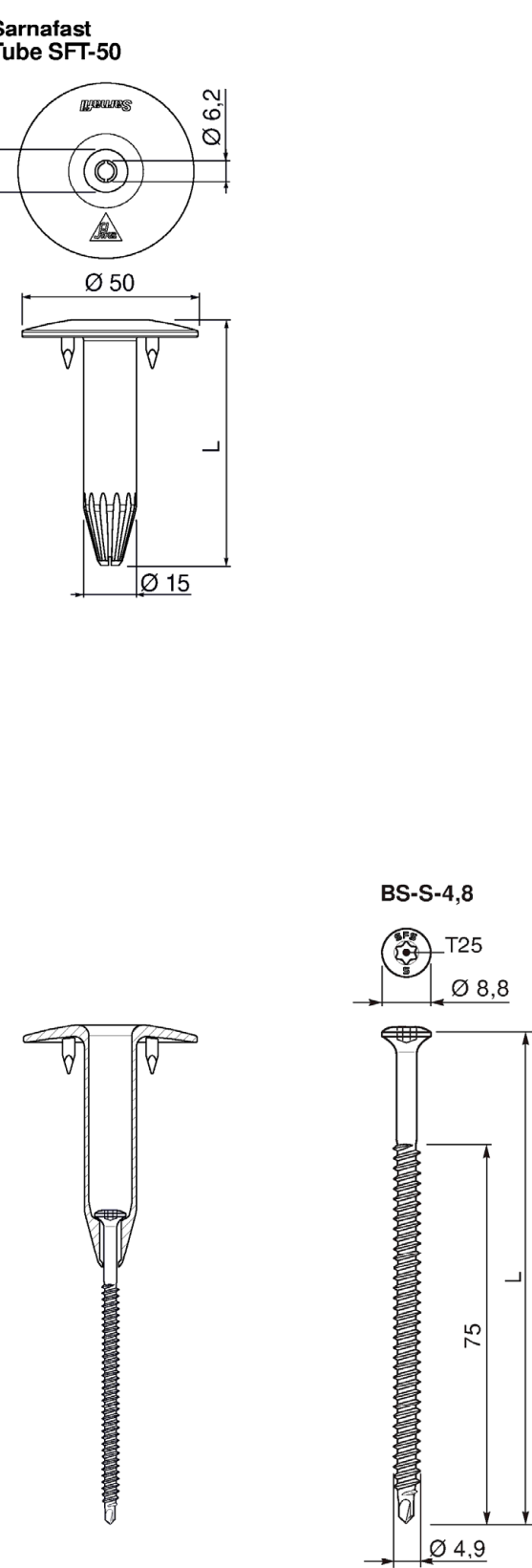
Combination 25A TI-6,3 / IF/IG-C-82x40	Combination 25B TI-6,3 / ID-70x70
IF/IG-C-82x40 TI-6,3	ID-70x70 TI-6,3
SFS Flat roof fasteners	Annex 25

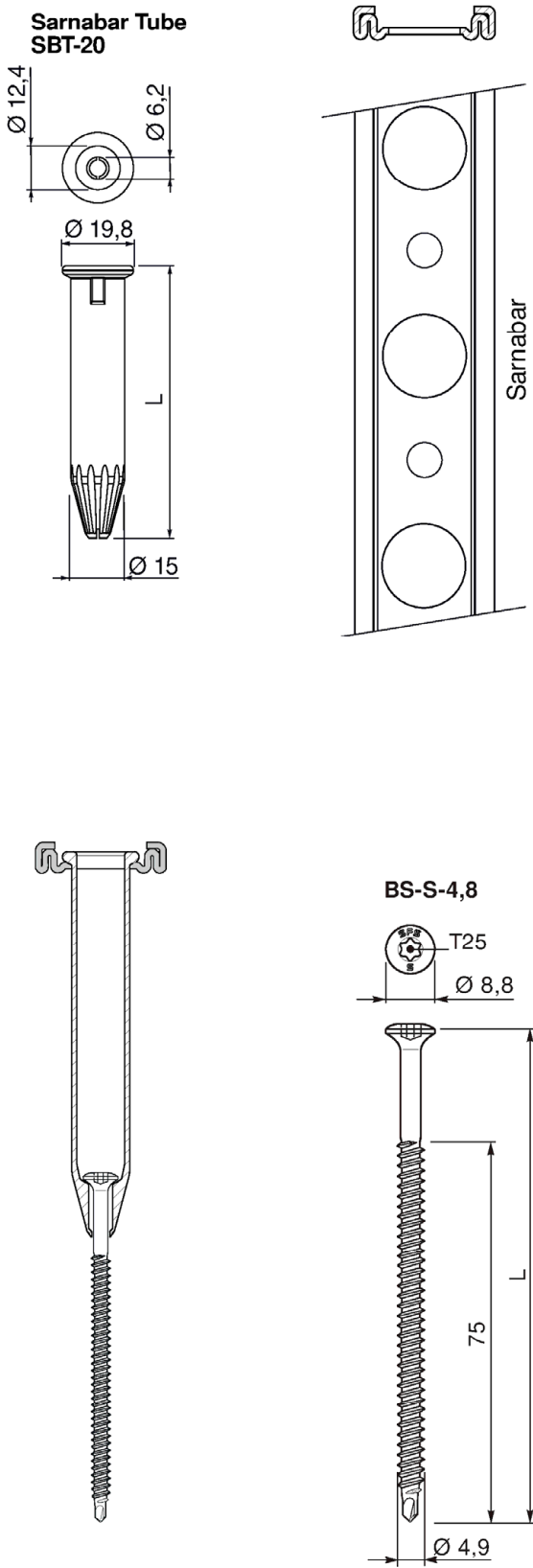
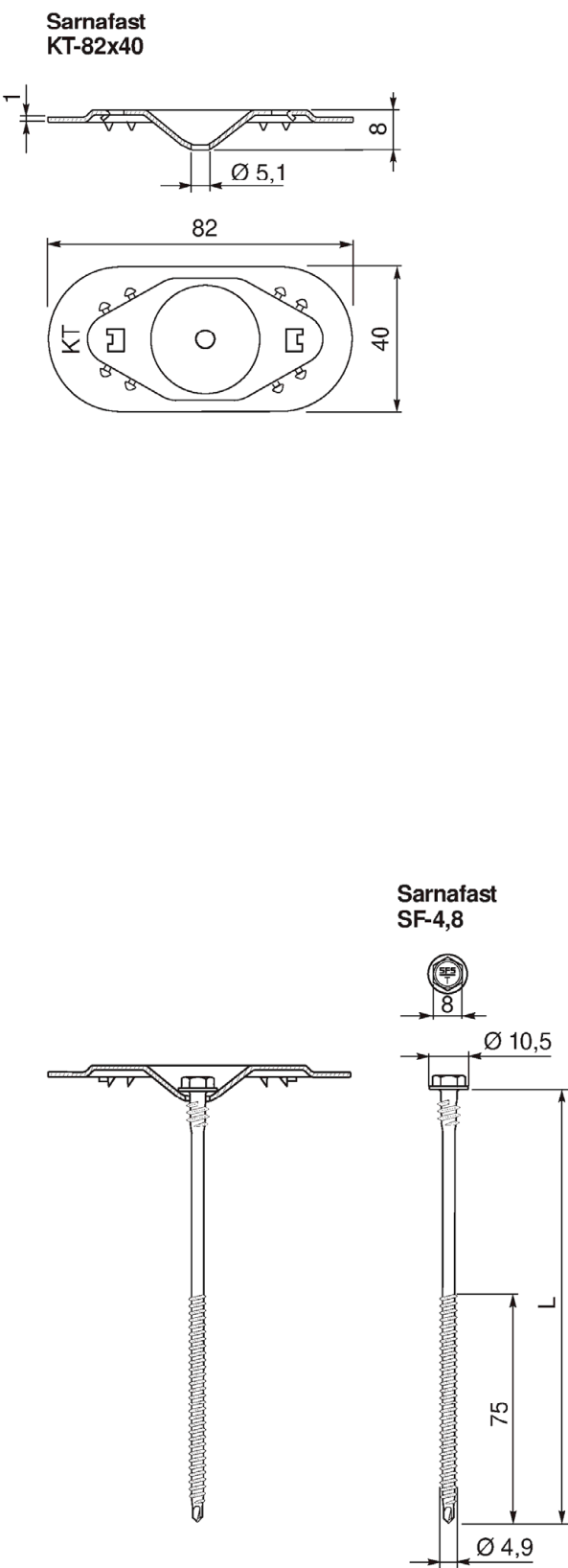
Combination 26A TI-T25-6,3 / R75		Combination 26B No longer in product range	
R75  TI-T25-6,3 			

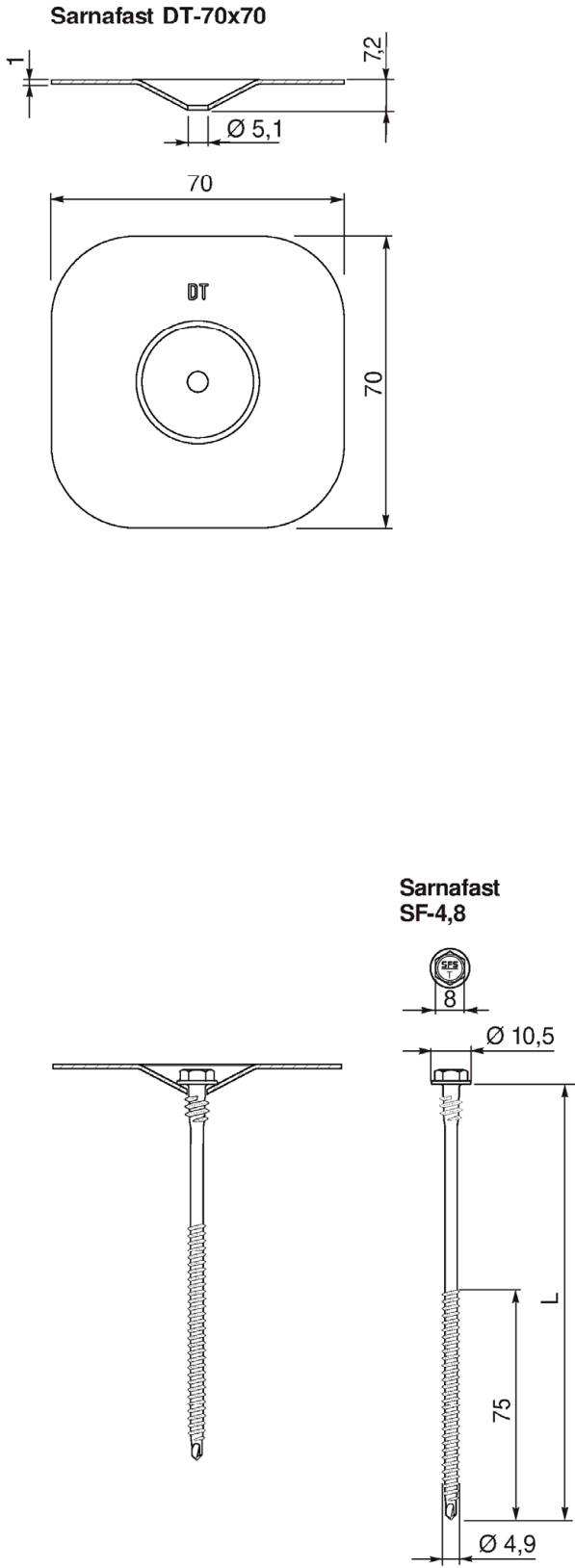
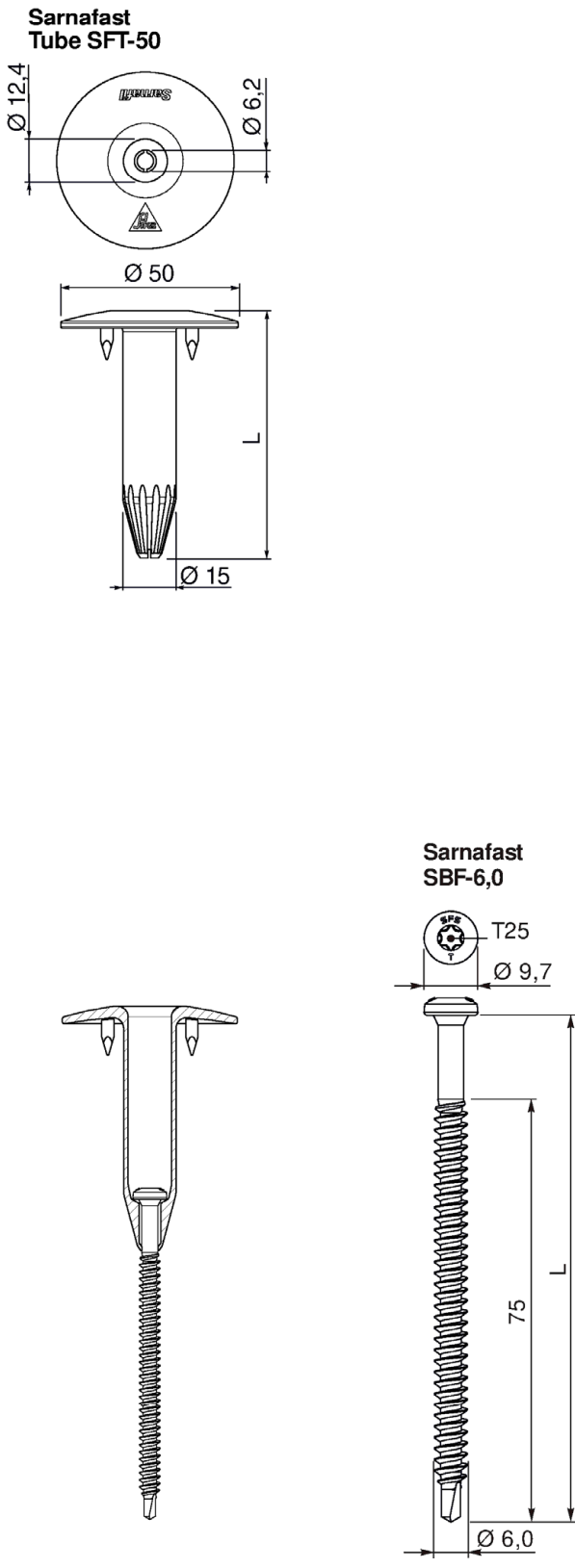
SFS Flat roof fasteners		Annex	26
-------------------------	--	-------	----

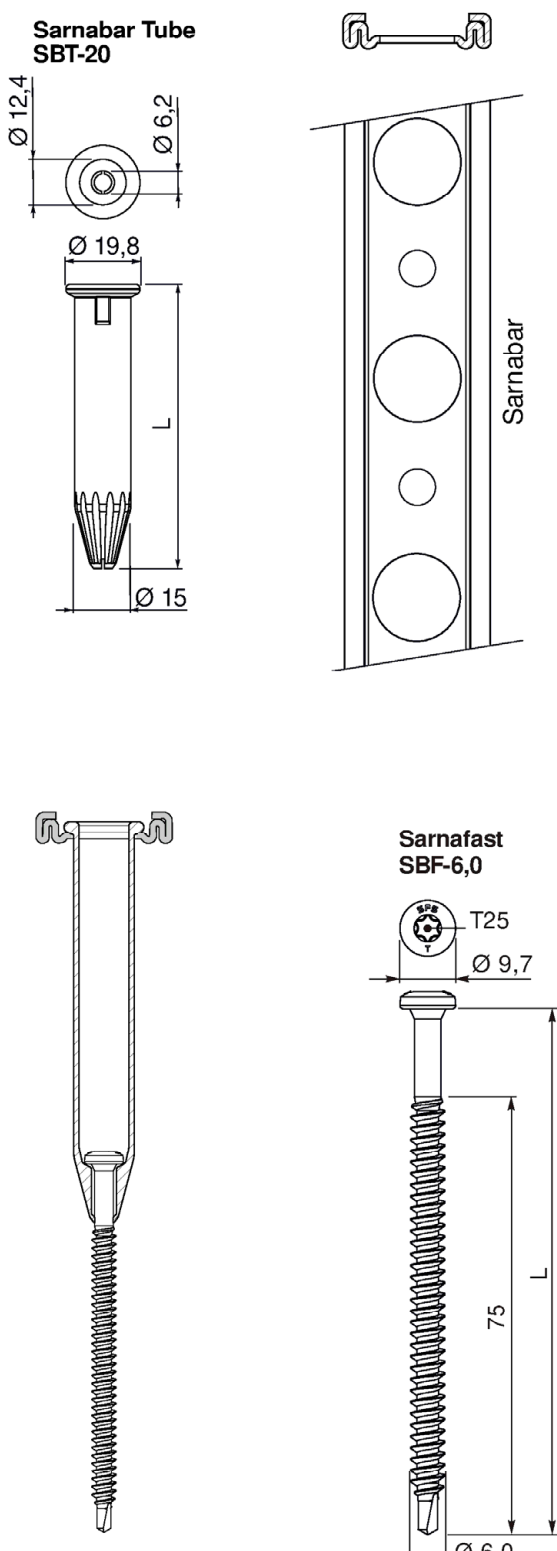
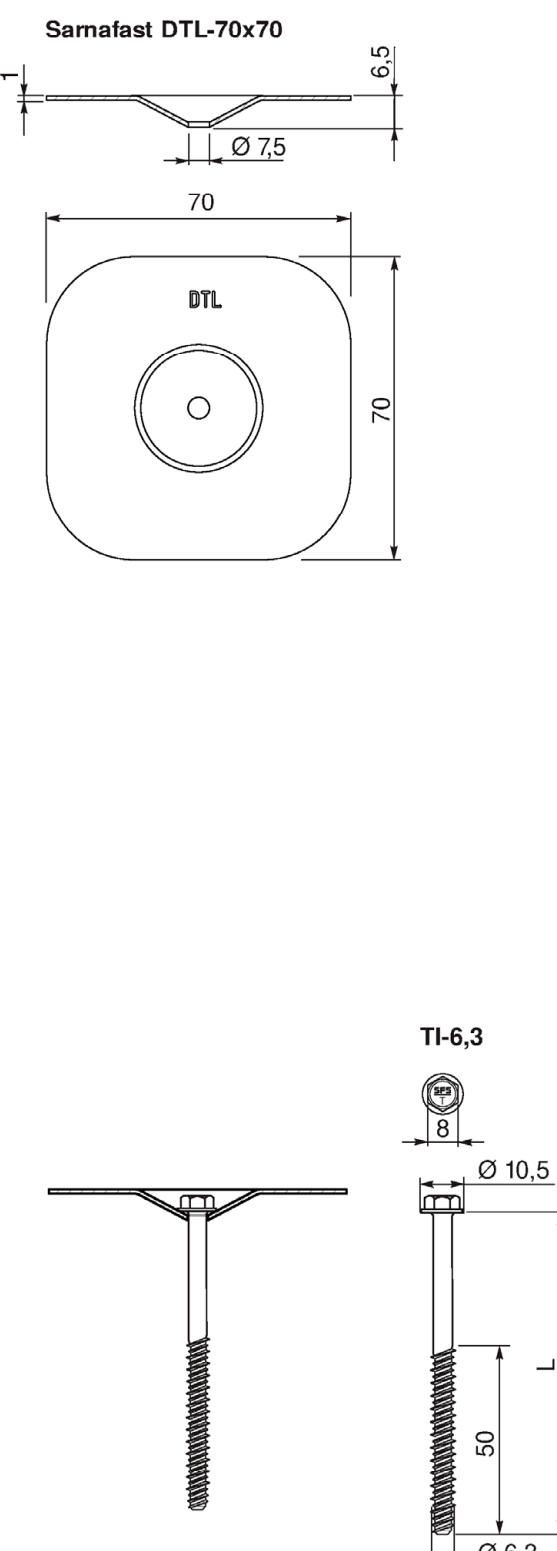
Combination 27A TI-T25-6,3 / R48		Combination 27B TI-T25-6,3 / R50	
R48  R50  TI-T25-6,3  TI-T25-6,3 		R50  TI-T25-6,3 	
SFS Flat roof fasteners		Annex 27	

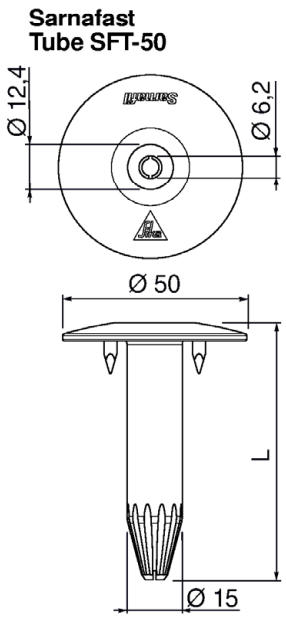
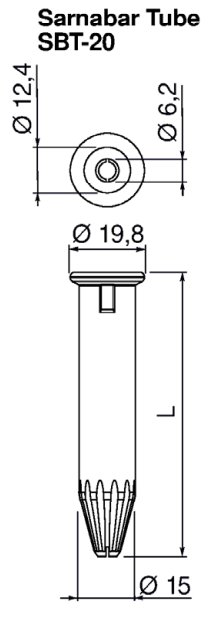
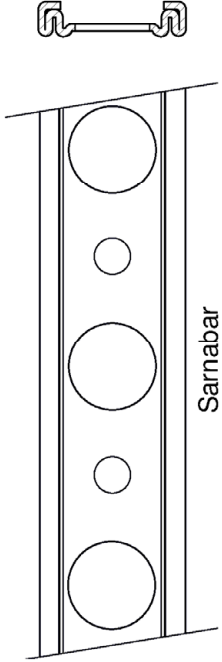
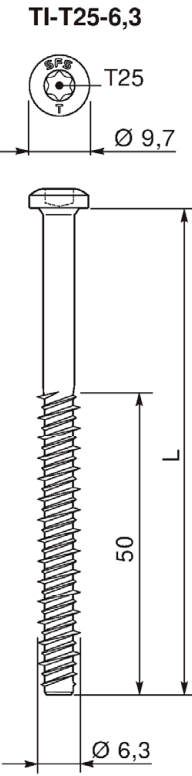
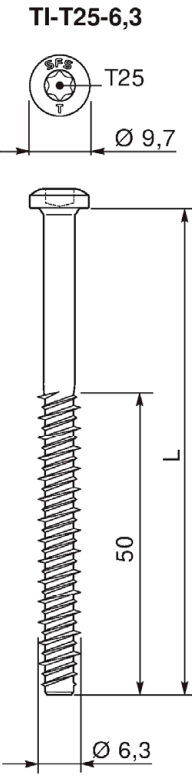
Combination 28A TIA-T25-6,3 / R50 R50  TIA-T25-6,3 	Combination 28B BS-4,8 / Sarnafast Tube SFT-50 Sarnafast Tube SFT-50  BS-4,8 
SFS Flat roof fasteners	Annex 28

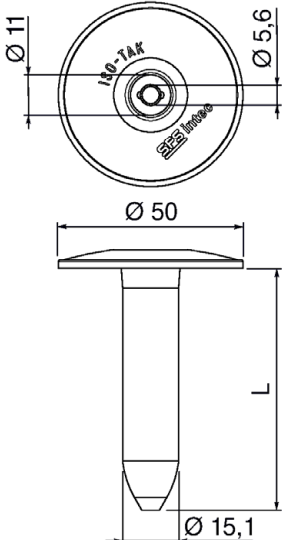
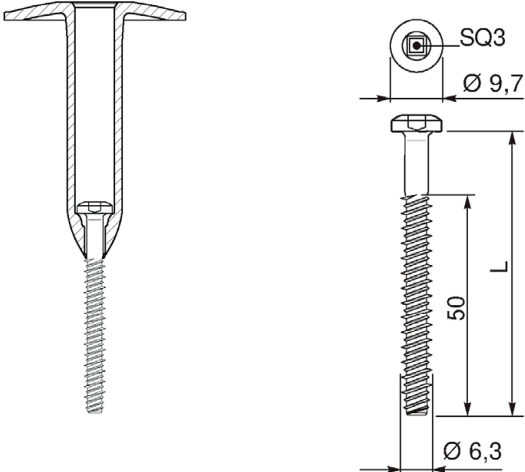
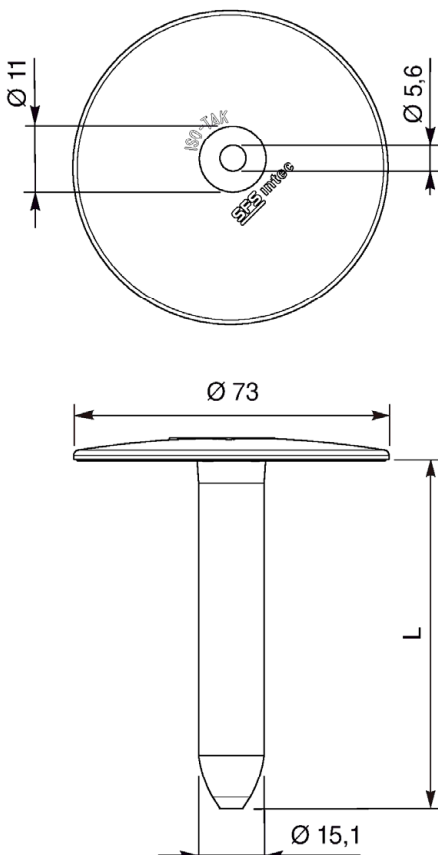
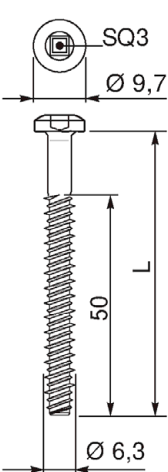
Combination 29A BS-4,8 / Sarnabar Tube SBT-20 / Sarnabar  Sarnabar Tube SBT-20 BS-4,8	Combination 29B BS-S-4,8 / Sarnafast Tube SFT-50  Sarnafast Tube SFT-50 BS-S-4,8
SFS Flat roof fasteners	Annex 29

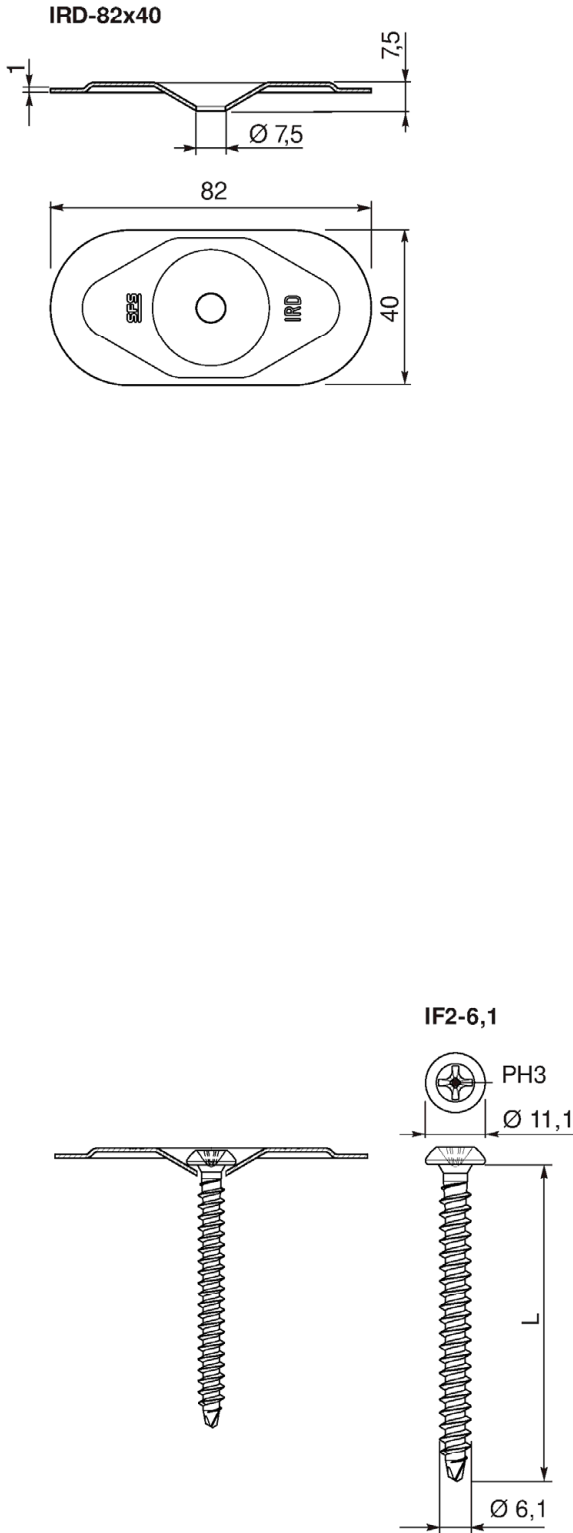
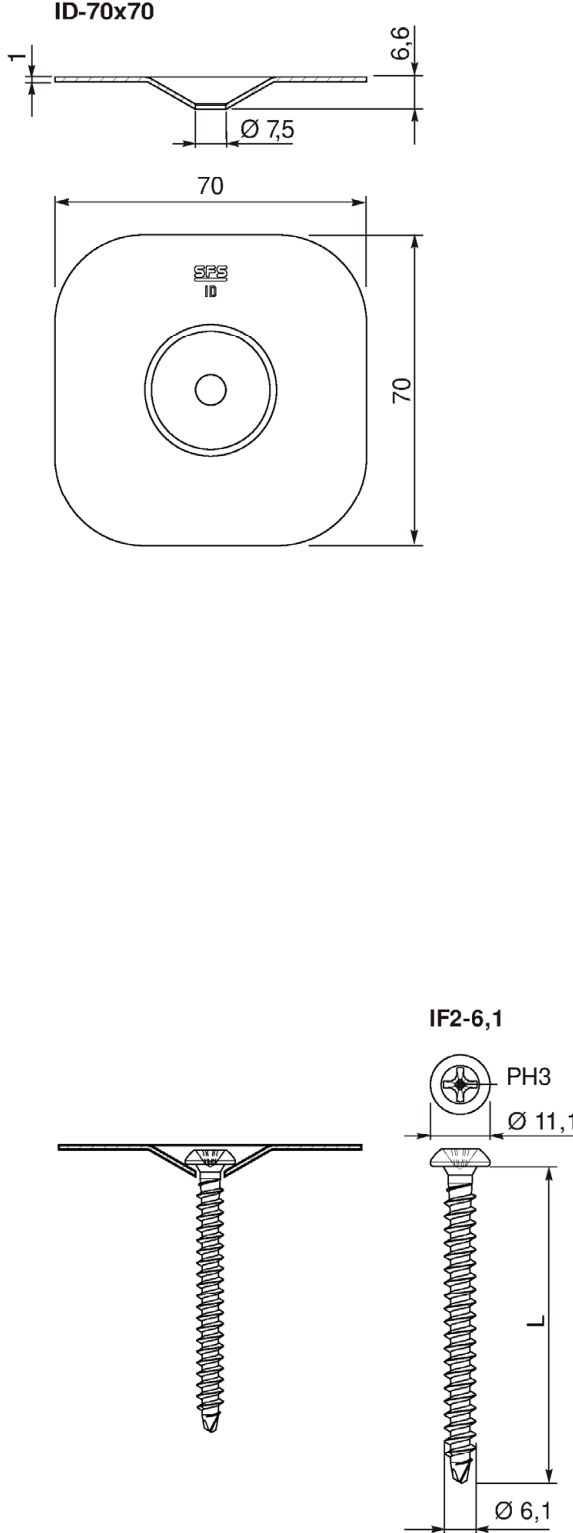
Combination 30A BS-S-4,8 / Sarnabar Tube SBT-20 / Sarnabar 	Combination 30B Sarnafast SF-4,8 / Sarnafast KT-82x40 
SFS Flat roof fasteners	Annex 30

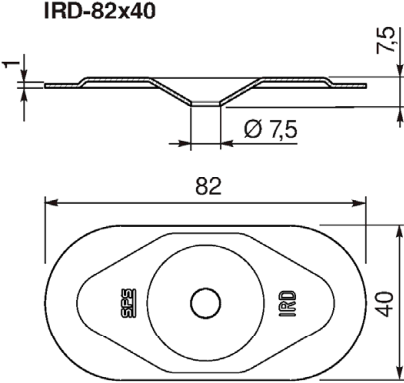
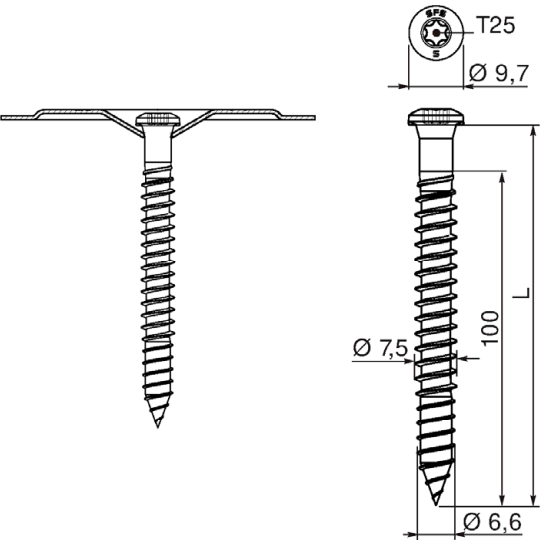
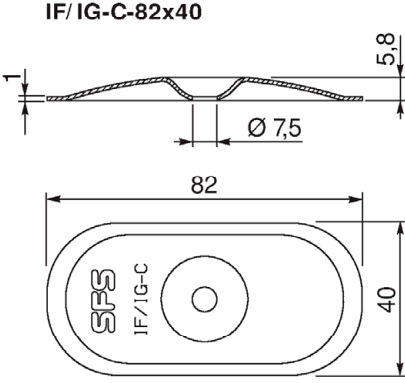
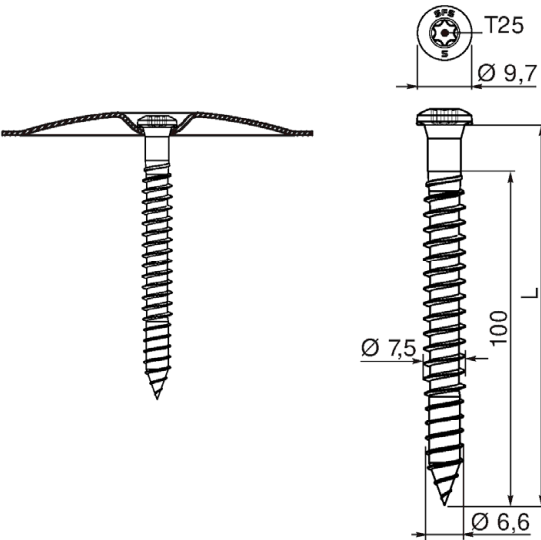
Combination 31A Sarnafast SF-4,8 / Sarnafast DT-70x70  Sarnafast DT-70x70 Technical drawing showing the side and top views of the Sarnafast DT-70x70 fastener. The side view shows a V-shaped profile with a height of 72, a base width of 70, and a central hole with a diameter of $\varnothing 5,1$. The top view shows a square base with rounded corners, a side length of 70, and a central hole labeled 'DT'. Sarnafast SF-4,8 Technical drawing showing the side and top views of the Sarnafast SF-4,8 fastener. The side view shows a threaded rod with a diameter of $\varnothing 4,9$, a threaded length of 75, and a total length of L. The top view shows a circular head with a diameter of $\varnothing 10,5$ and a central hole with a diameter of 8.	Combination 31B Sarnafast SBF-6,0 / Sarnafast Tube SFT-50  Sarnafast Tube SFT-50 Technical drawing showing the side and top views of the Sarnafast Tube SFT-50 fastener. The side view shows a tube with a diameter of $\varnothing 50$, a height of 12,4, and a central hole with a diameter of $\varnothing 6,2$. The bottom view shows a circular base with a diameter of $\varnothing 15$. Sarnafast SBF-6,0 Technical drawing showing the side and top views of the Sarnafast SBF-6,0 fastener. The side view shows a threaded rod with a diameter of $\varnothing 6,0$, a threaded length of 75, and a total length of L. The top view shows a circular head with a diameter of $\varnothing 9,7$ and a central hole with a diameter of T25.
SFS Flat roof fasteners	Annex 31

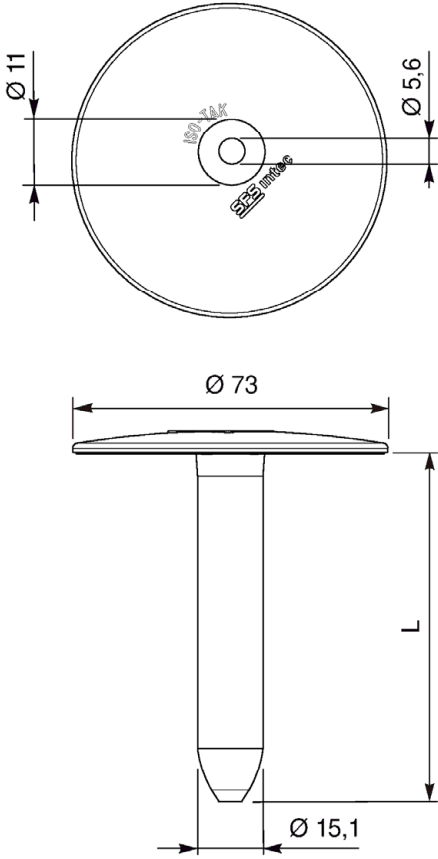
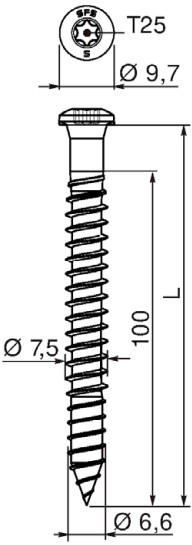
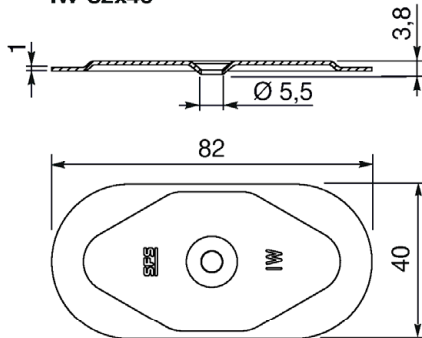
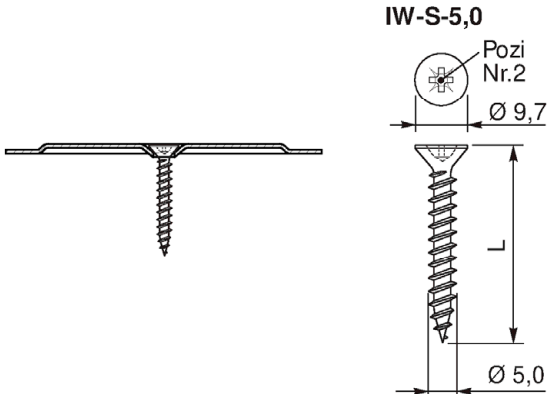
Combination 32A Sarnafast SBF-6,0 / Sarnabar Tube SBT-20 / Sarnabar  Sarnabar Tube SBT-20 Sarnafast SBF-6,0	Combination 32B TI-6,3 / Sarnafast DTL-70x70  Sarnafast DTL-70x70 TI-6,3
SFS Flat roof fasteners	Annex 32

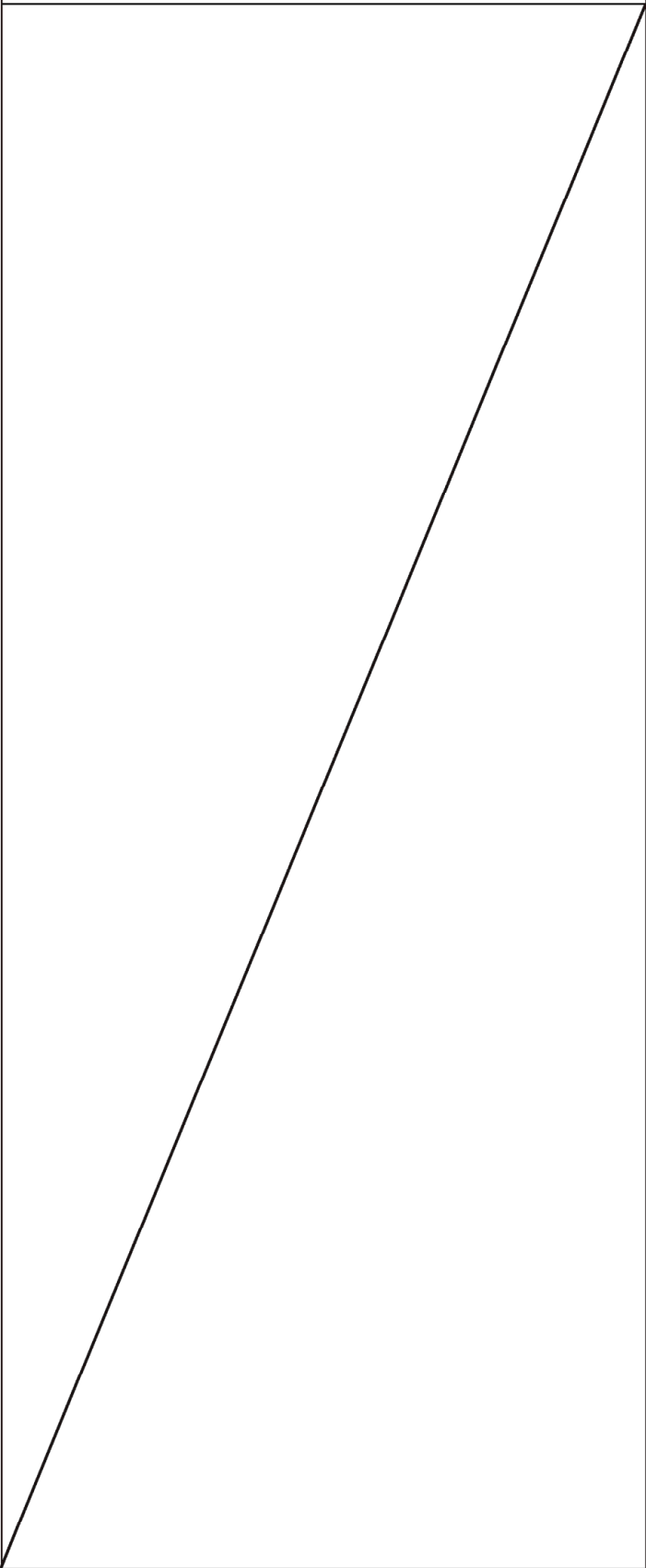
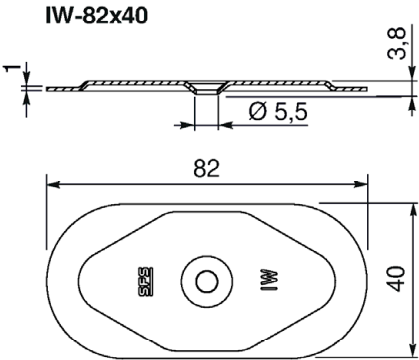
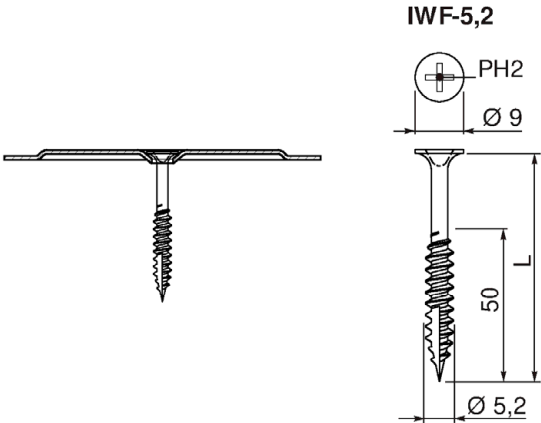
Combination 33A TI-T25-6,3 / Sarnafast Tube SFT-50		Combination 33B TI-T25-6,3 / Sarnabar Tube SBT-20 / Sarnabar	
Sarnafast Tube SFT-50  Sarnabar Tube SBT-20  		 	
SFS Flat roof fasteners		Annex 33	

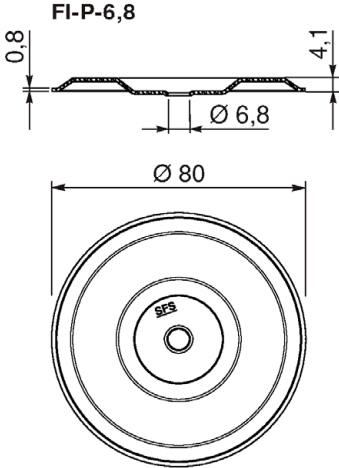
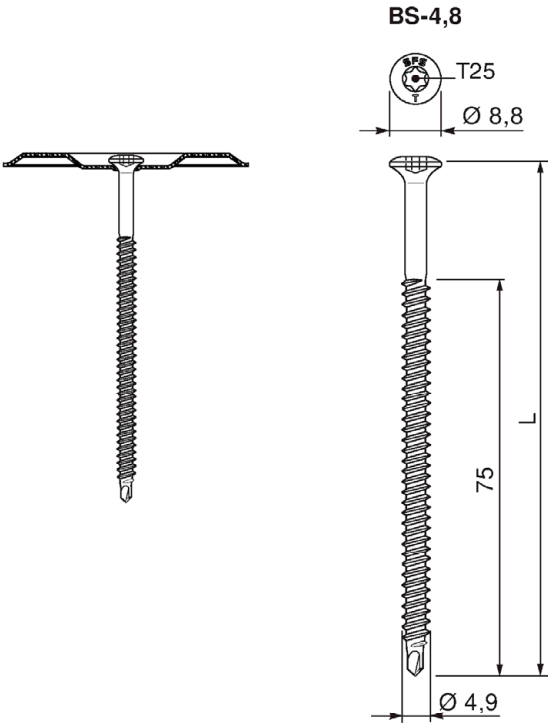
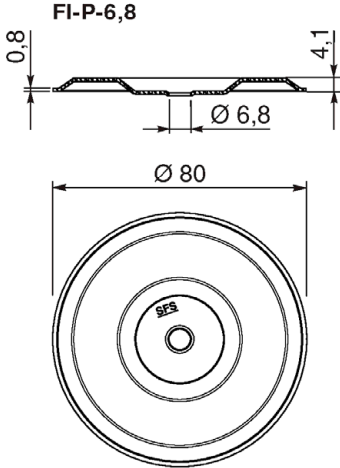
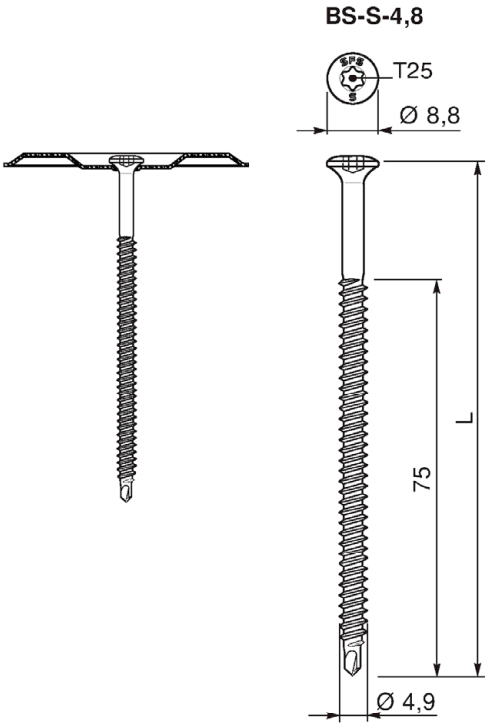
Combination 34A TI-S-Z10-6,3 / R50		Combination 34B TI-S-Z10-6,3 / R75	
R50  TI-S-Z10-6,3 		R75  TI-S-Z10-6,3 	
SFS Flat roof fasteners		Annex	34

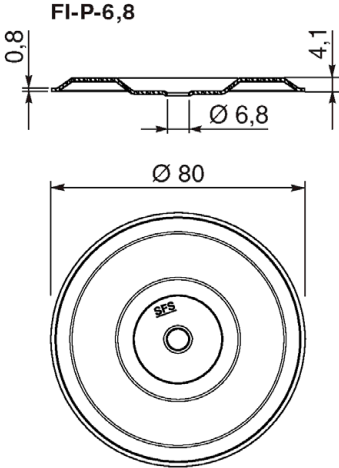
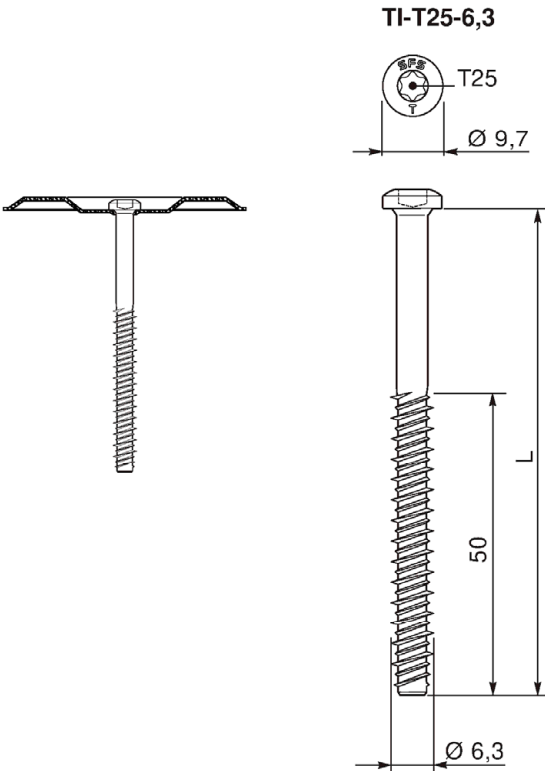
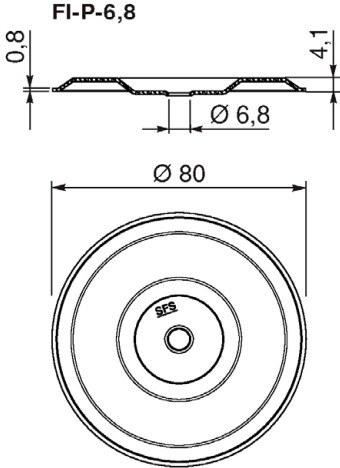
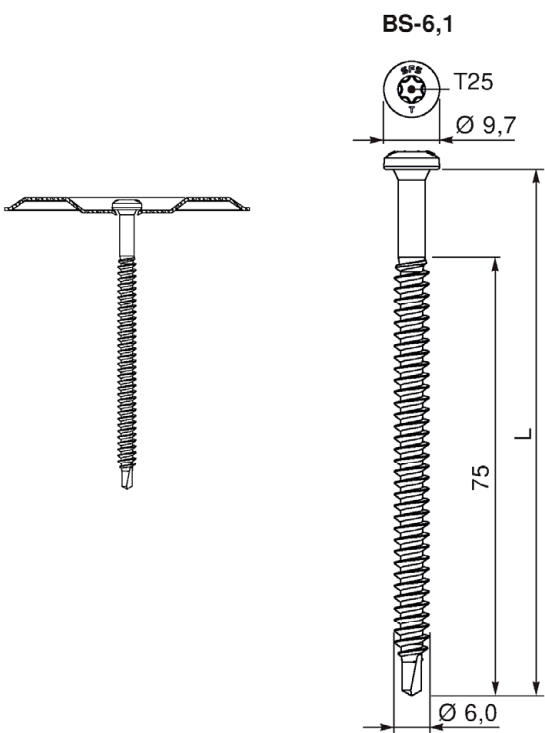
Combination 35A IF2-6,1 / IRD-82x40	Combination 35B IF2-6,1 / ID-70x70
 IRD-82x40 IF2-6,1 PH3 Ø 11,1 L Ø 6,1	 ID-70x70 IF2-6,1 PH3 Ø 11,1 L Ø 6,1
SFS Flat roof fasteners	Annex 35

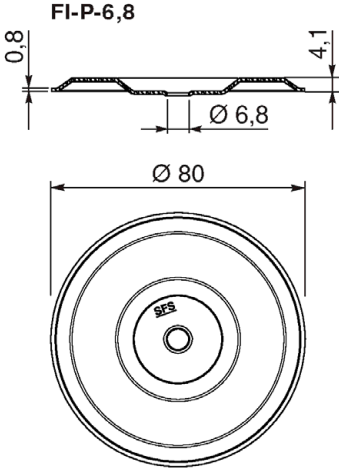
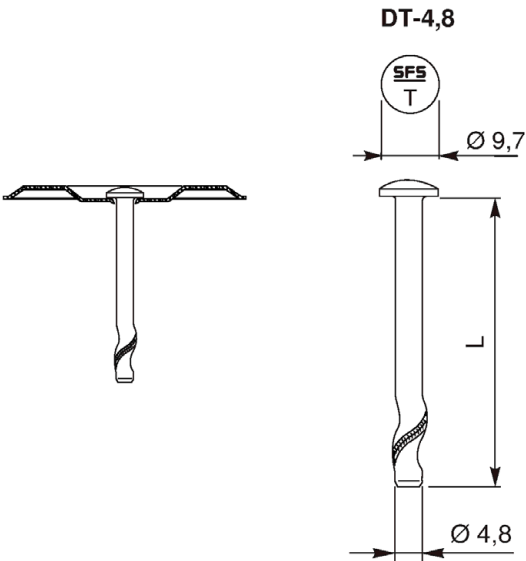
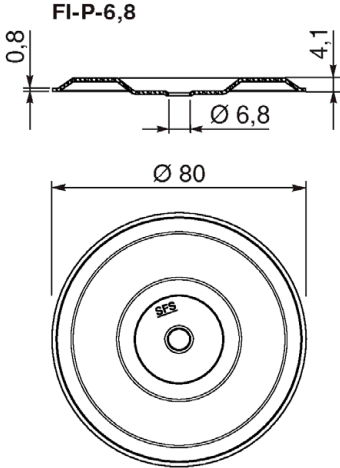
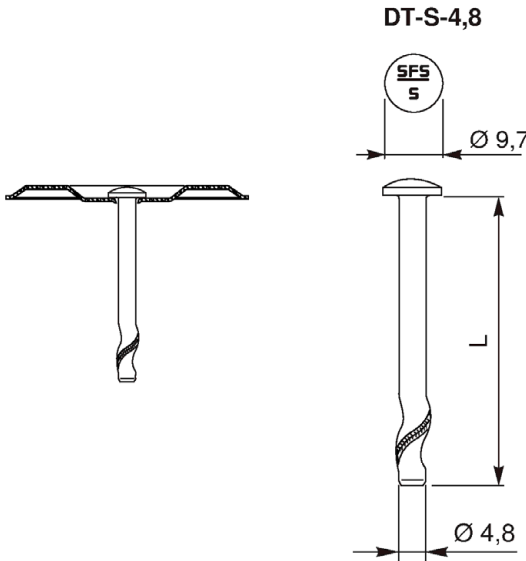
Combination 36A FB-S-T25-7,5 / IRD-82x40 IRD-82x40  FB-S-T25-7,5 	Combination 36B FB-S-T25-7,5 / IF/IG-C-82x40 IF/IG-C-82x40  FB-S-T25-7,5 
SFS Flat roof fasteners	Annex 36

Combination 37A FB-S-T25-7,5 / R75 R75  FB-S-T25-7,5  SFS Flat roof fasteners	Combination 37B IW-S-5,0 / IW-82x40 IW-82x40  IW-S-5,0  Annex 37
--	--

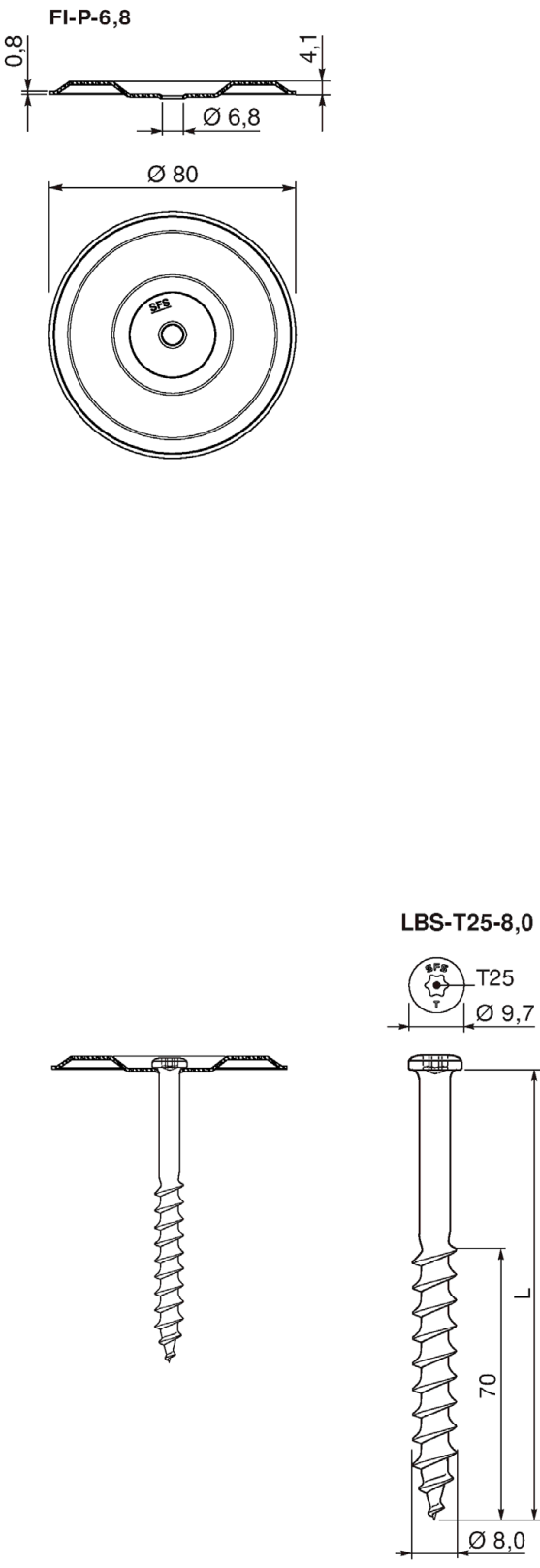
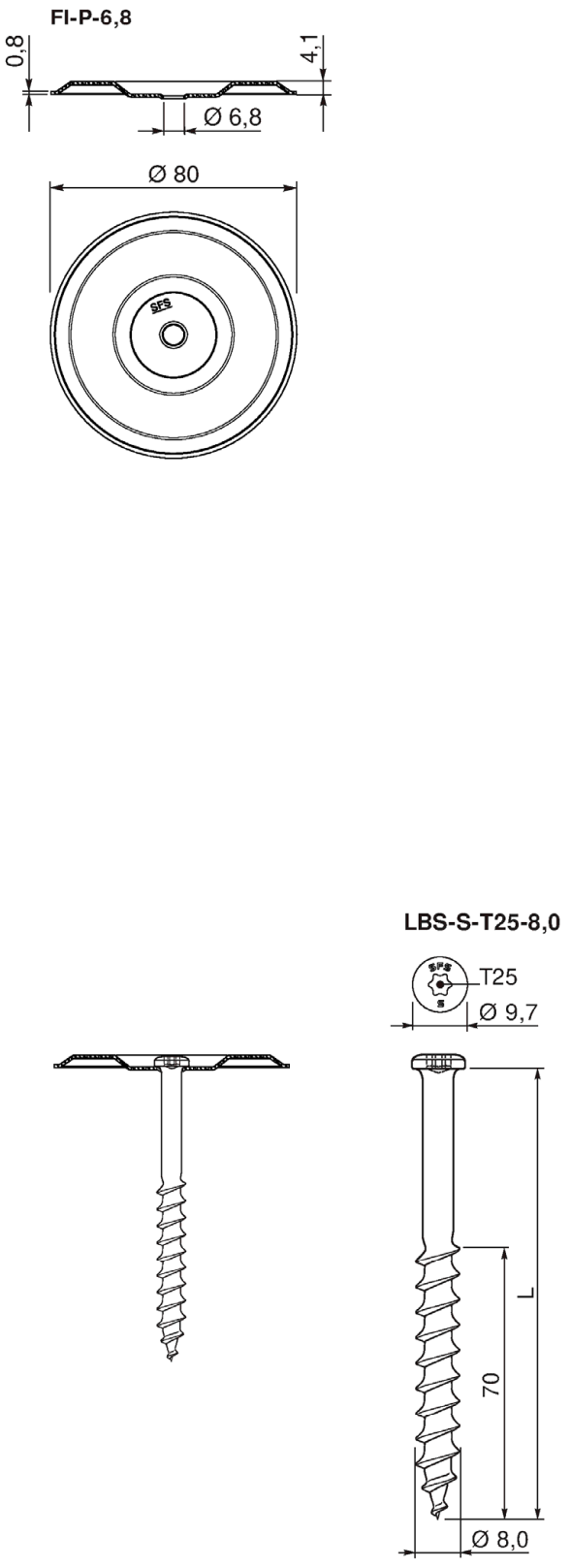
Combination 38A No longer in product range	Combination 38B IWF-5,2 / IW-82x40
	IW-82x40  IWF-5,2 
SFS Flat roof fasteners	Annex 38

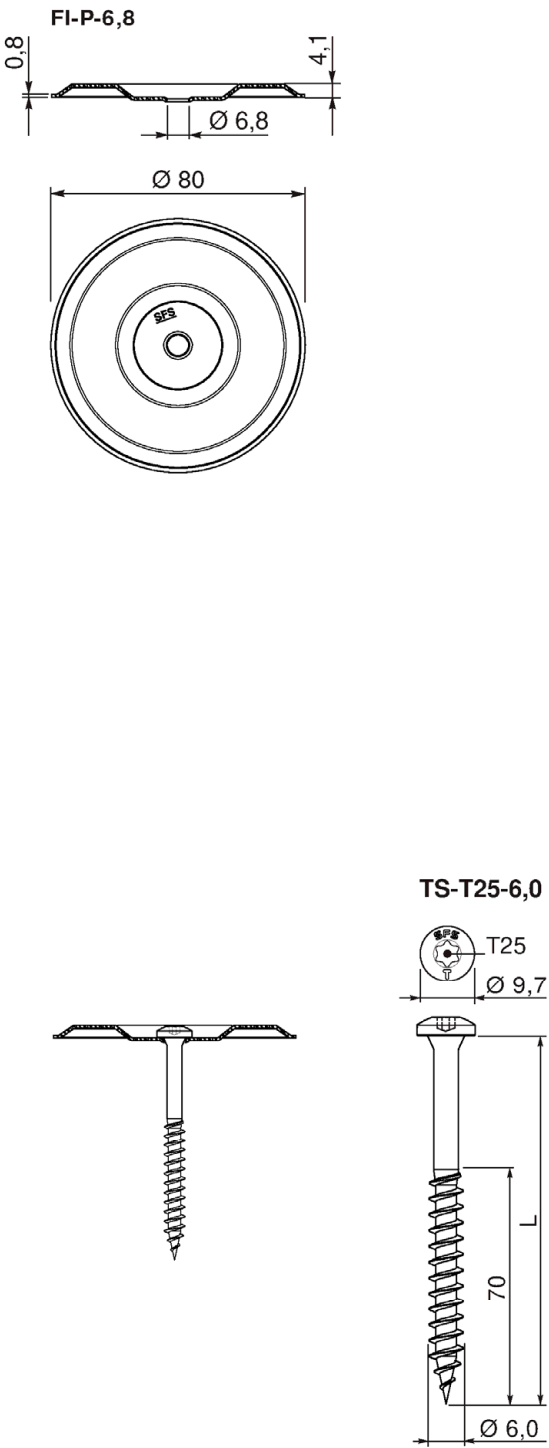
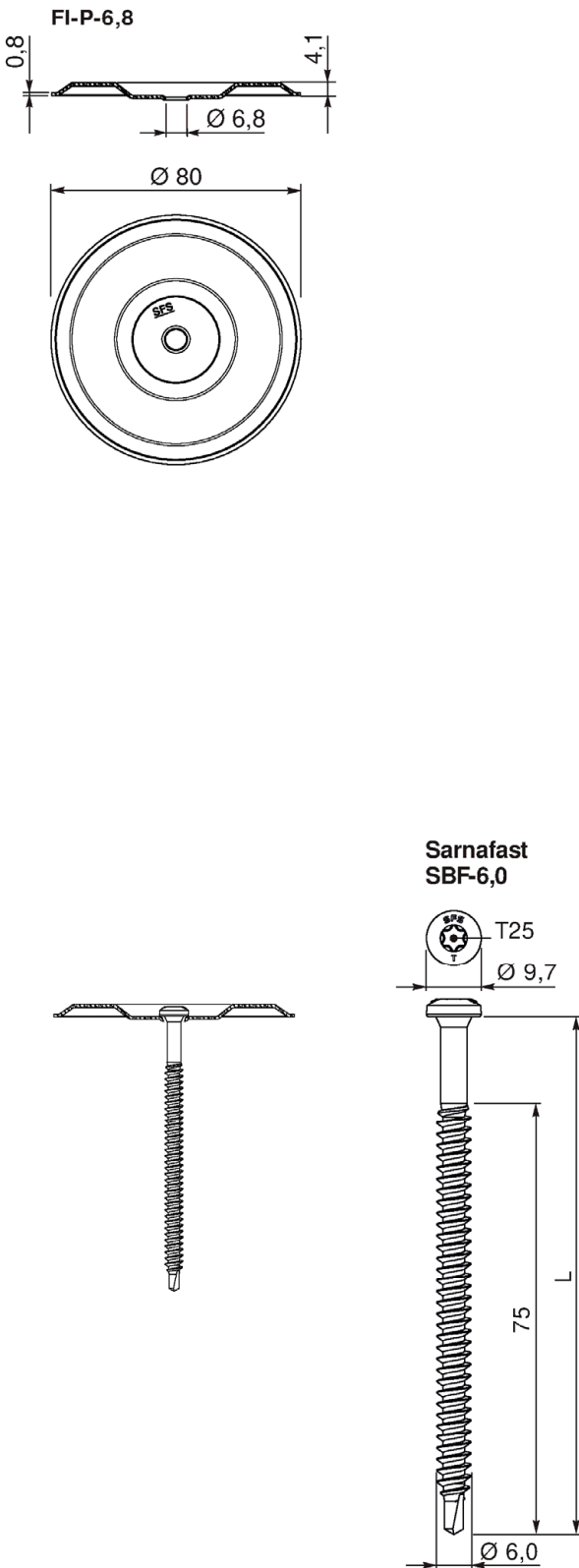
Combination 39A BS-4,8 / FI-P-6,8	Combination 39B BS-S-4,8 / FI-P-6,8
FI-P-6,8  	FI-P-6,8  
SFS Flat roof fasteners	Annex 39

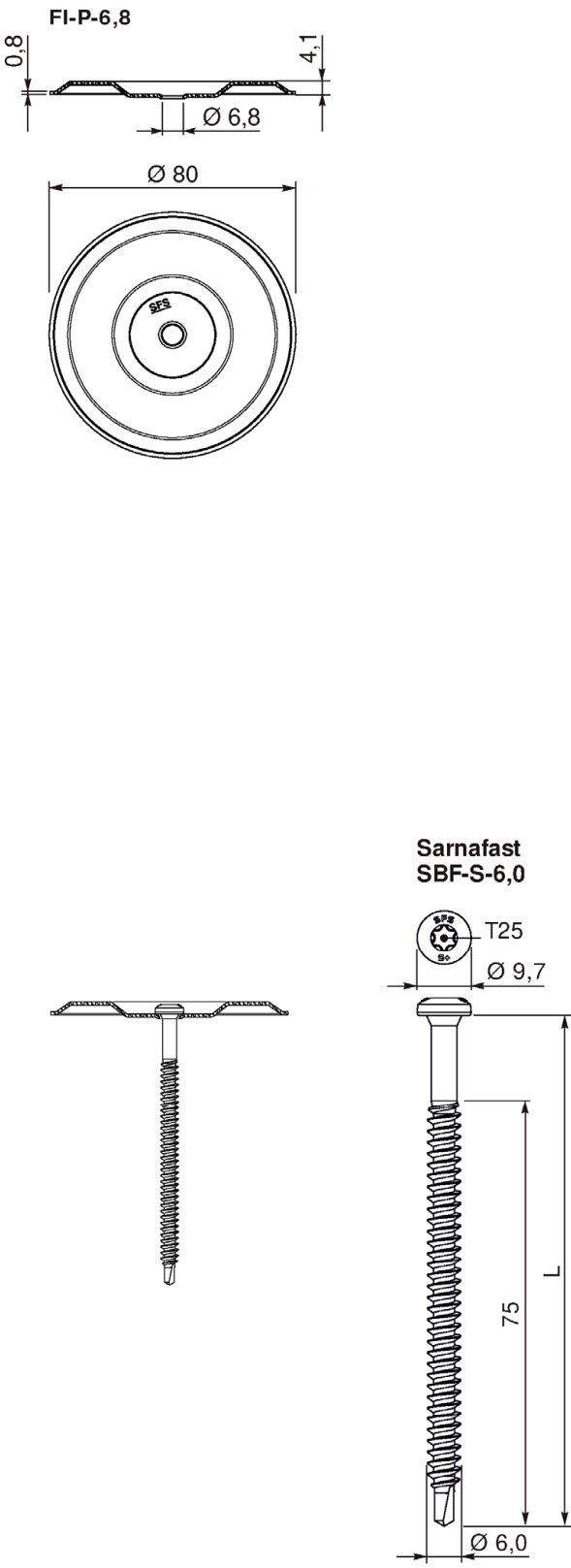
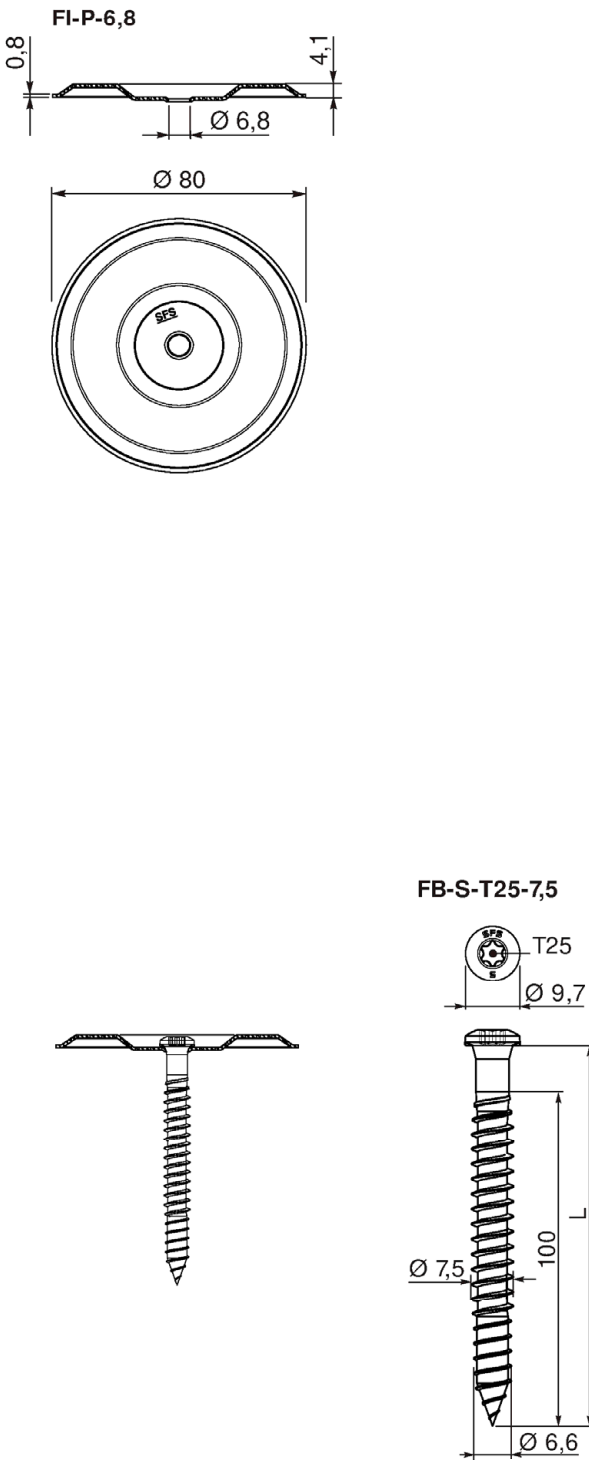
Combination 40A TI-T25-6,3 / FI-P-6,8	Combination 40B BS-6,1 / FI-P-6,8
FI-P-6,8  TI-T25-6,3 	FI-P-6,8  BS-6,1 
SFS Flat roof fasteners	Annex 40

Combination 41A DT-4,8 / FI-P-6,8	Combination 41B DT-S-4,8 / FI-P-6,8
FI-P-6,8  DT-4,8 	FI-P-6,8  DT-S-4,8 
SFS Flat roof fasteners	Annex 41

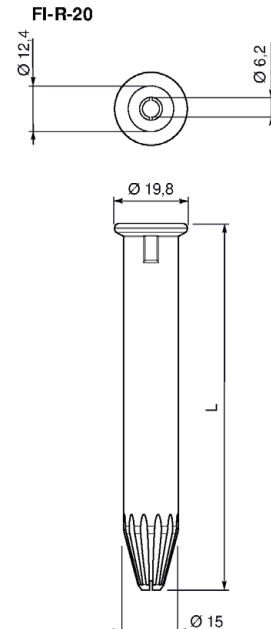
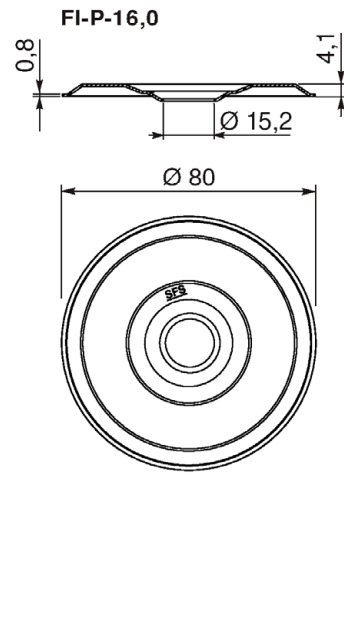
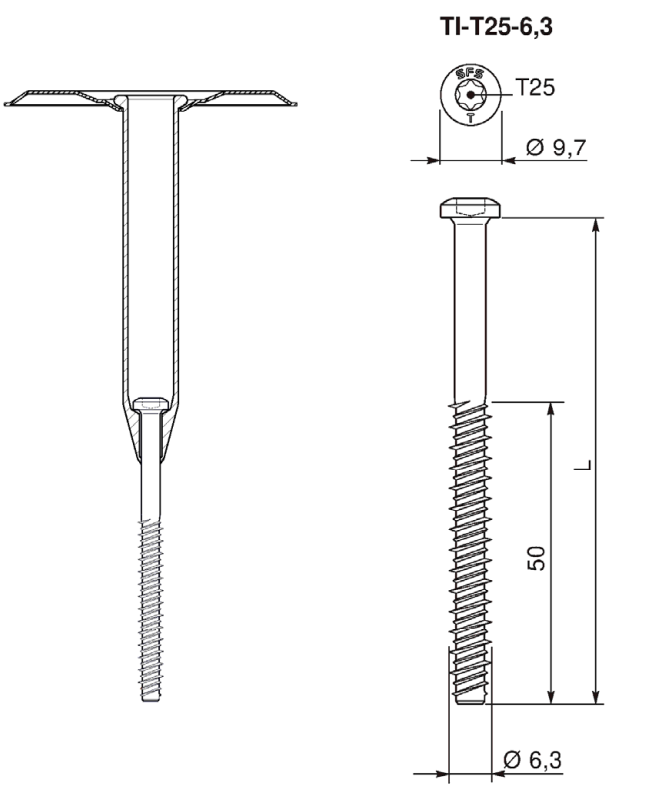
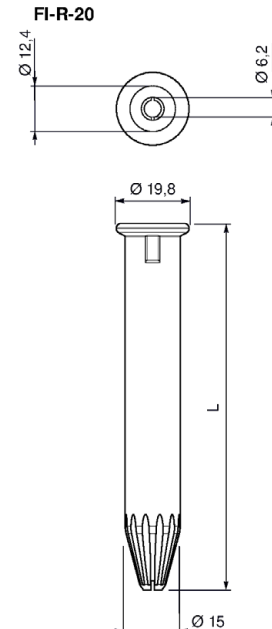
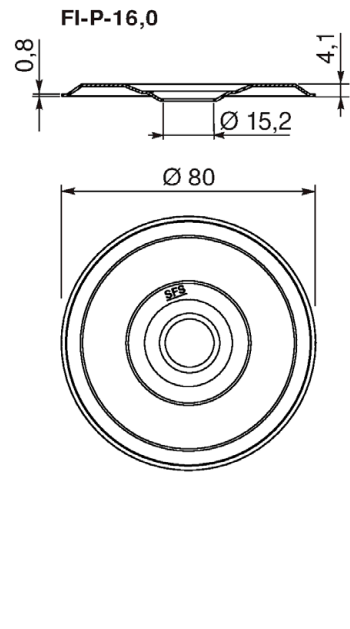
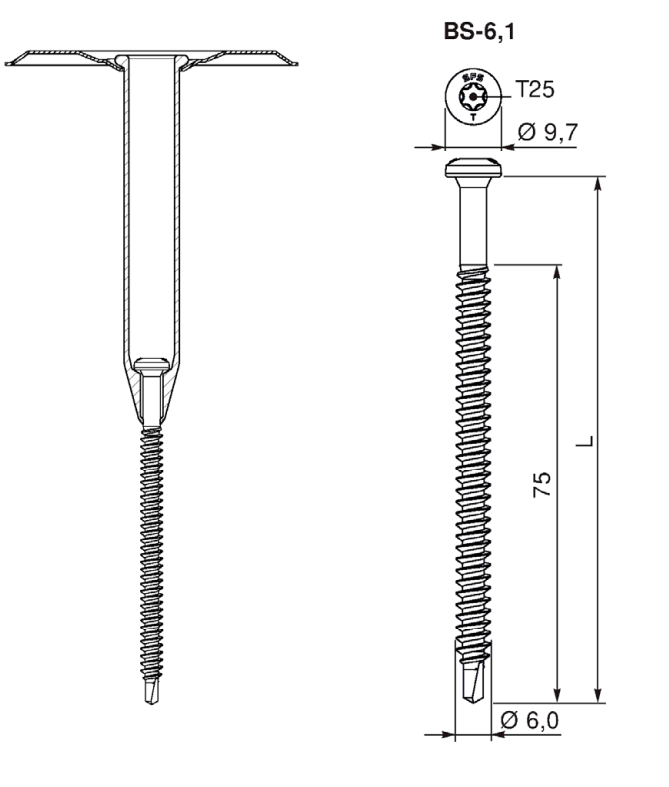
Combination 42A DT-6,3 / FI-P-6,8	Combination 42B DT-S-6,3 / FI-P-6,8
 FI-P-6,8 DT-6,3	 FI-P-6,8 DT-S-6,3
SFS Flat roof fasteners	Annex 42

Combination 43A LBS-T25-8,0 / FI-P-6,8		Combination 43B LBS-S-T25-8,0 / FI-P-6,8	
			
SFS Flat roof fasteners		Annex	43

Combination 44A TS-T25-6,0 / FI-P-6,8  FI-P-6,8 0,8 4,1 Ø 6,8 Ø 80 TS-T25-6,0 T25 Ø 9,7 70 L Ø 6,0	Combination 44B Sarnafast SBF-6,0 / FI-P-6,8  FI-P-6,8 0,8 4,1 Ø 6,8 Ø 80 Sarnafast SBF-6,0 T25 Ø 9,7 75 L Ø 6,0
SFS Flat roof fasteners	Annex 44

Combination 45A Sarnafast SBF-S-6,0 / FI-P-6,8	Combination 45B FB-S-T25-7,5 / FI-P-6,8
	
SFS Flat roof fasteners	Annex 45

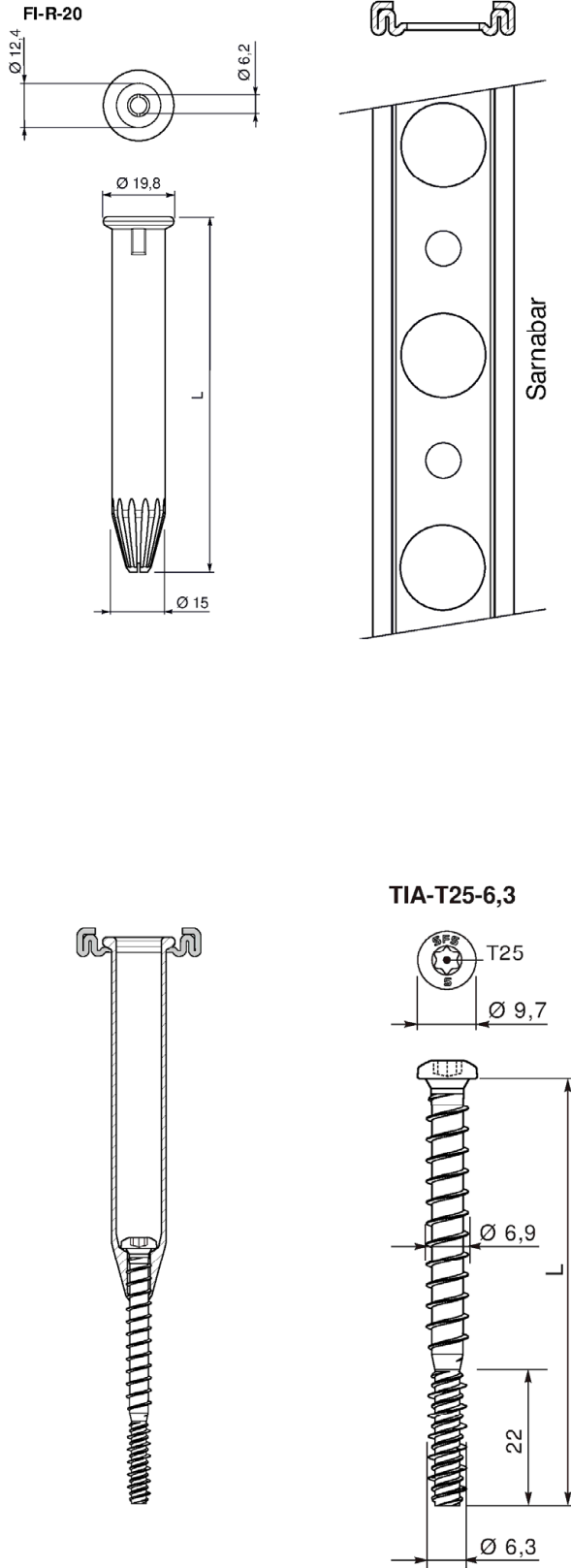
Combination 46A BS-4,8 / FI-P-16,0 / FI-R-20		Combination 46B BS-S-4,8 / FI-P-16,0 / FI-R-20	
SFS Flat roof fasteners		Annex 46	

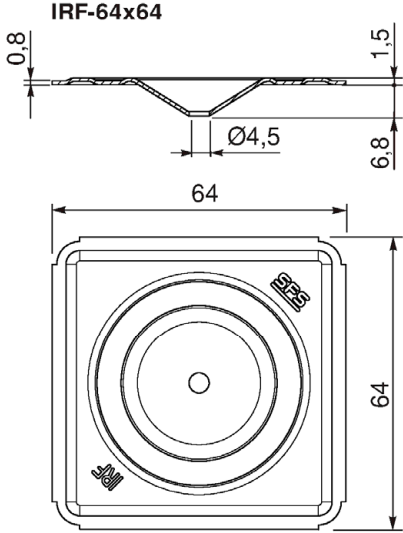
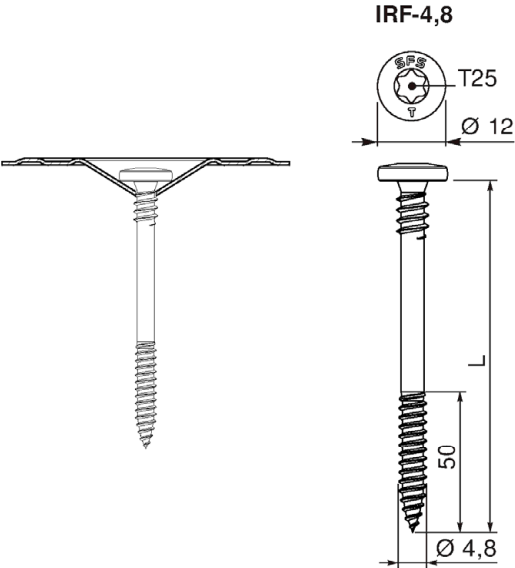
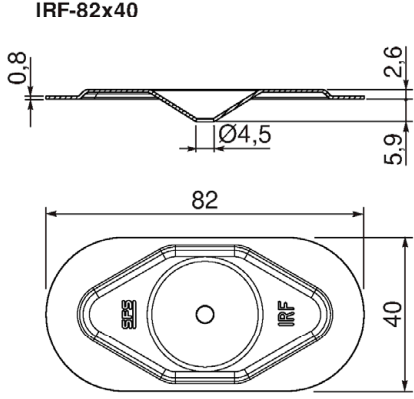
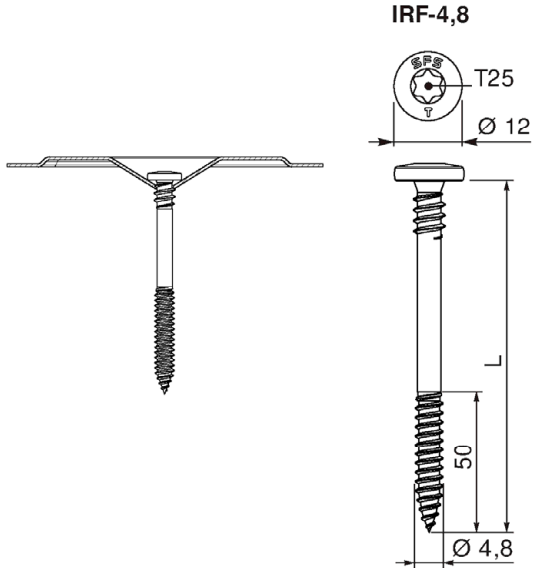
Combination 47A TI-T25-6,3 / FI-P-16,0 / FI-R-20	Combination 47B BS-6,1 / FI-P-16,0 / FI-R-20
FI-R-20  FI-P-16,0   TI-T25-6,3	FI-R-20  FI-P-16,0   BS-6,1
SFS Flat roof fasteners	Annex 47

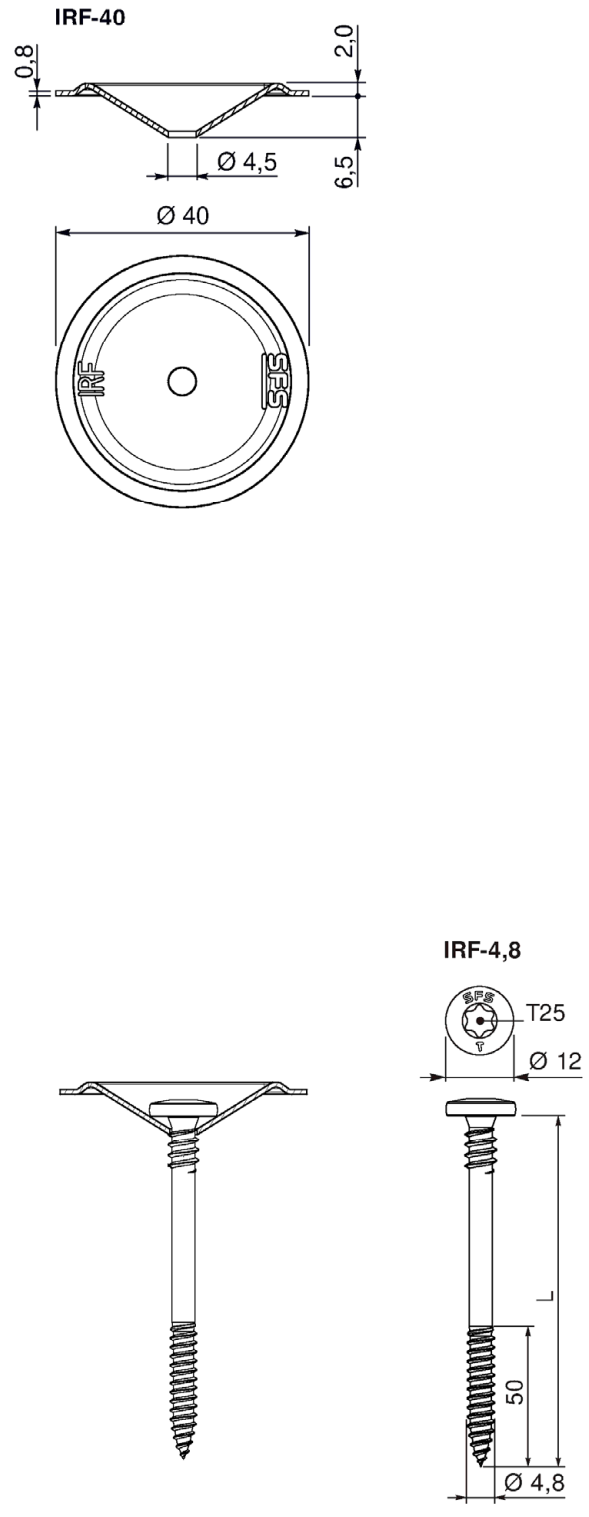
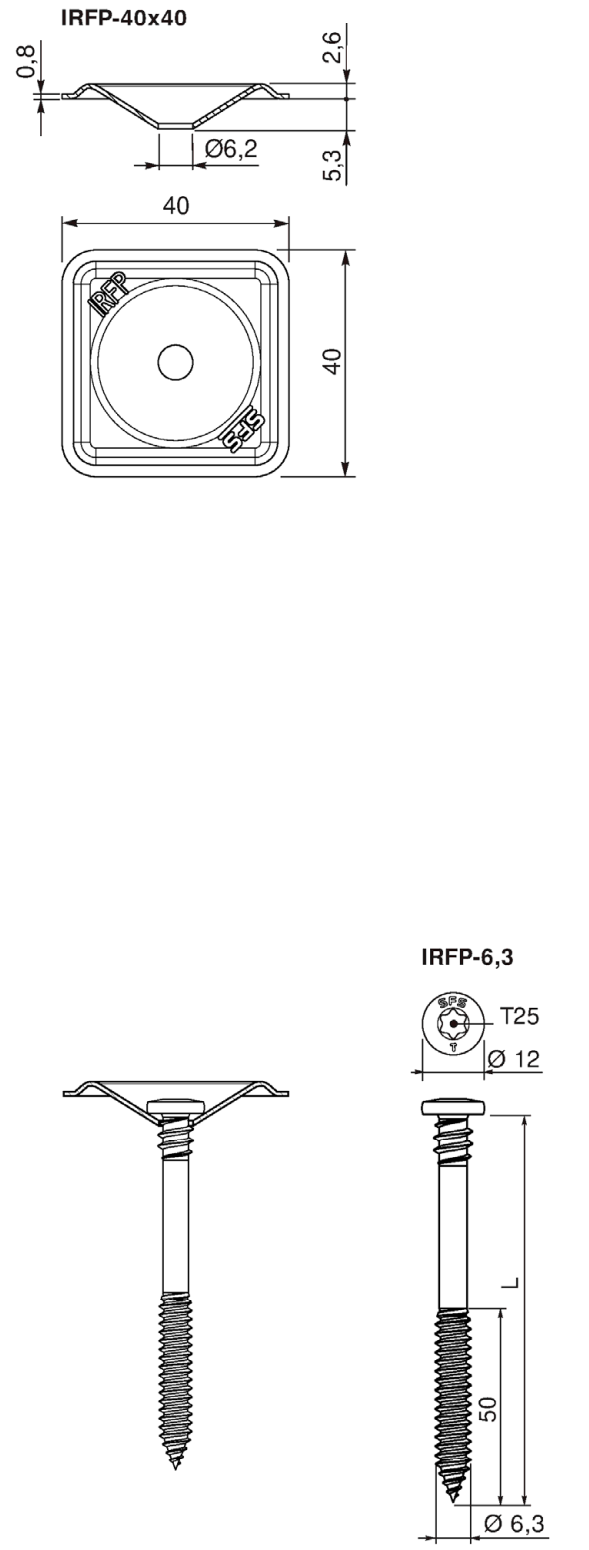
Combination 48A DT-4,8 / FI-P-16,0 / FI-R-20	Combination 48B DT-S-4,8 / FI-P-16,0 / FI-R-20
SFS Flat roof fasteners	Annex 48

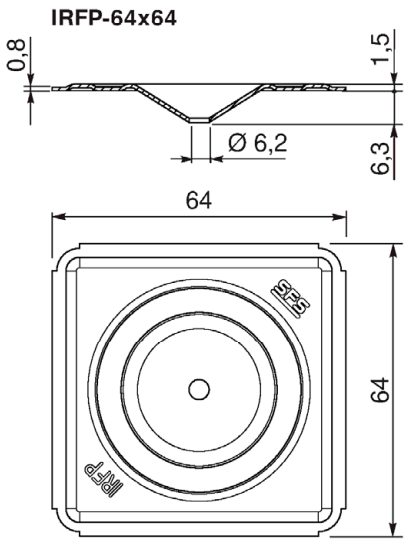
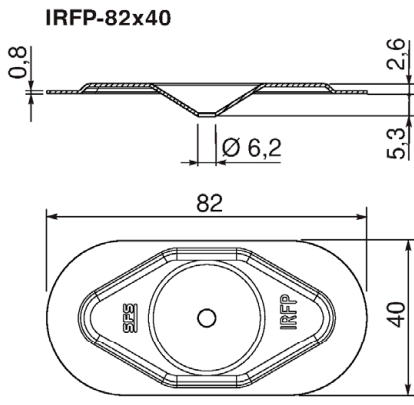
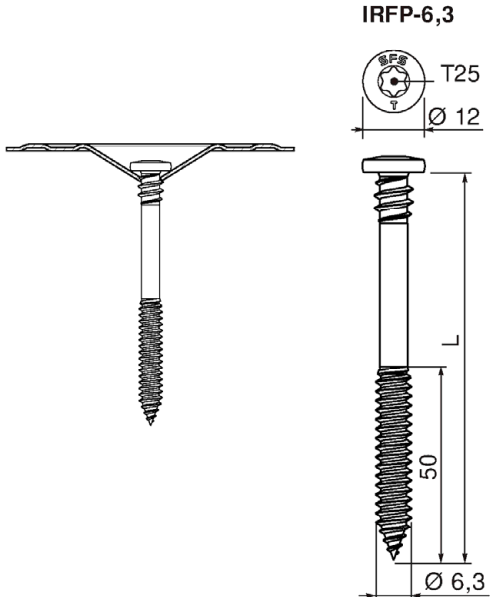
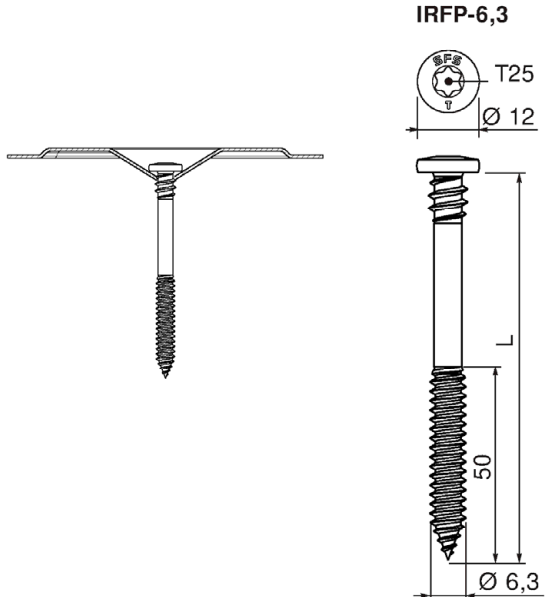
Combination 49A TS-T25-6,0 / FI-P-16,0 / FI-R-20	Combination 49B Sarnafast SBF-6,0 / FI-P-16,0 / FI-R-20
SFS Flat roof fasteners	Annex 49

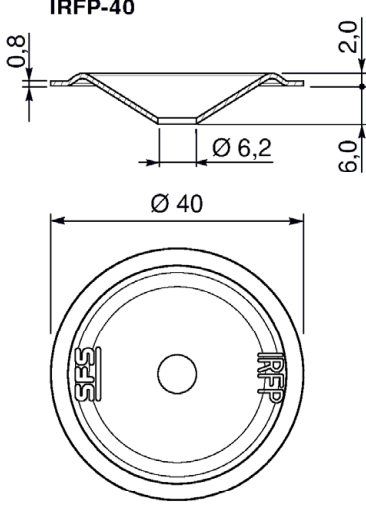
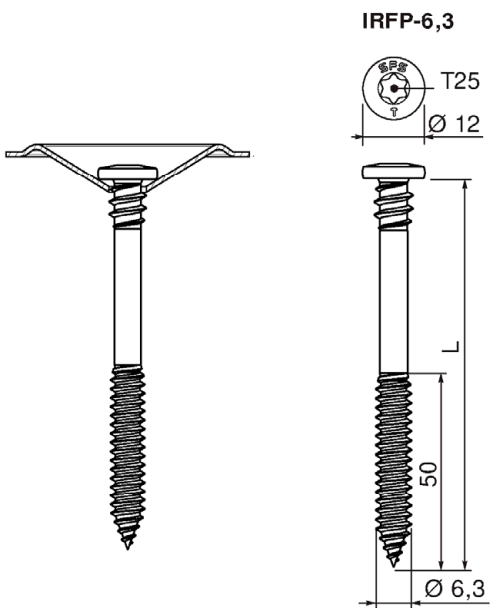
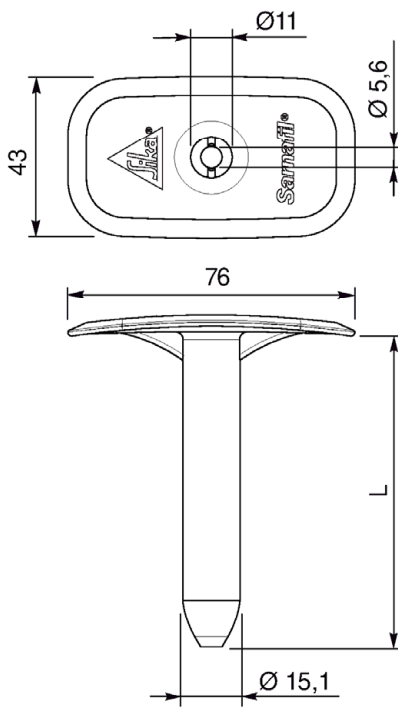
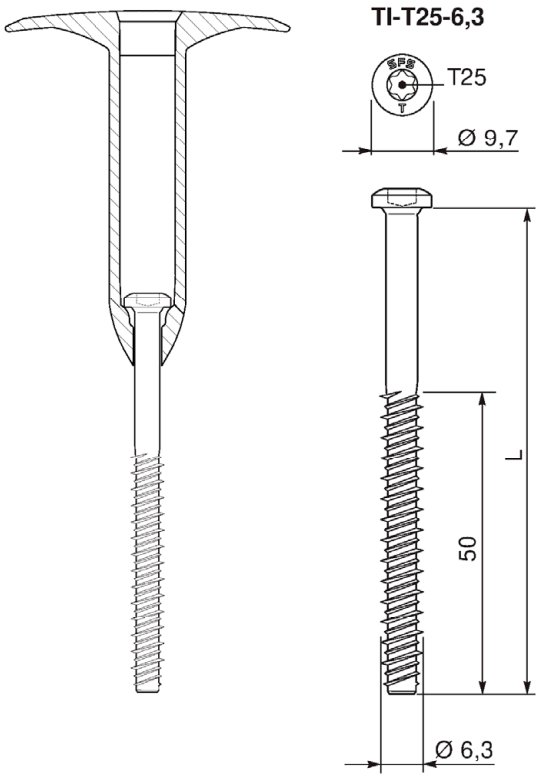
Combination 50A Sarnafast SBF-S-6,0 / FI-P-16,0 / FI-R-20	Combination 50B TIA-T25-6,3 / FI-P-16,0 / FI-R-20
SFS Flat roof fasteners	Annex 50

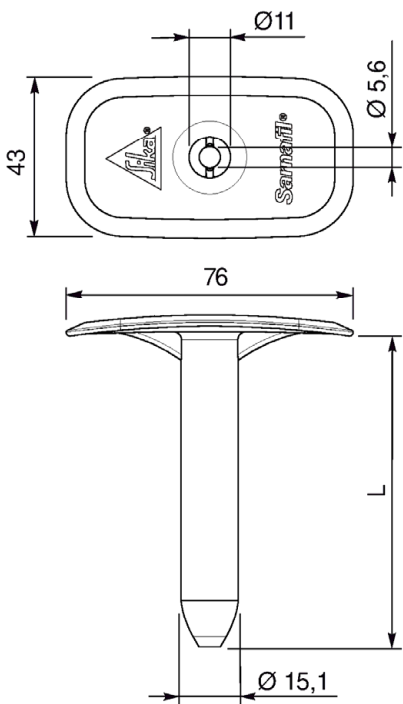
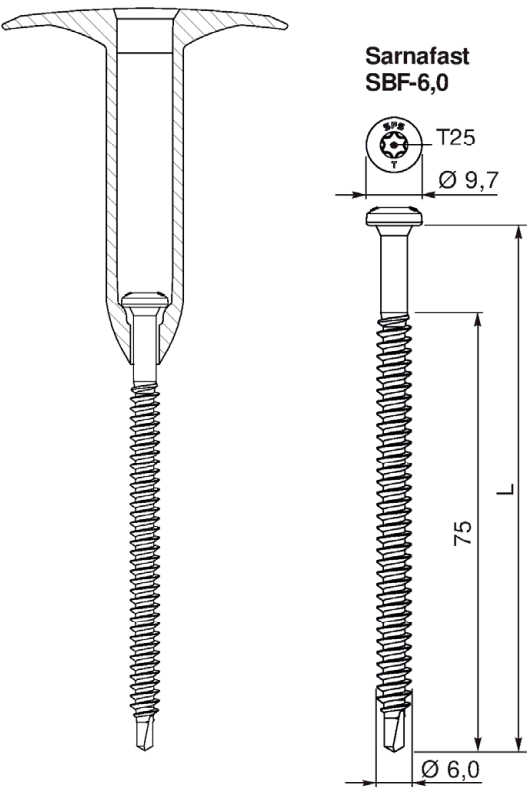
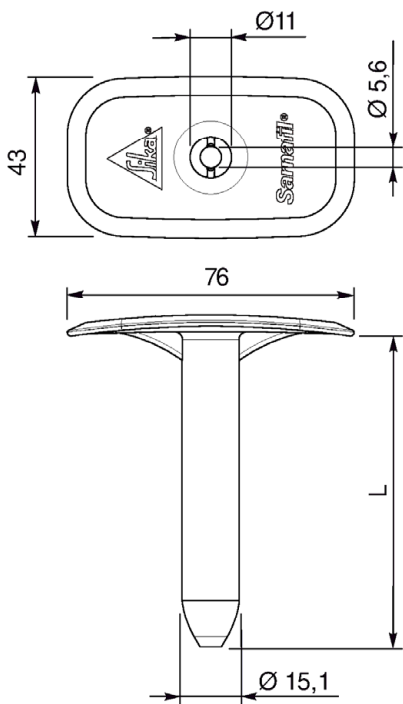
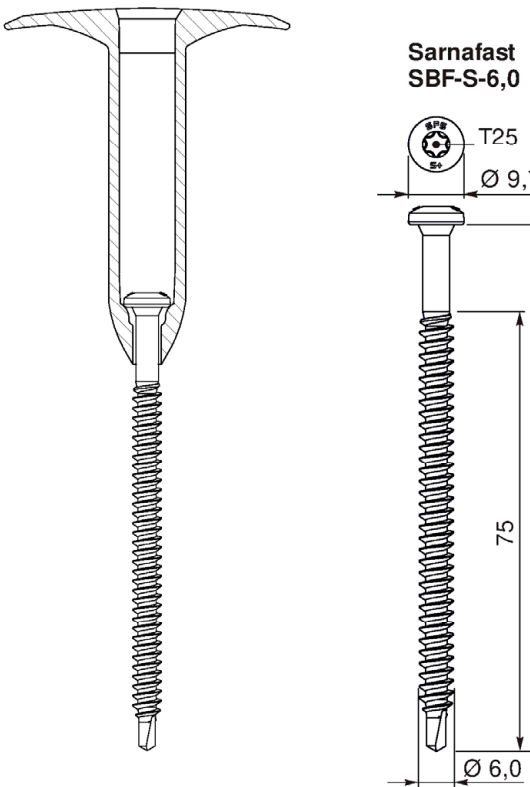
Combination 51A TIA-T25-6,3 / FI-R-20 / Sarnabar 	Combination 51B IRF-4,8 / IRF-40x40 
SFS Flat roof fasteners	Annex 51

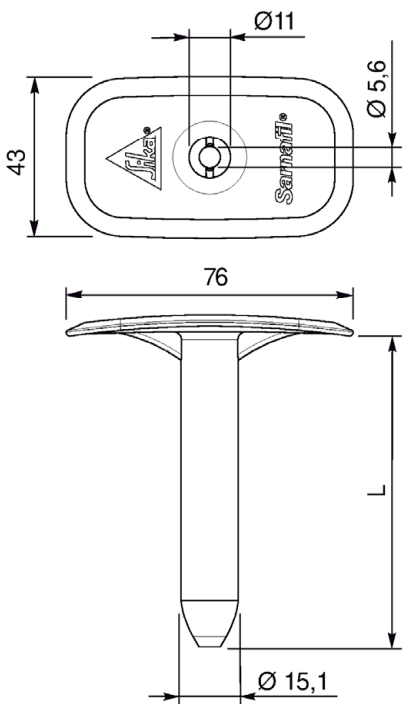
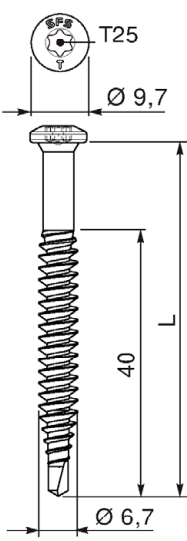
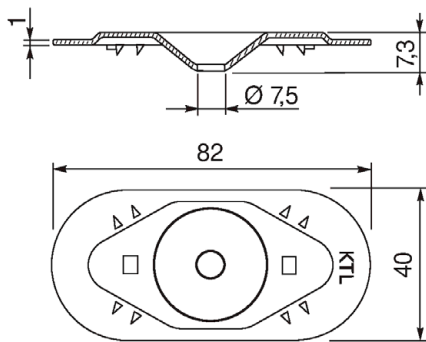
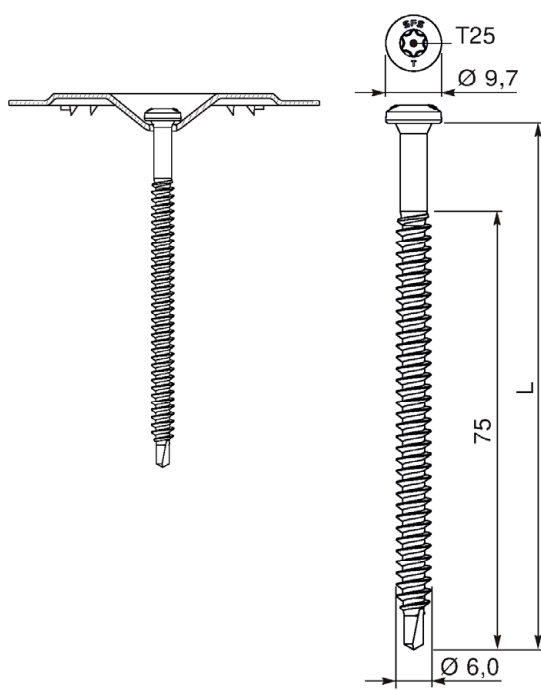
Combination 52A IRF-4,8 / IRF-64x64	Combination 52B IRF-4,8 / IRF-82x40
IRF-64x64  IRF-4,8 	IRF-82x40  IRF-4,8 
SFS Flat roof fasteners	Annex 52

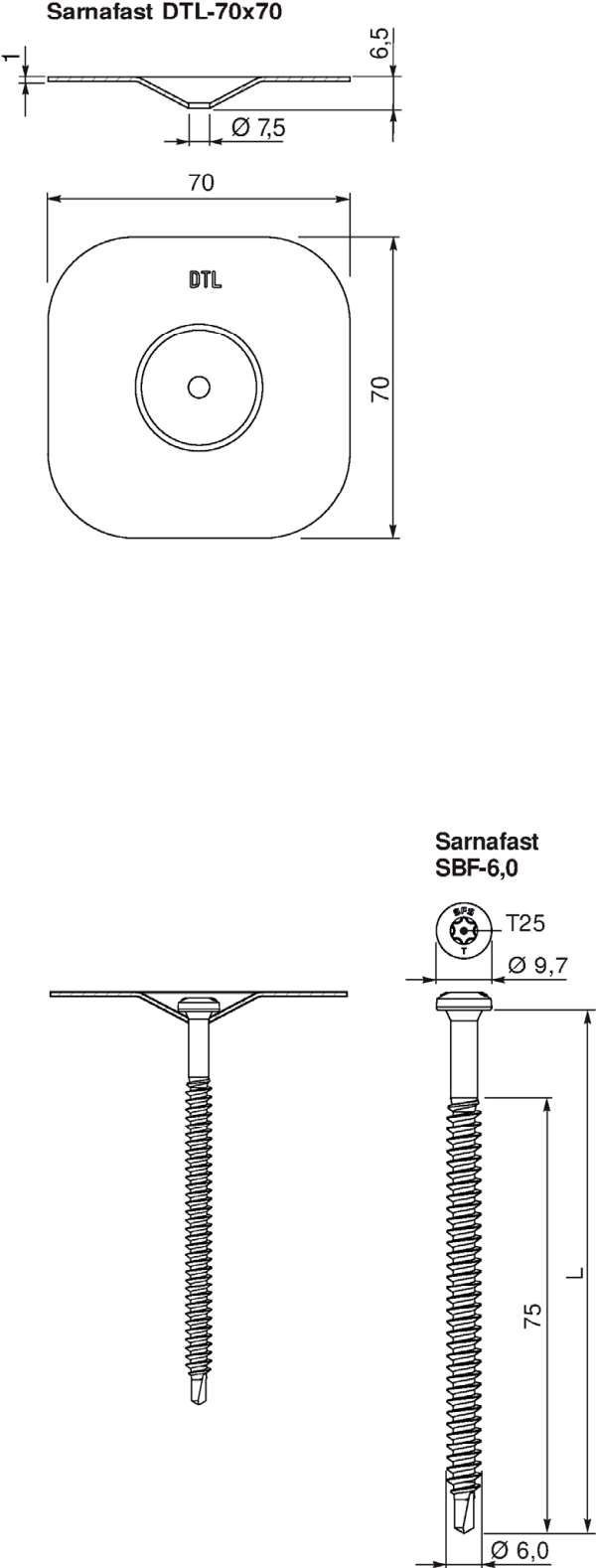
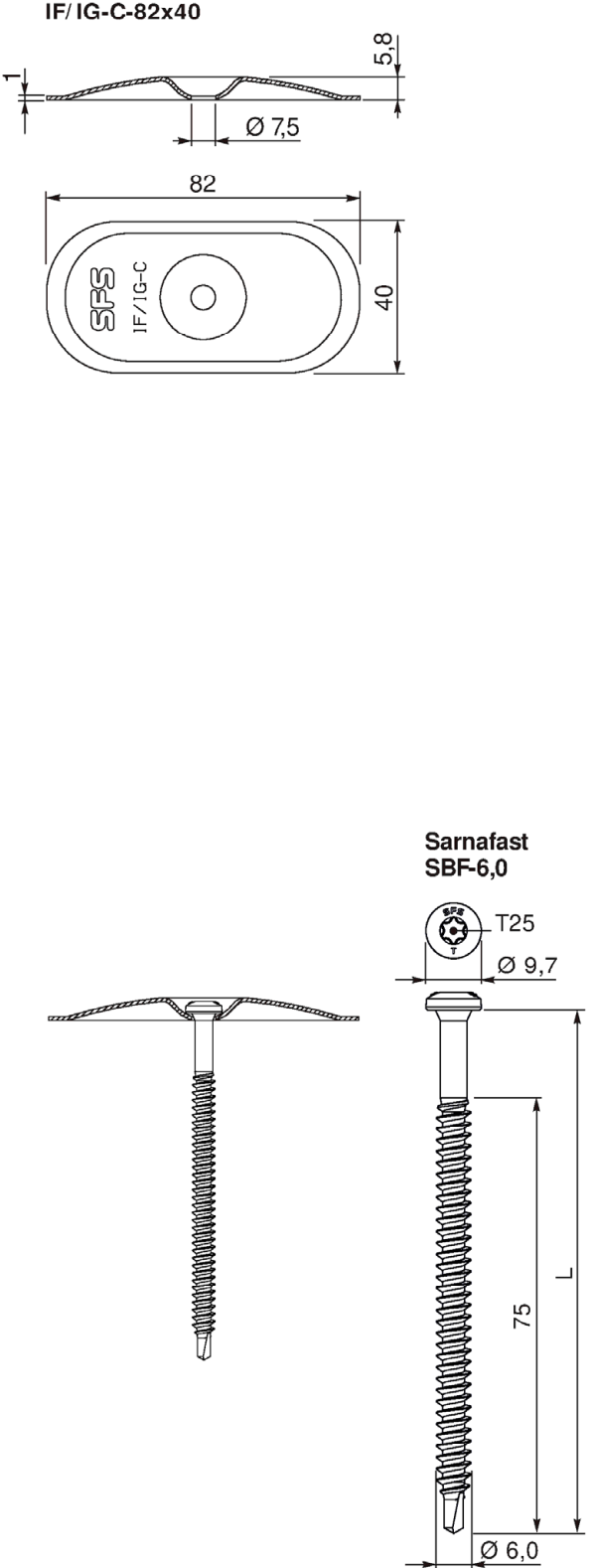
Combination 53A IRF-4,8 / IRF-40		Combination 53B IRFP-6,3 / IRFP-40x40	
			
SFS Flat roof fasteners		Annex	53

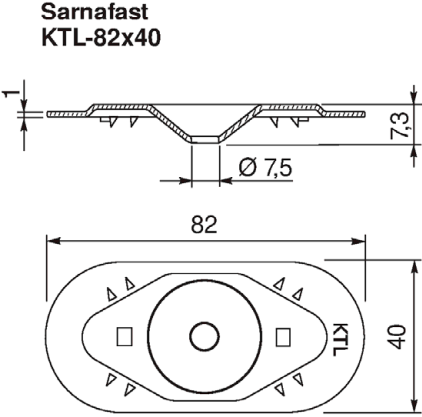
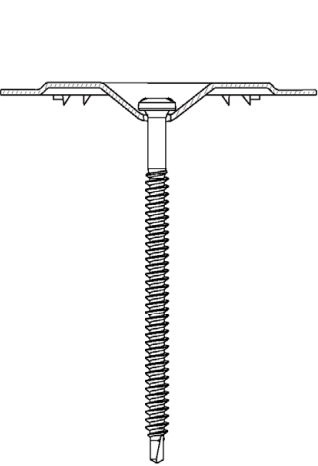
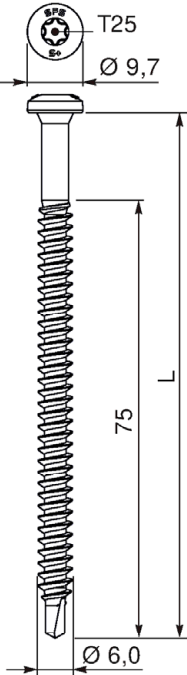
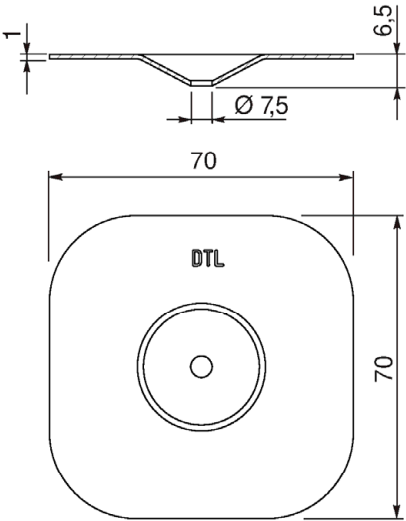
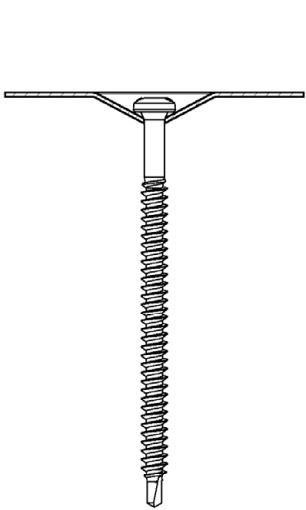
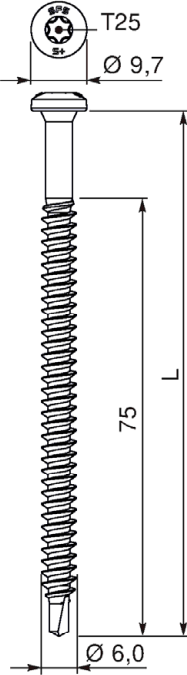
Combination 54A IRFP-6,3 / IRFP-64x64		Combination 54B IRFP-6,3 / IRFP-82x40	
			
			
SFS Flat roof fasteners		Annex	54

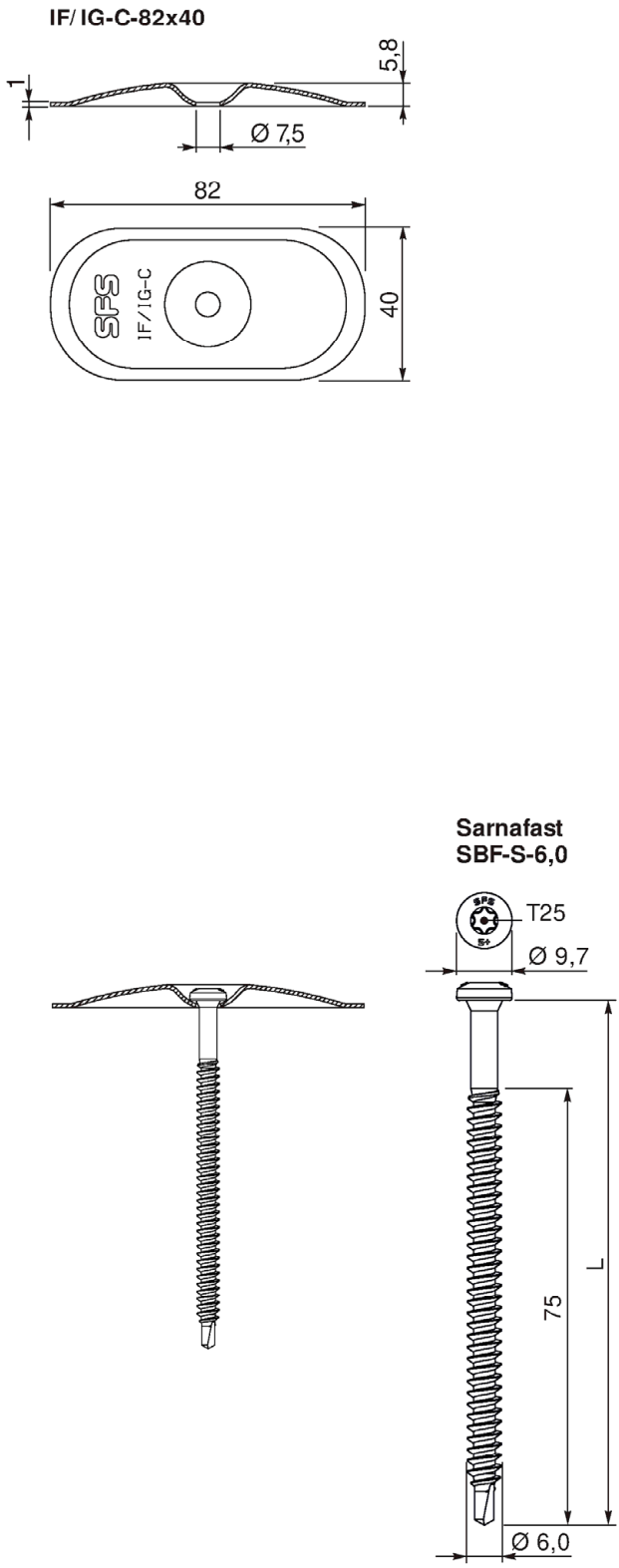
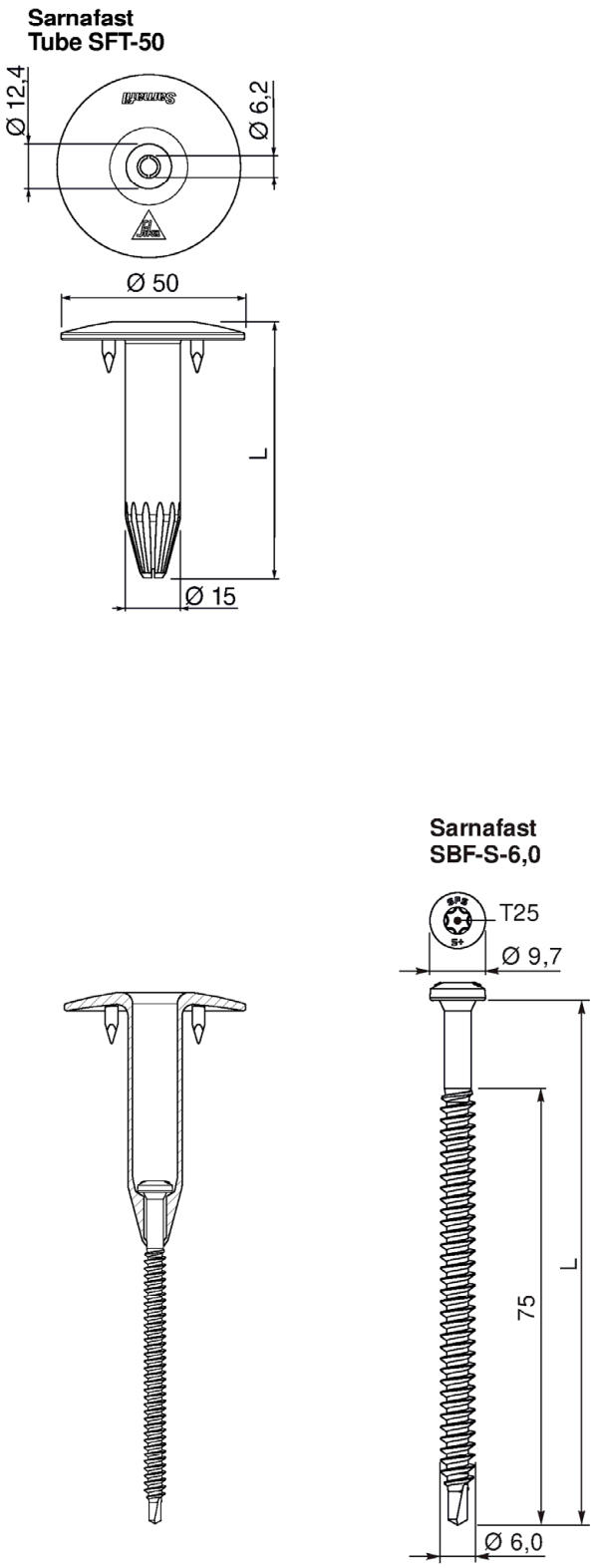
Combination 55A IRFP-6,3 / IRFP-40	Combination 55B TI-T25-6,3 / Isolfix SRT
IRFP-40  IRFP-6,3 	Isolfix SRT  TI-T25-6,3 
SFS Flat roof fasteners	Annex 55

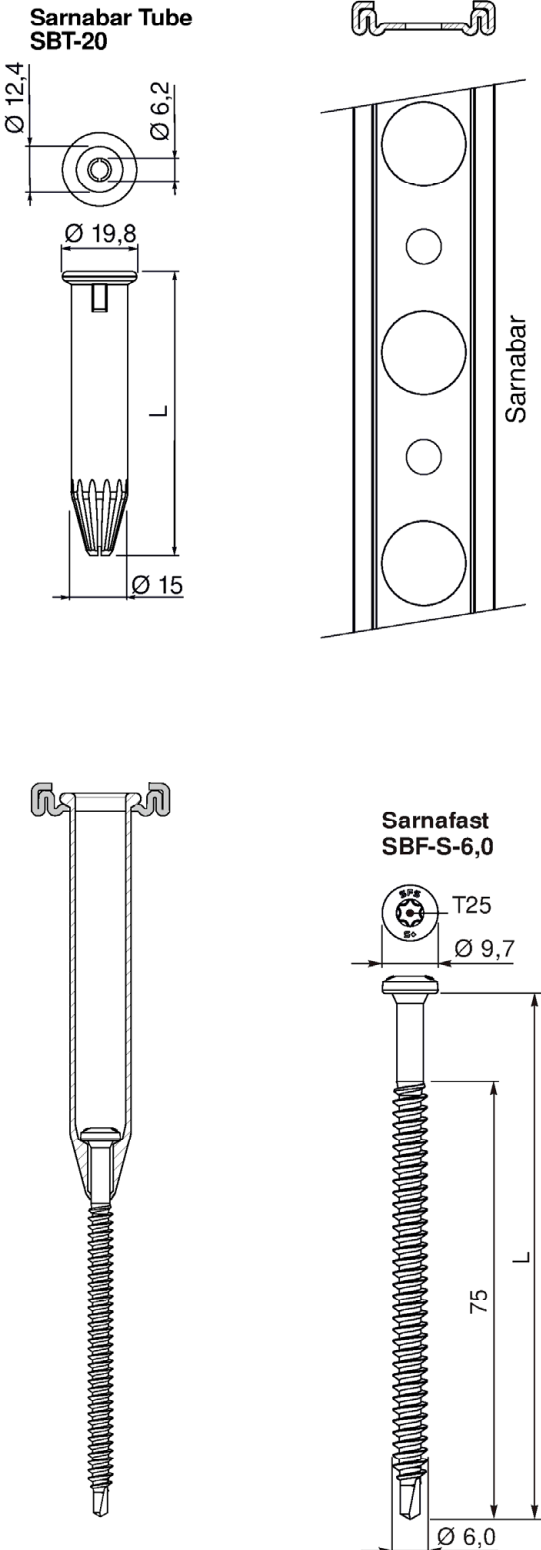
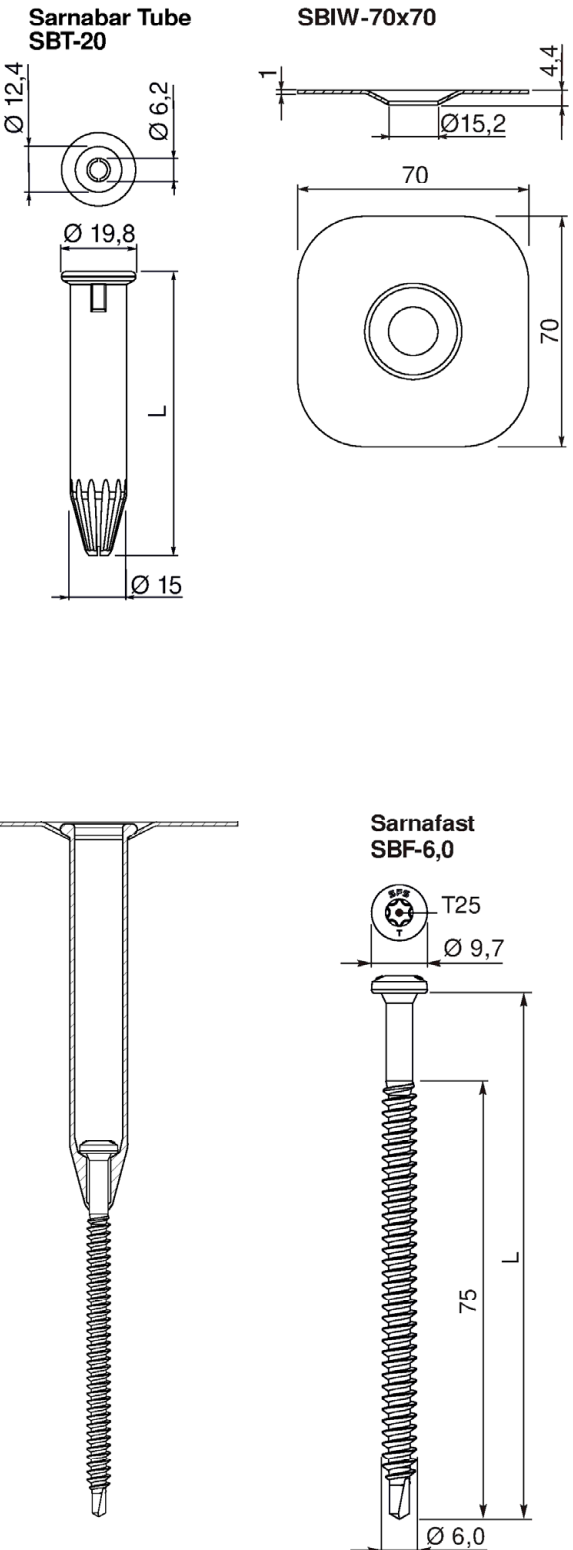
Combination 56A Sarnafast SBF-6,0 / Isolfix SRT	Combination 56B Sarnafast SBF-S-6,0 / Isolfix SRT
Isolfix SRT  Sarnafast SBF-6,0 	Isolfix SRT  Sarnafast SBF-S-6,0 
SFS Flat roof fasteners	Annex 56

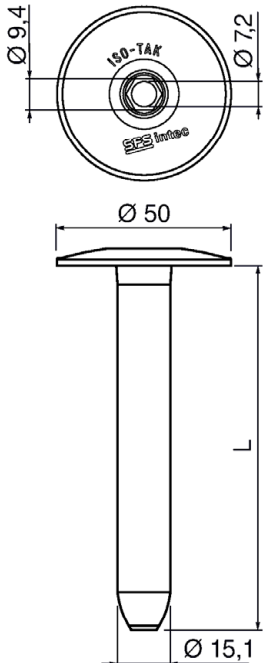
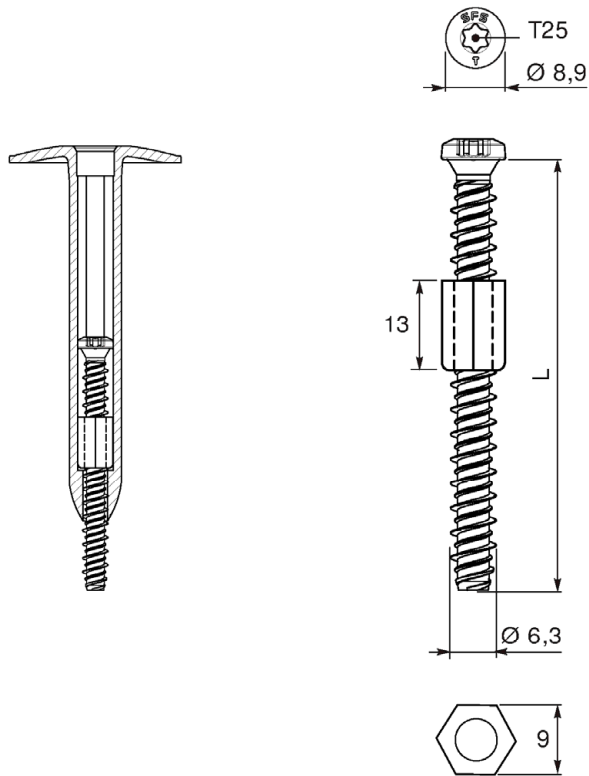
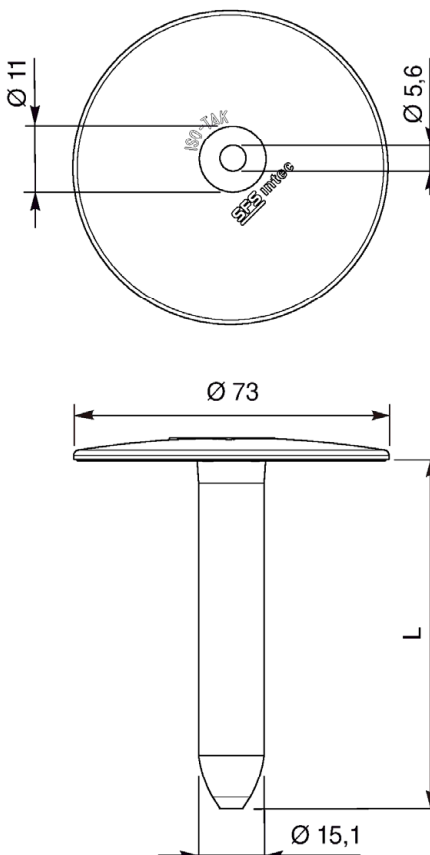
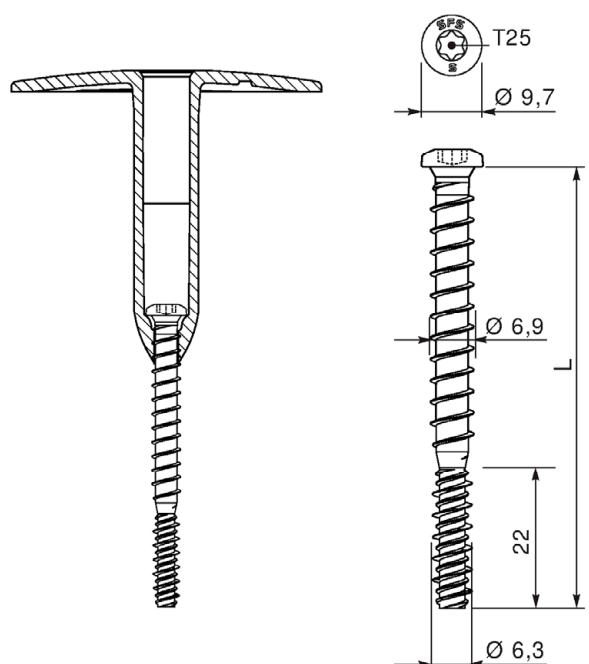
Combination 57A BS-6,7 / Isolfix SRT	Combination 57B Sarnafast SBF-6,0 / Sarnafast KTL-82x40
Isolfix SRT  BS-6,7 	Sarnafast KTL-82x40  Sarnafast SBF-6,0 
SFS Flat roof fasteners	Annex 57

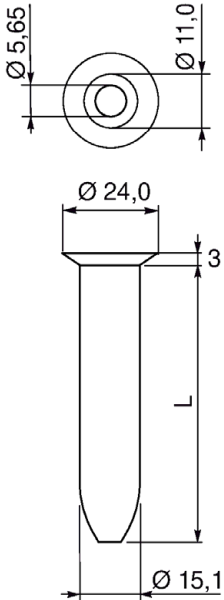
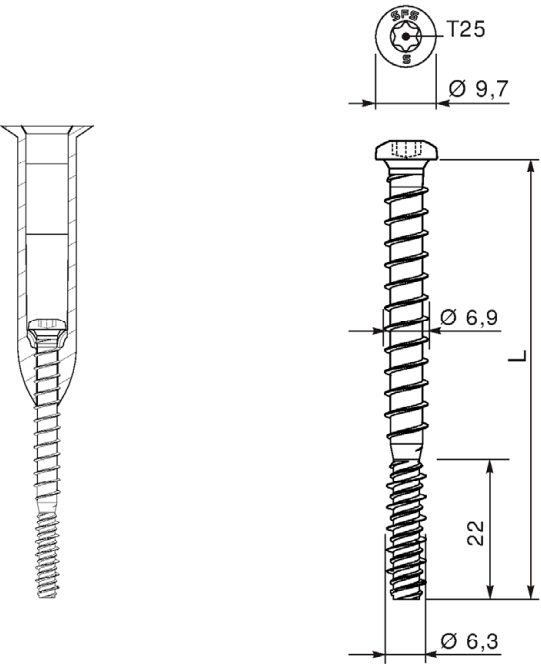
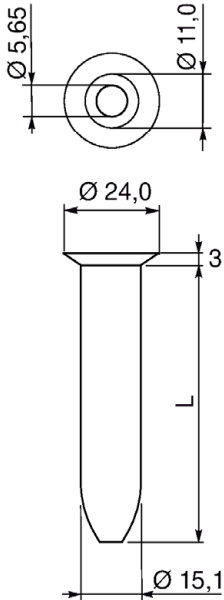
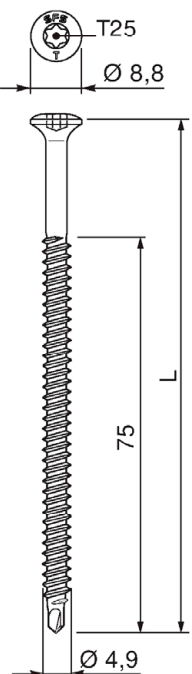
Combination 58A Sarnafast SBF-6,0 / Sarnafast DTL-70x70  Sarnafast DTL-70x70 1 6,5 Ø 7,5 70 DTL 70 Sarnafast SBF-6,0 T25 Ø 9,7 75 L Ø 6,0	Combination 58B Sarnafast SBF-6,0 / IF/IG-C-82x40  IF/IG-C-82x40 1 5,8 Ø 7,5 82 SFS IF/IG-C 40 Sarnafast SBF-6,0 T25 Ø 9,7 75 L Ø 6,0
SFS Flat roof fasteners	Annex 58

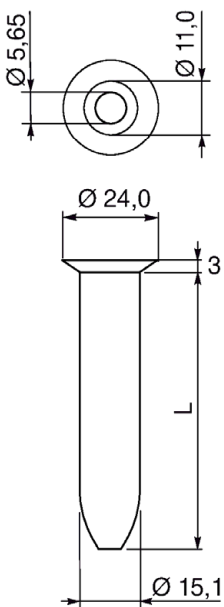
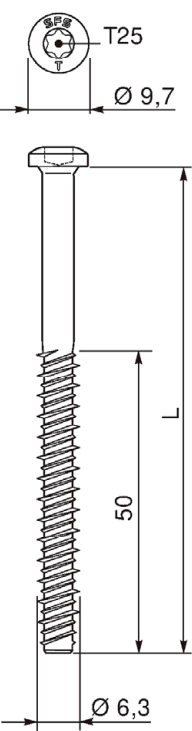
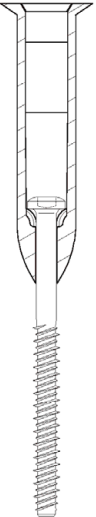
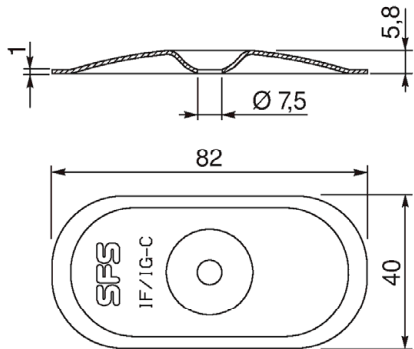
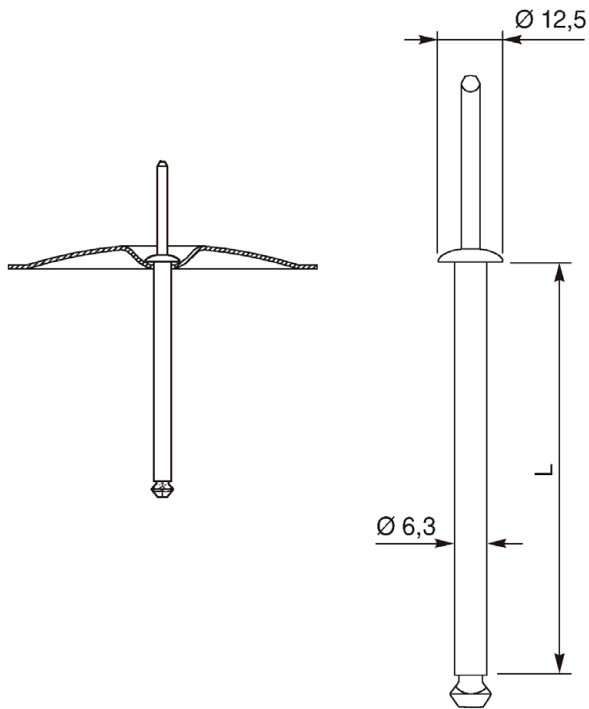
Combination 59A Sarnafast SBF-S-6,0 / Sarnafast KTL-82x40	Combination 59B Sarnafast SBF-S-6,0 / Sarnafast DTL-70x70
Sarnafast KTL-82x40  Sarnafast SBF-S-6,0  Sarnafast SBF-S-6,0 	Sarnafast DTL-70x70  Sarnafast SBF-S-6,0  Sarnafast SBF-S-6,0 
SFS Flat roof fasteners	Annex 59

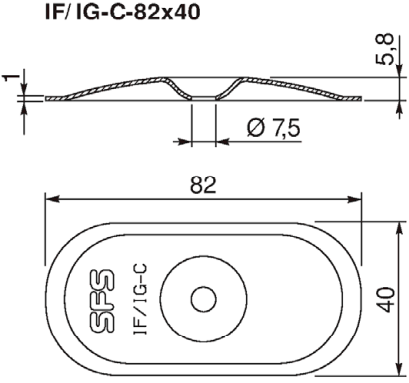
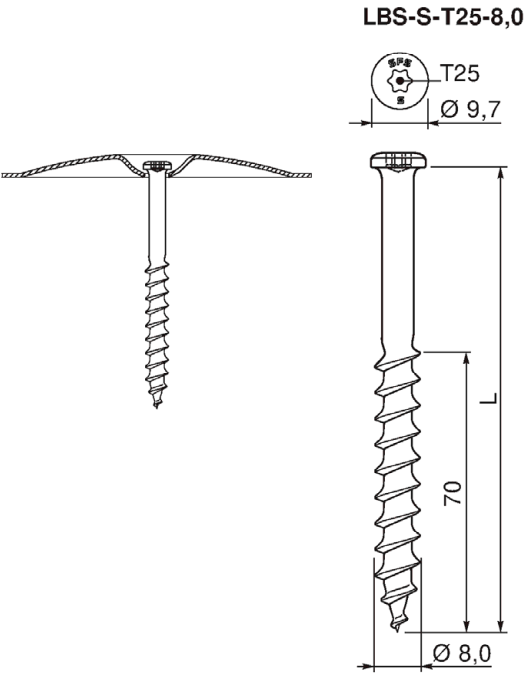
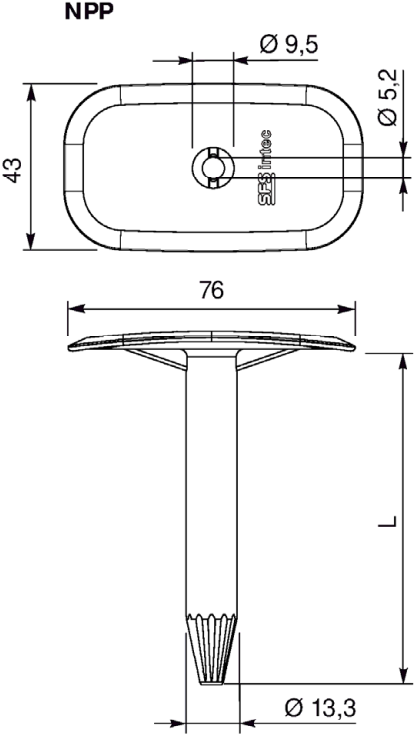
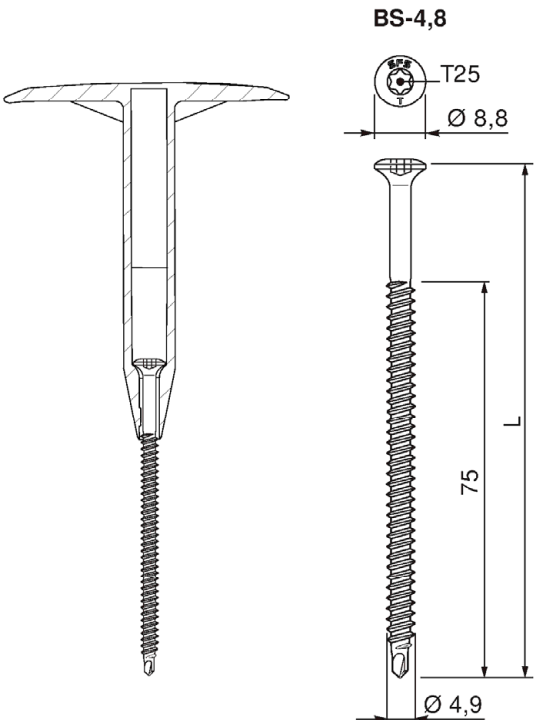
Combination 60A Sarnafast SBF-S-6,0 / IF/IG-C-82x40  The IF/IG-C-82x40 fastener is shown in two views: a side view with a height of 5,8 and a central hole of Ø 7,5, and a top view with an overall width of 82 and a central hole of Ø 7,5. The Sarnafast SBF-S-6,0 fastener is shown in two views: a side view with a height of 75 and a central hole of Ø 6,0, and a top view with a width of 9,7 and a central hole of Ø 6,0.	Combination 60B Sarnafast SBF-S-6,0 / Sarnafast Tube SFT-50  The Sarnafast Tube SFT-50 fastener is shown in two views: a side view with a height of 75 and a central hole of Ø 6,0, and a top view with a width of 12,4 and a central hole of Ø 6,2. The Sarnafast SBF-S-6,0 fastener is shown in two views: a side view with a height of 75 and a central hole of Ø 6,0, and a top view with a width of 9,7 and a central hole of Ø 6,0.
SFS Flat roof fasteners	Annex 60

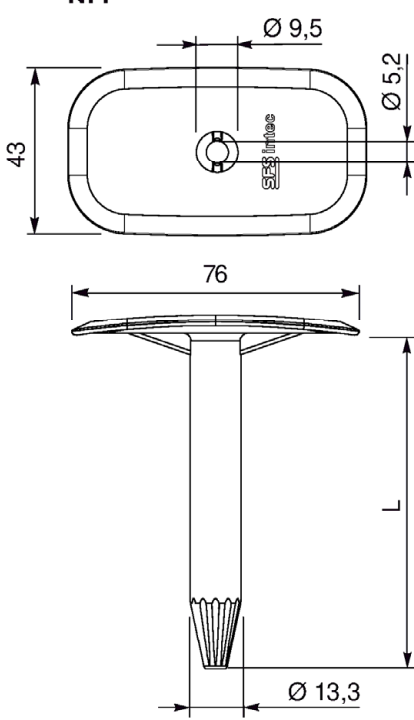
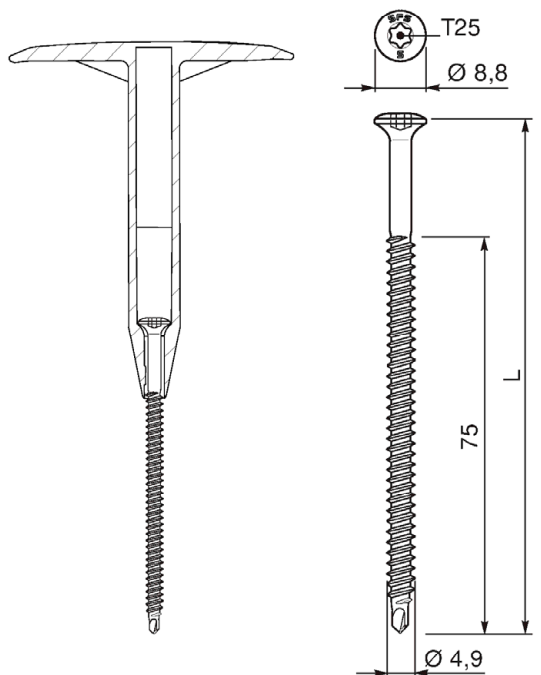
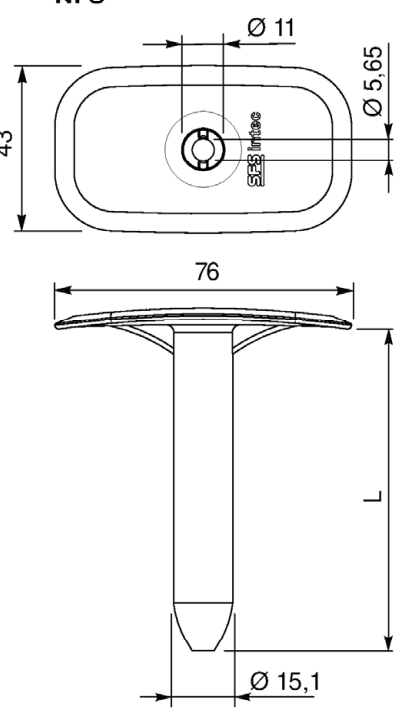
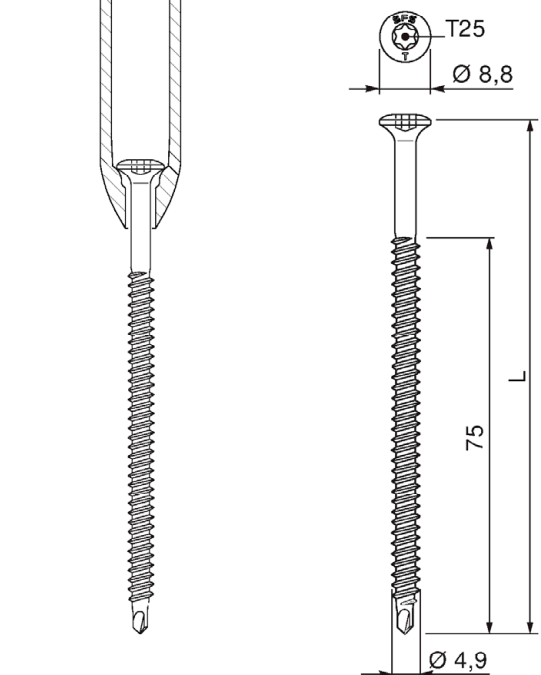
Combination 61A Sarnafast SBF-S-6,0 / Sarnabar Tube SBT-20 / Sarnabar	Combination 61B Sarnafast SBF-6,0 / SBIW-70x70 / Sarnabar Tube SBT-20
 Sarnabar Tube SBT-20 Sarnabar Sarnafast SBF-S-6,0	 Sarnabar Tube SBT-20 SBIW-70x70 Sarnafast SBF-6,0
SFS Flat roof fasteners	Annex 61

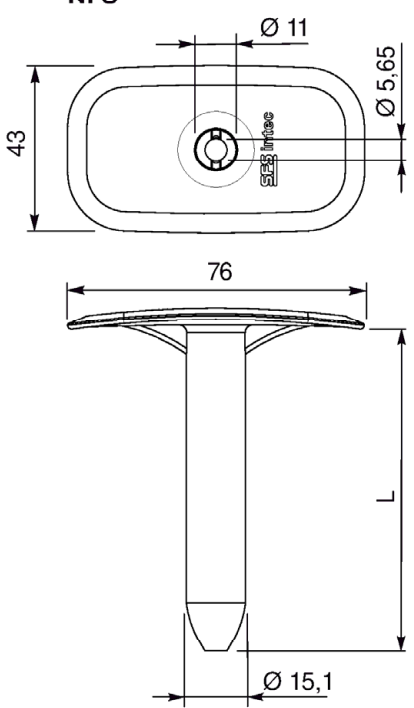
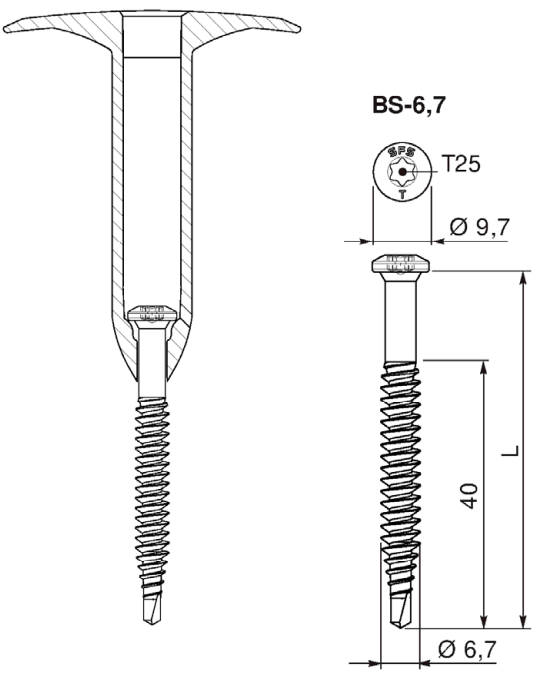
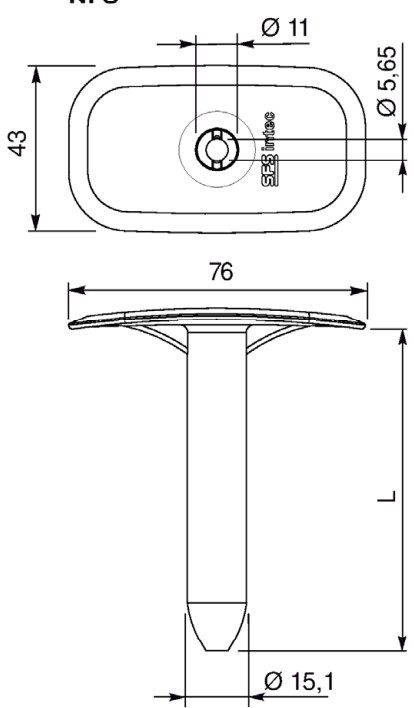
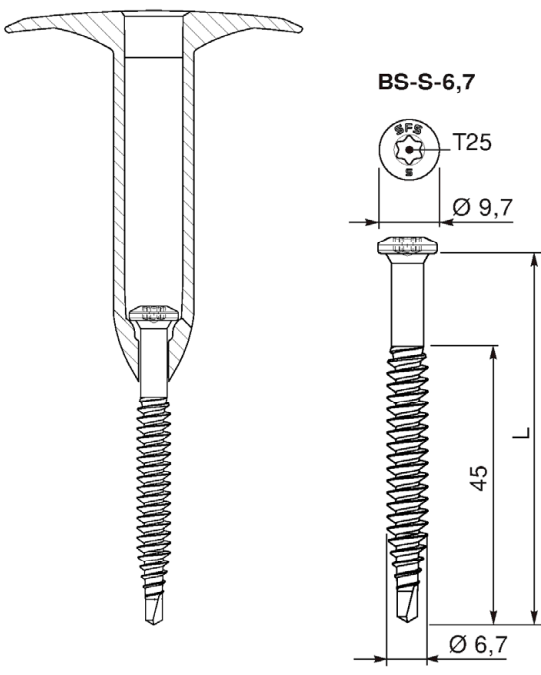
Combination 62A TIF-N-6,3 / RH50	Combination 62B TIA-T25-6,3 / R75
RH50  TIF-N-6,3 	R75  TIA-T25-6,3 
SFS Flat roof fasteners	Annex 62

Combination 63A TIA-T25-6,3 / ST-25 ST-25  TIA-T25-6,3 	Combination 63B BS-4,8 / ST-25 ST-25  BS-4,8 
SFS Flat roof fasteners	Annex 63

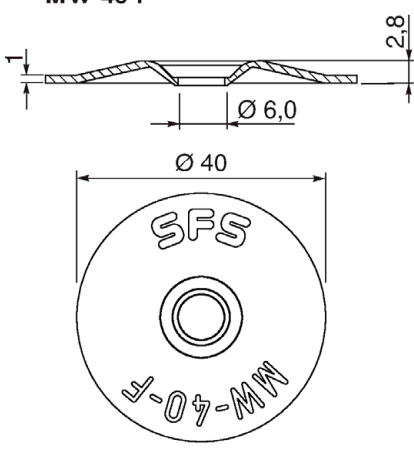
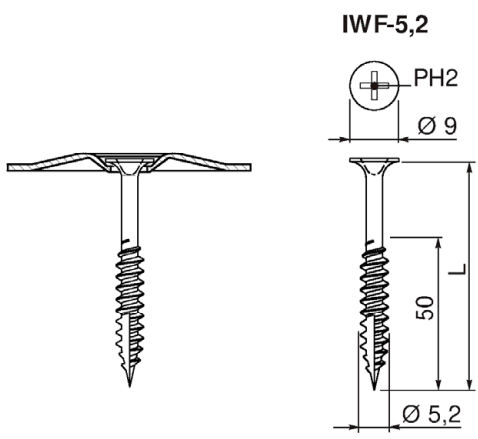
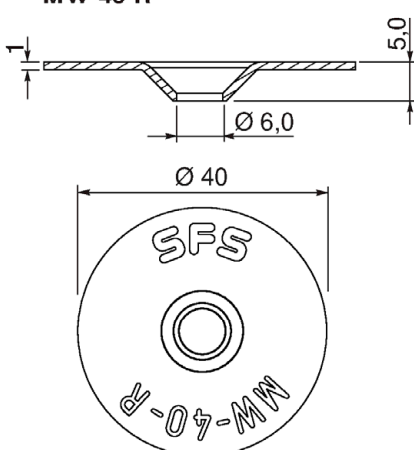
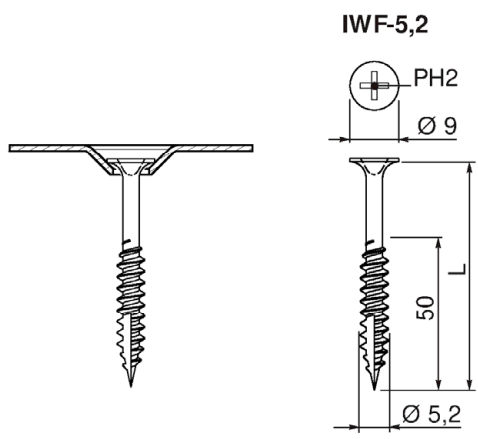
Combination 64A TI-T25-6,3 / ST-25	Combination 64B TPR-L-6,3 / IF/IG-C-82x40
ST-25  TI-T25-6,3  	IF/IG-C-82x40  TPR-L-6,3 
SFS Flat roof fasteners	Annex 64

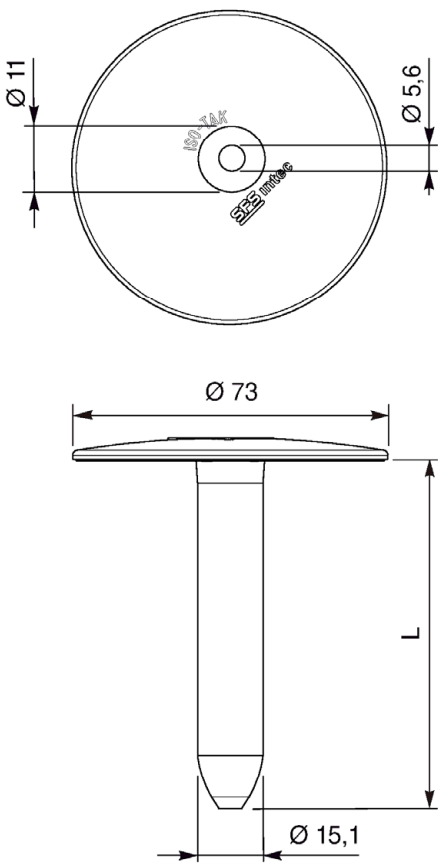
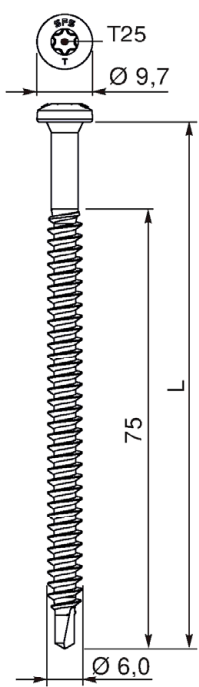
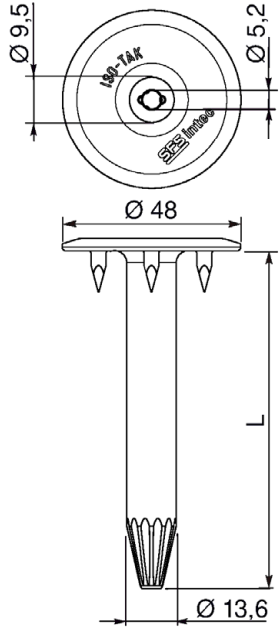
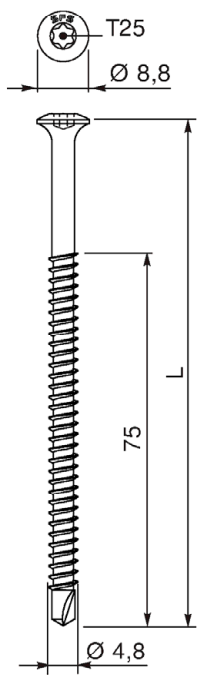
Combination 65A LBS-S-T25-8,0 / IF/IG-C-82x40  IF/IG-C-82x40  LBS-S-T25-8,0	Combination 65B BS-4,8 / NPP  NPP  BS-4,8
SFS Flat roof fasteners	Annex 65

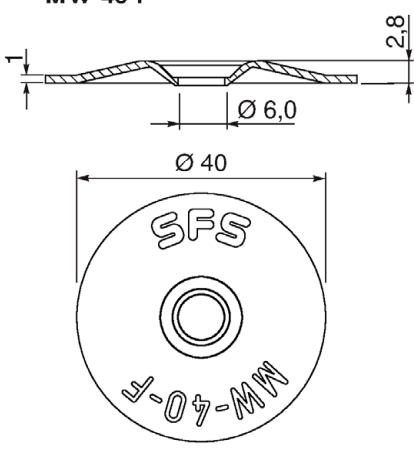
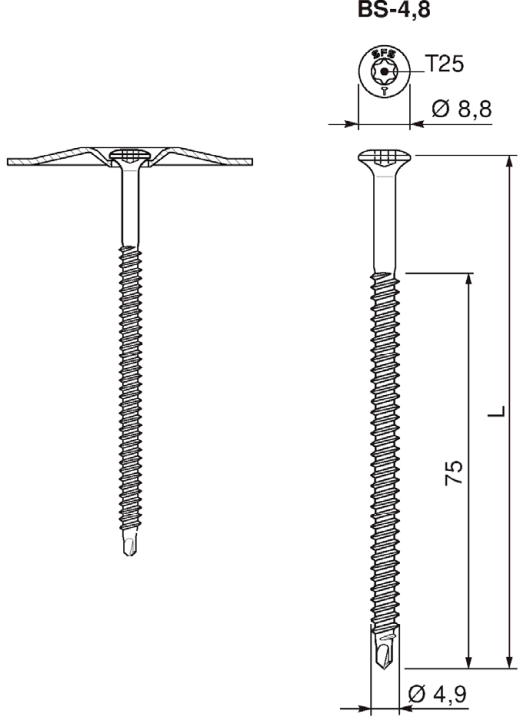
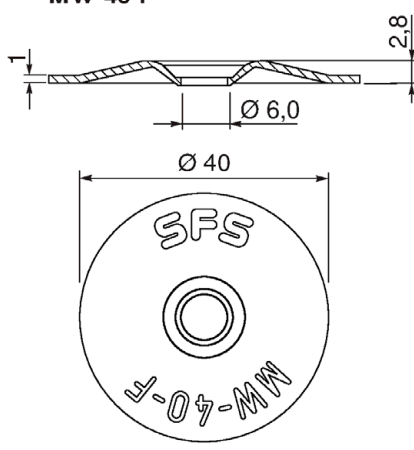
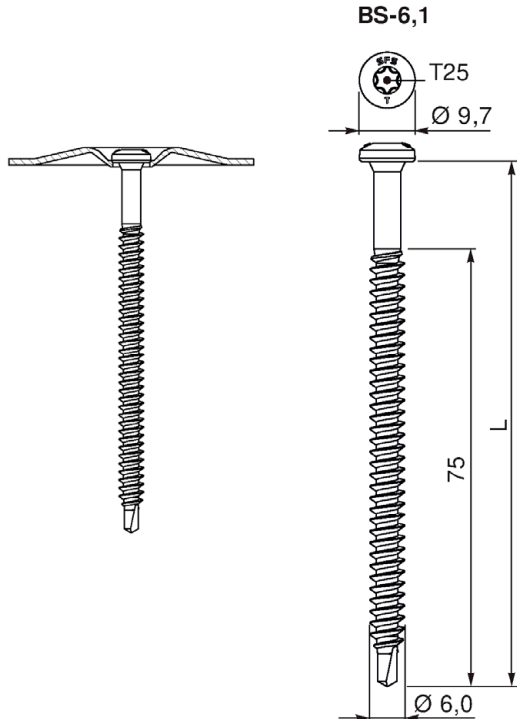
Combination 66A BS-S-4,8 / NPP	Combination 66B BS-4,8 / NPS
NPP  BS-S-4,8 	NPS  BS-4,8 
SFS Flat roof fasteners	Annex 66

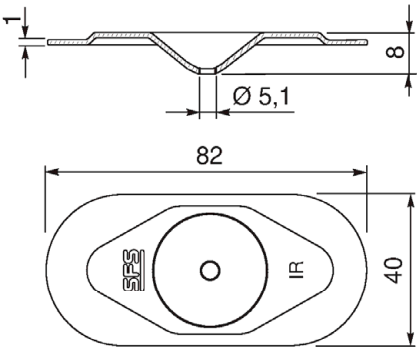
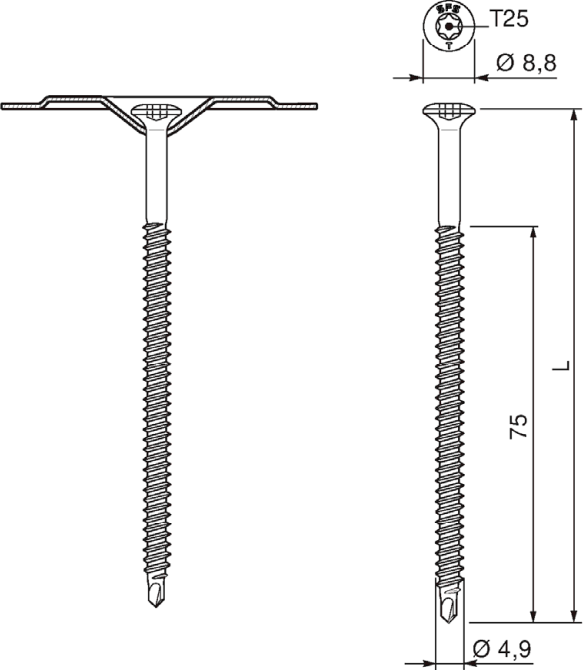
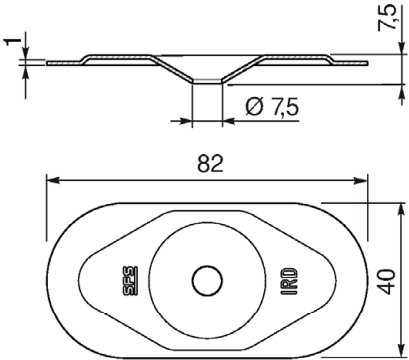
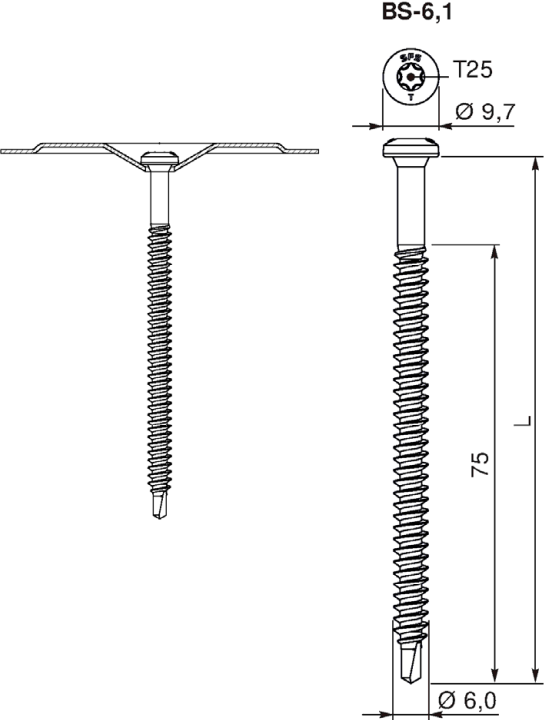
Combination 67A BS-6,7 / NPS	Combination 67B BS-S-6,7 / NPS
NPS  BS-6,7 	NPS  BS-S-6,7 
SFS Flat roof fasteners	Annex 67

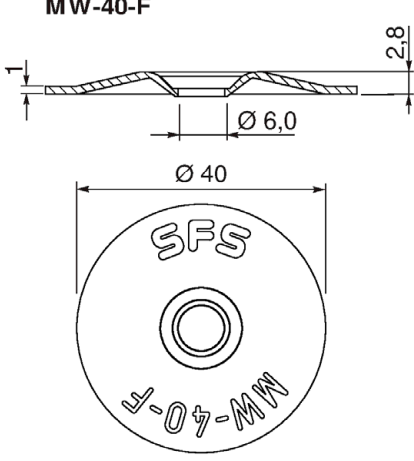
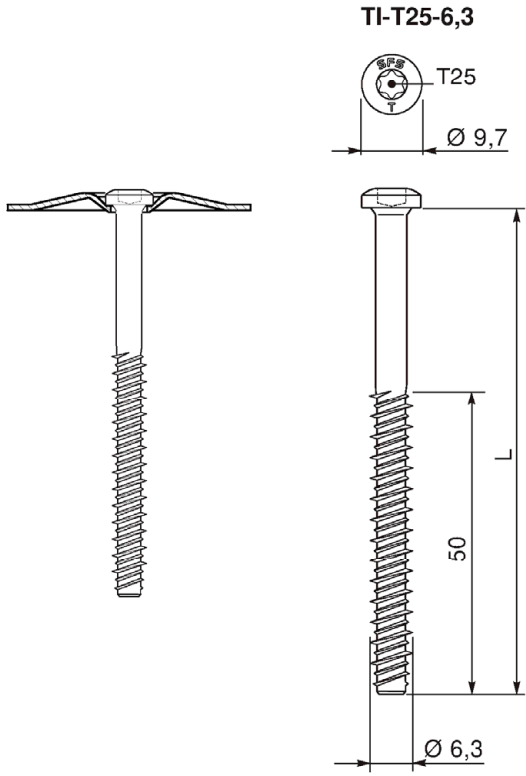
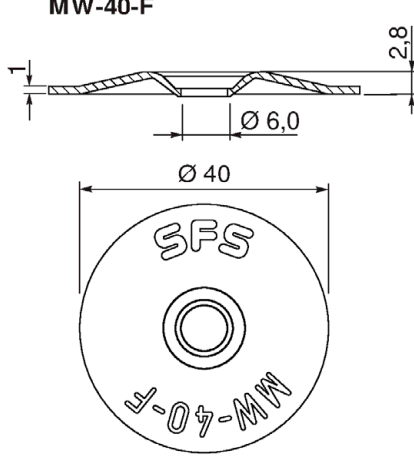
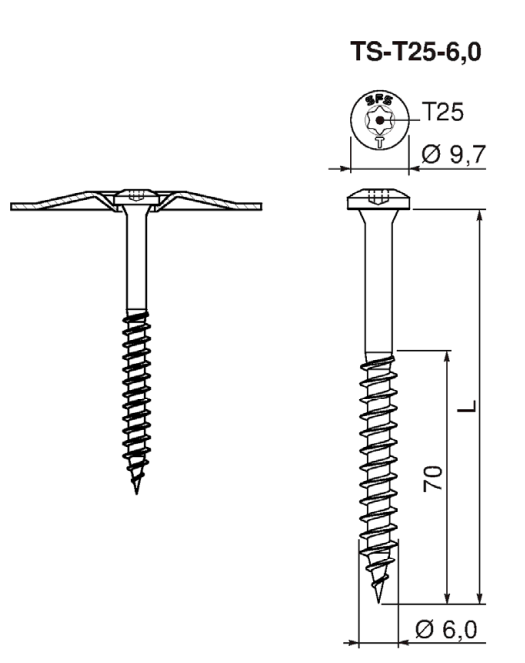
Combination 68A TI-T25-6,3 / NPS	Combination 68B TIA-T25-6,3 / Sarnabar Tube SBT-20 / Sarnabar
SFS Flat roof fasteners	Annex 68

Combination 69A IWF-5,2 / MW-40-F	Combination 69B IWF-5,2 / MW-40-R
MW-40-F  IWF-5,2 	MW-40-R  IWF-5,2 
SFS Flat roof fasteners	Annex 69

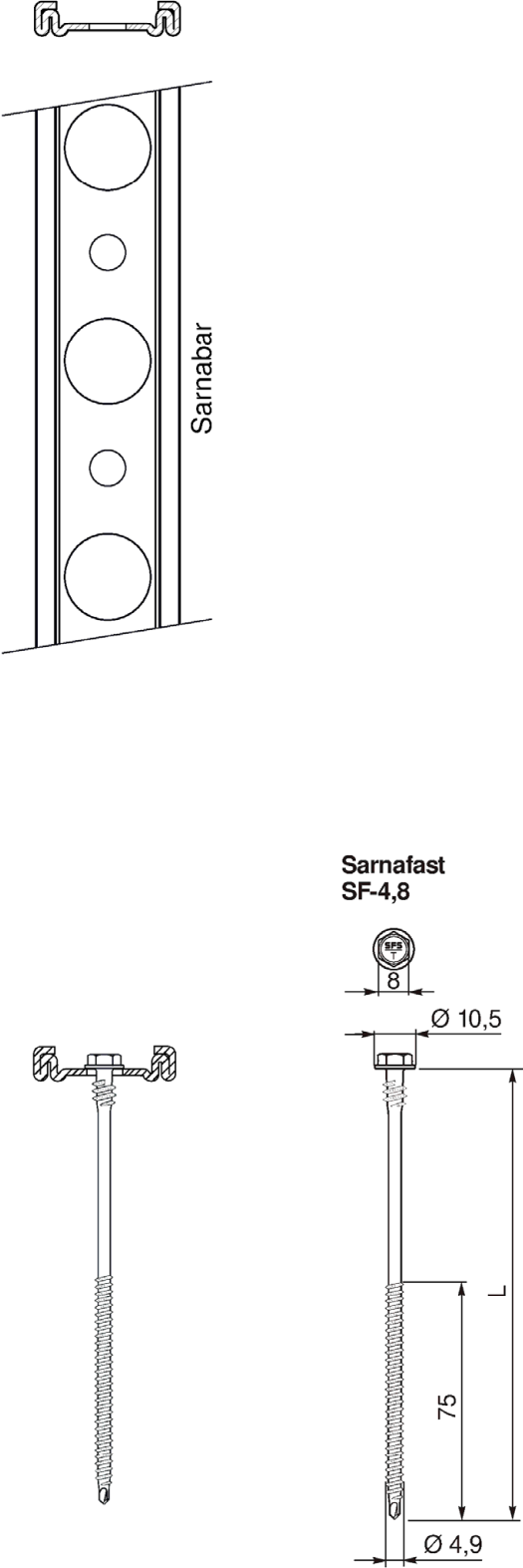
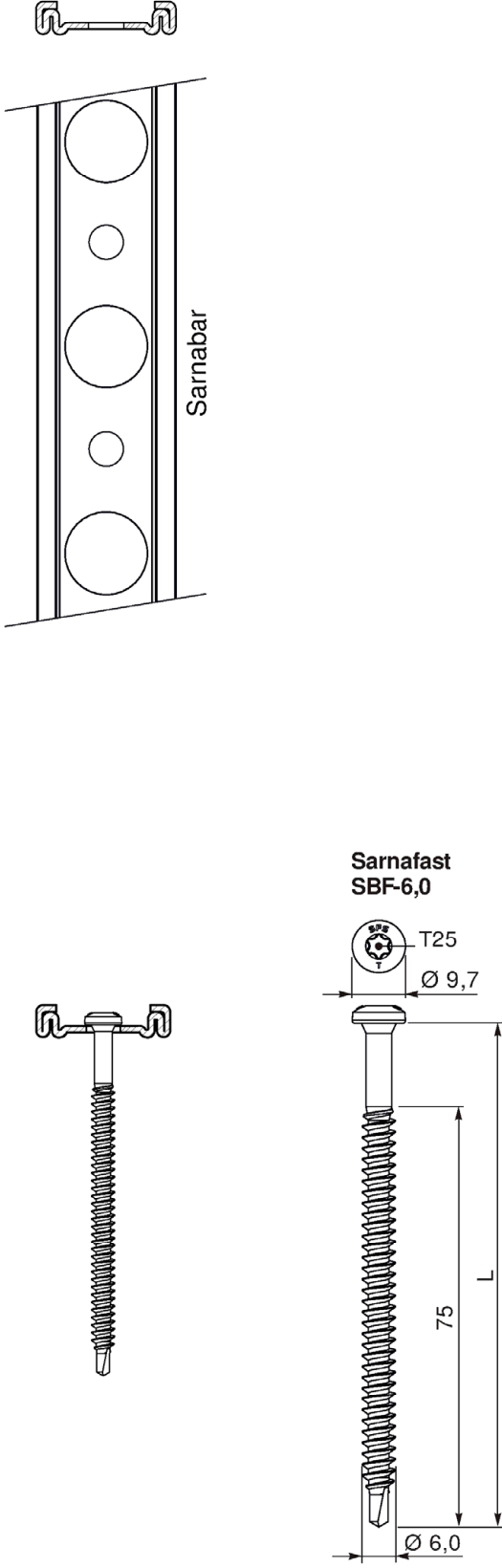
Combination 70A Sarnafast SBF-6,0 / R75	Combination 70B BS3-4,8 / RP48
R75  Sarnafast SBF-6,0 	RP48  BS3-4,8 
SFS Flat roof fasteners	Annex 70

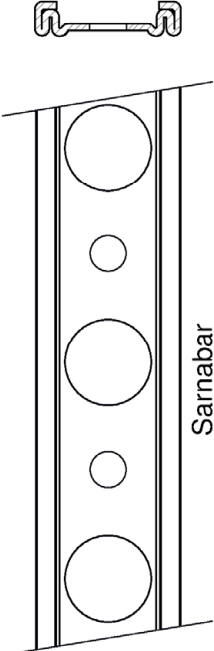
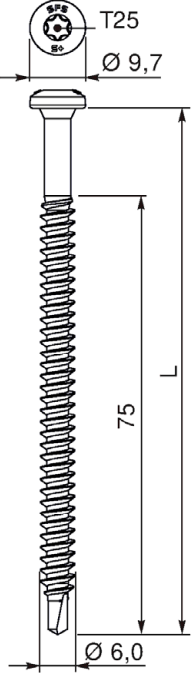
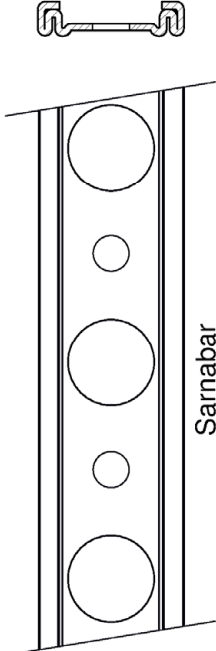
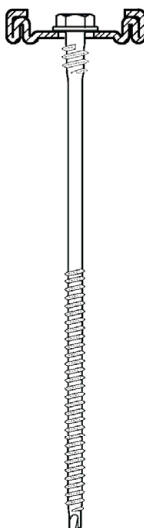
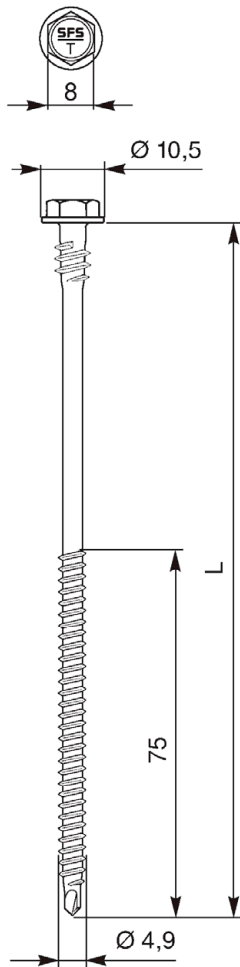
Combination 71A BS-4,8 / MW-40-F	Combination 71B BS-6,1 / MW-40-F
MW-40-F  BS-4,8 	MW-40-F  BS-6,1 
SFS Flat roof fasteners	Annex 71

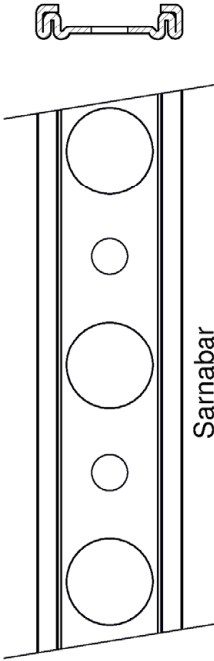
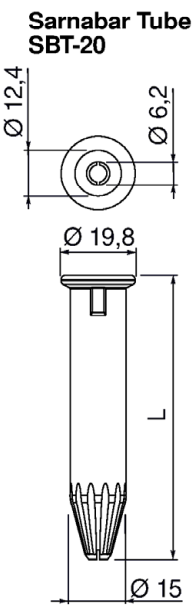
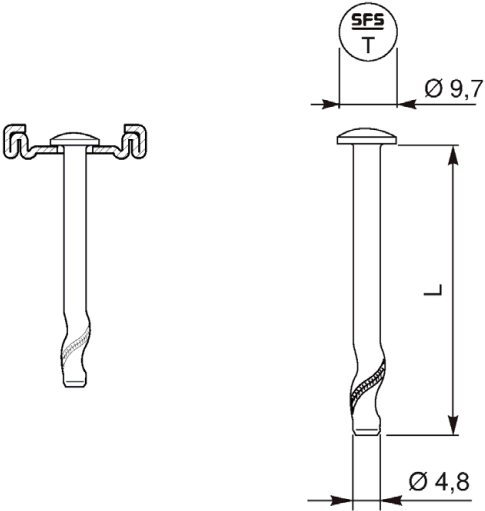
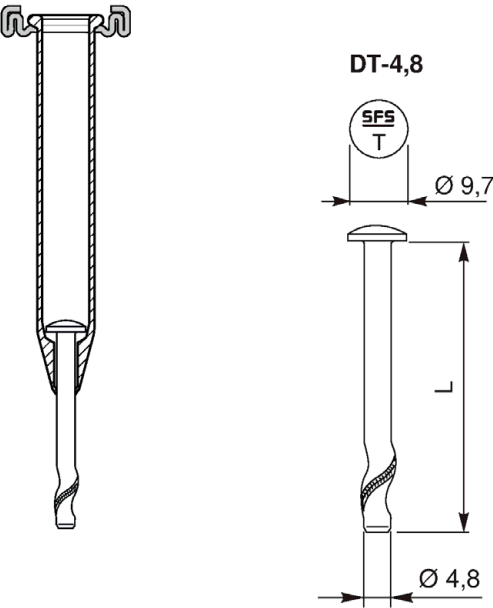
Combination 72A BS-4,8 / IR-82x40	Combination 72B BS-6,1 / IRD-82x40
IR-82x40  BS-4,8 	IRD-82x40  BS-6,1 
SFS Flat roof fasteners	Annex 72

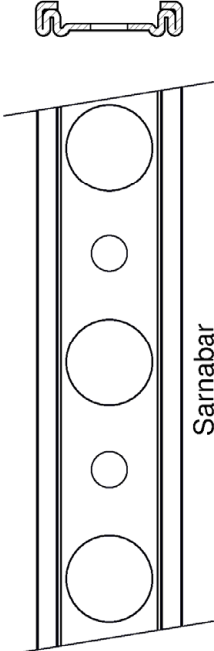
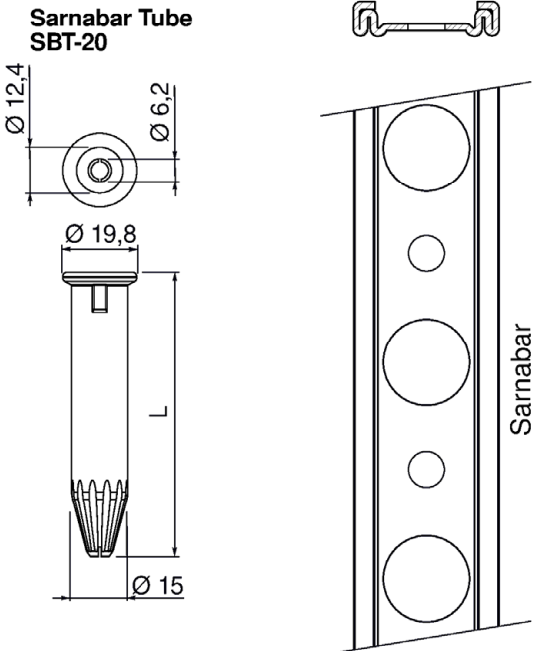
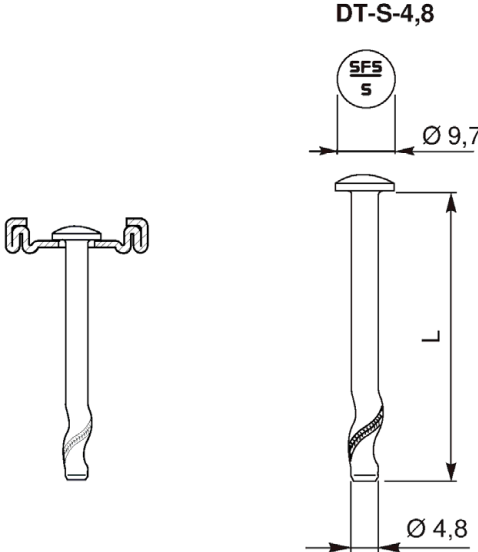
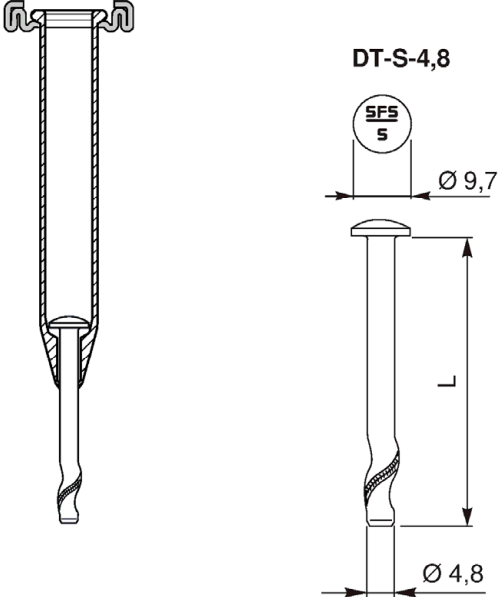
Combination 73A TI-T25-6,3 / MW-40-F MW-40-F  TI-T25-6,3 	Combination 73B TS-T25-6,0 / MW-40-F MW-40-F  TS-T25-6,0 
SFS Flat roof fasteners	Annex 73

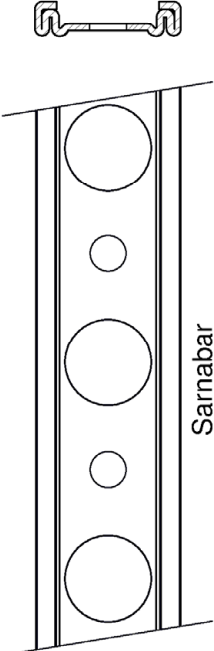
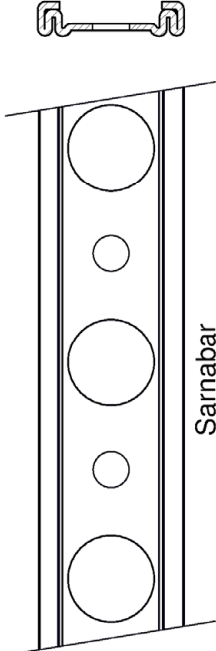
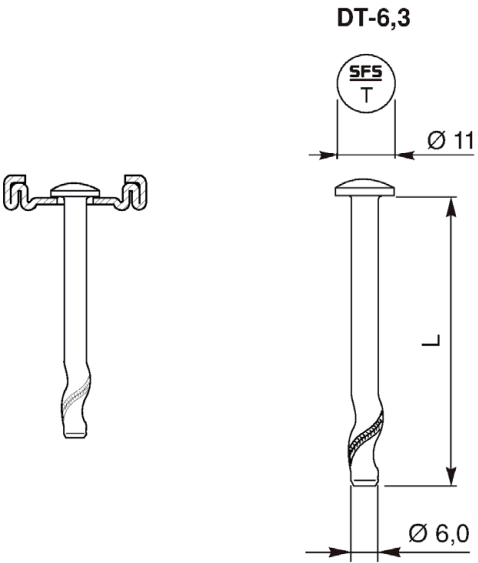
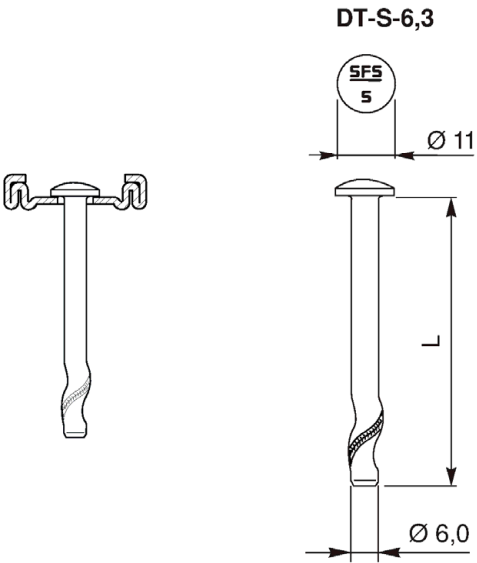
Combination 74A TI-T25-6,3 / IRD-82x40	Combination 74B IWF-5,2 / IR-82x40
IRD-82x40 TI-T25-6,3	IR-82x40 IWF-5,2
SFS Flat roof fasteners	Annex 74

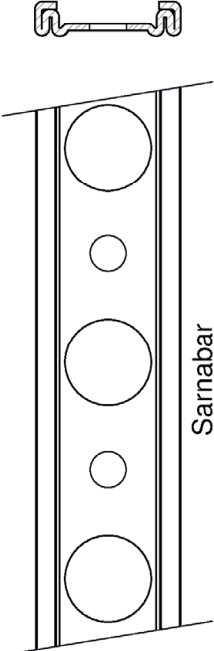
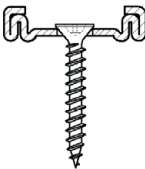
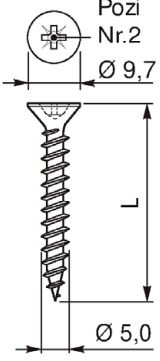
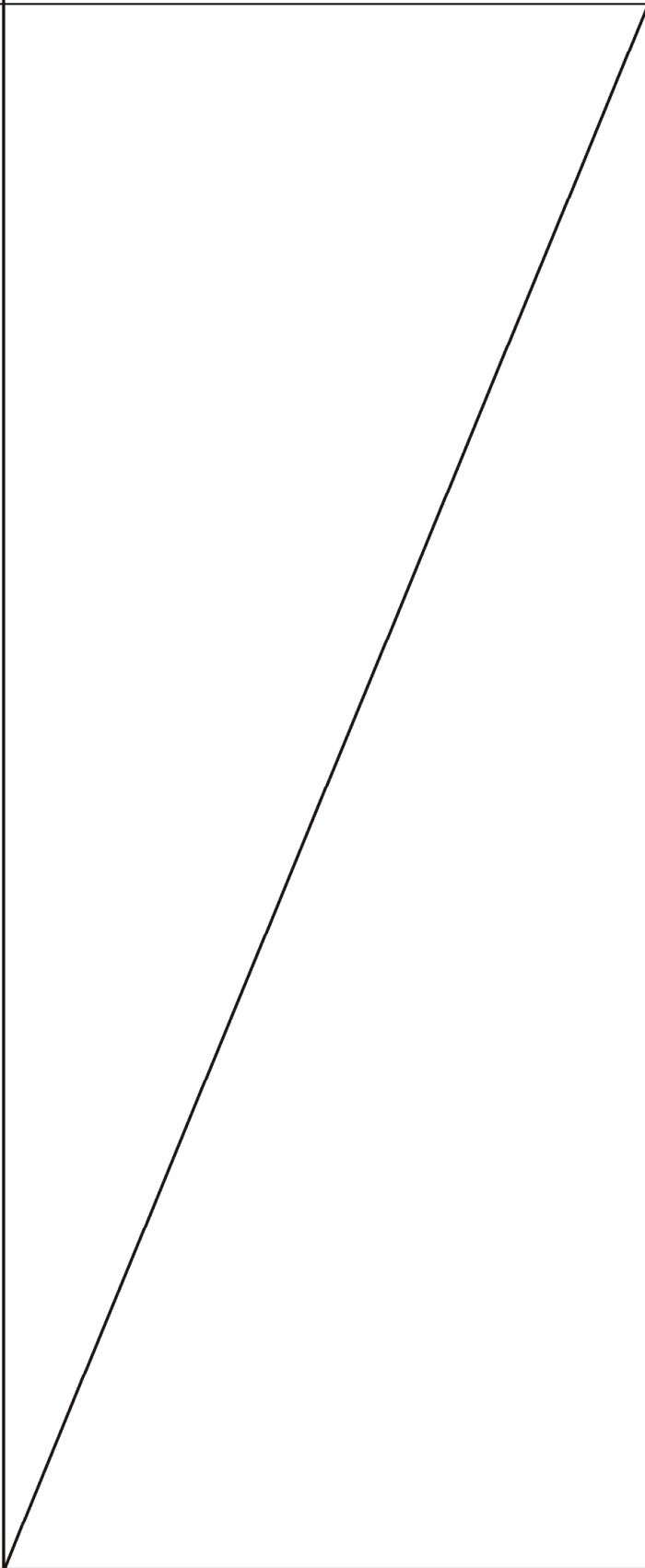
Combination 75A Sarnafast SF-4,8 / Sarnabar	Combination 75B Sarnafast SBF-6,0 / Sarnabar
 The left panel shows a technical drawing of a Sarnabar profile, which is a vertical channel with four circular holes. Above it is a small detail of the Sarnafast SF-4,8 fastener head. Below the profile is a side view of the fastener, showing its threaded shaft and a cross-section of the Sarnabar profile with the fastener installed. The fastener has a head diameter of 8 mm, a shaft diameter of $\varnothing 10,5$ mm, and a threaded length of 75 mm. The Sarnabar profile has a width of $\varnothing 4,9$ mm.	 The right panel shows a technical drawing of a Sarnabar profile, similar to the one on the left. Above it is a small detail of the Sarnafast SBF-6,0 fastener head. Below the profile is a side view of the fastener, showing its threaded shaft and a cross-section of the Sarnabar profile with the fastener installed. The fastener has a head diameter of T25, a shaft diameter of $\varnothing 9,7$ mm, and a threaded length of 75 mm. The Sarnabar profile has a width of $\varnothing 6,0$ mm.
SFS Flat roof fasteners	Annex 75

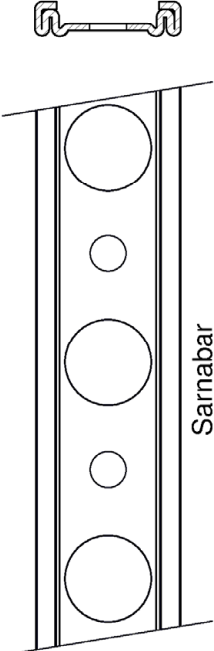
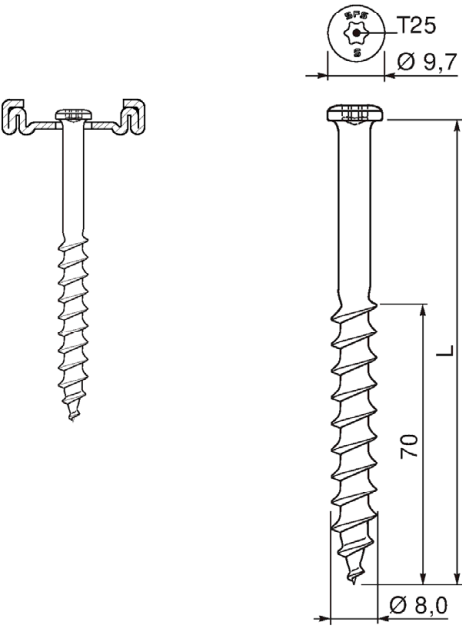
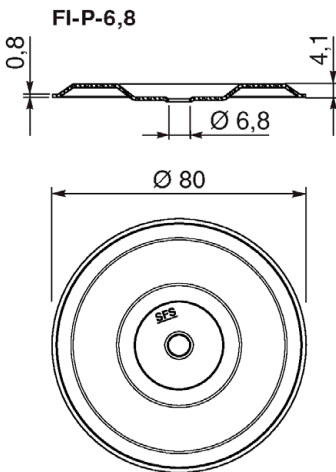
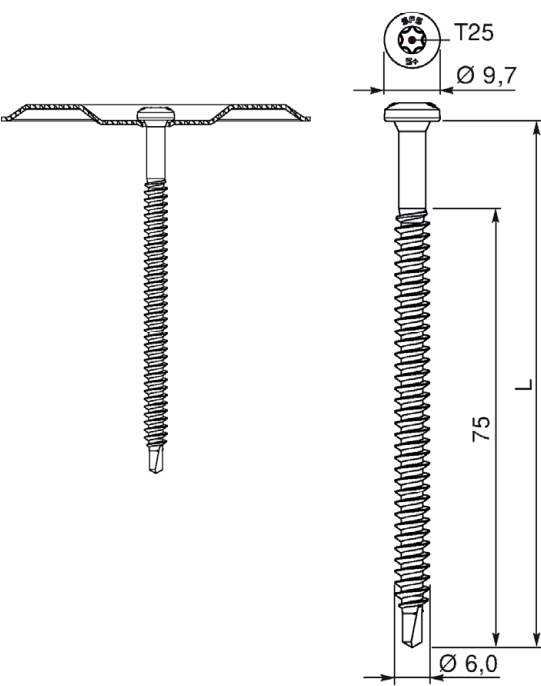
Combination 76A Sarnafast SBF-S-6,0 / Sarnabar	Combination 76B IR2-4,8 / Sarnabar
 Sarnabar  Sarnafast SBF-S-6,0 	 Sarnabar  IR2-4,8 
SFS Flat roof fasteners	Annex 76

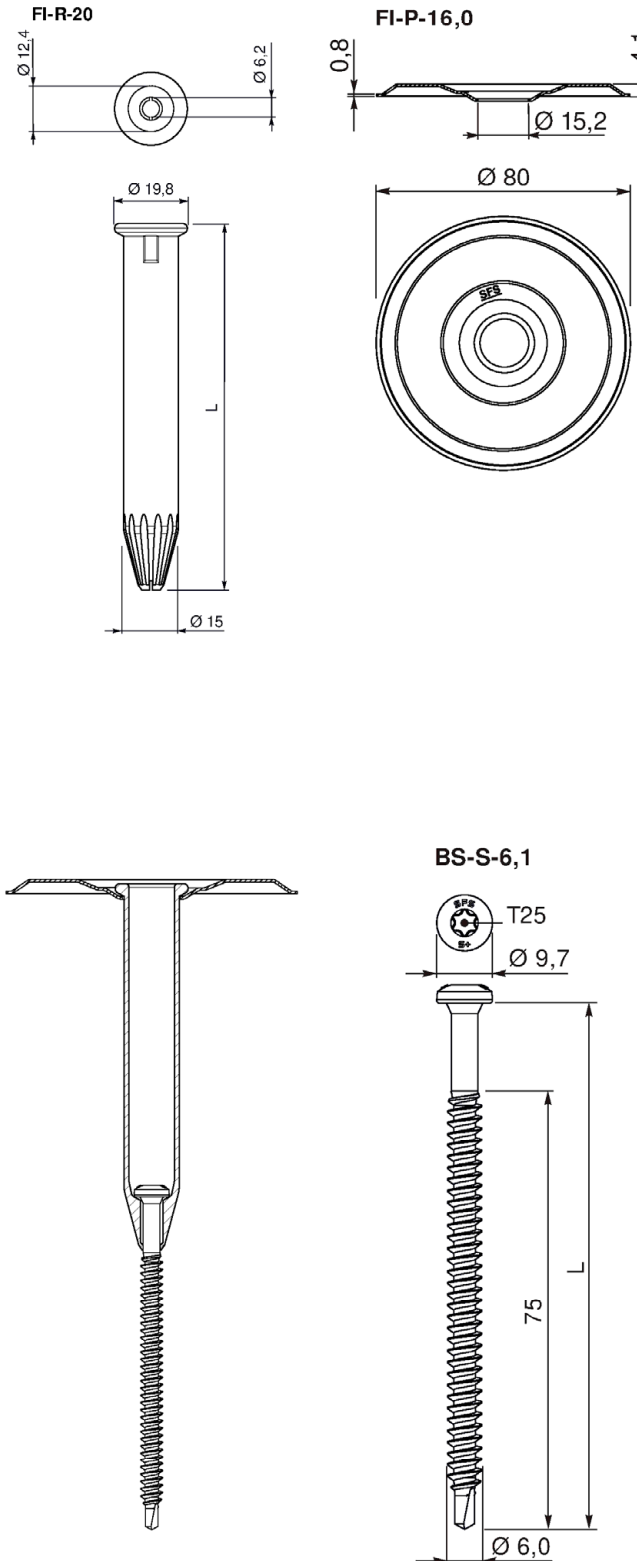
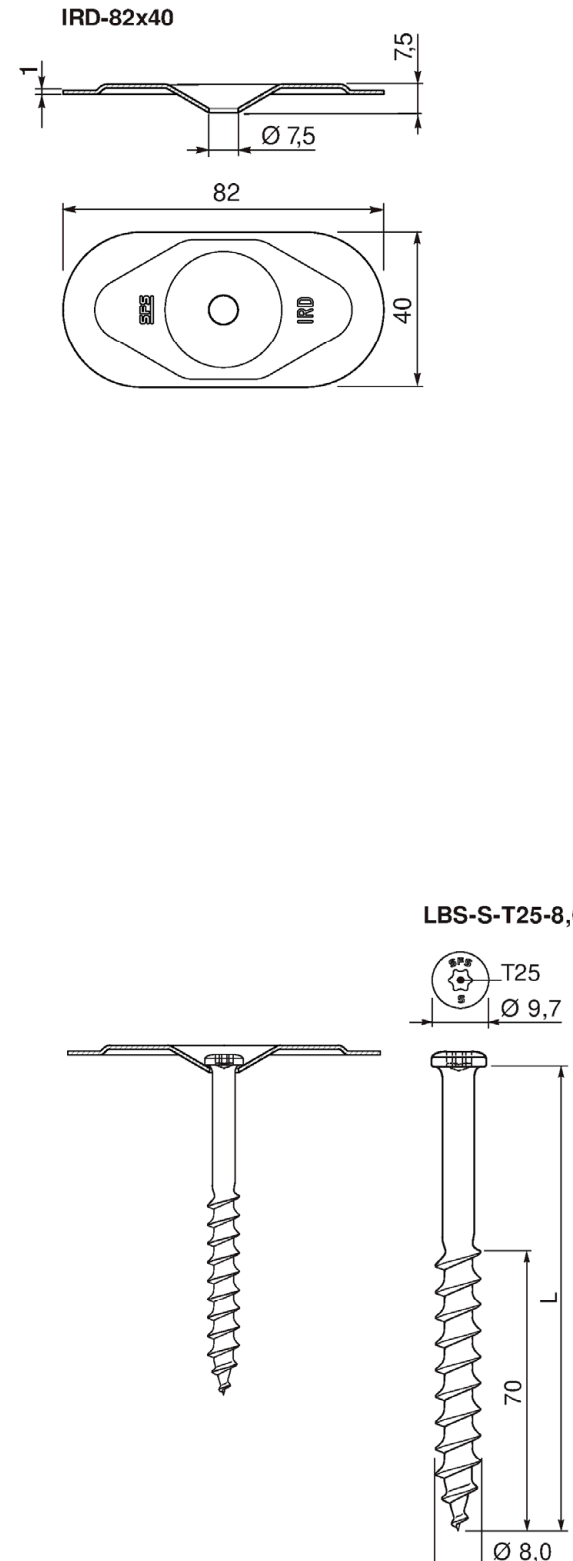
Combination 77A DT-4,8 / Sarnabar	Combination 77B DT-4,8 / Sarnabar Tube SBT-20 / Sarnabar
 Technical drawing of the Sarnabar roof fastener, showing a side view of the fastener with four circular holes and a top view of the fastener head.	 Technical drawing of the Sarnabar Tube SBT-20, showing a side view of the tube with dimensions: $\varnothing 12,4$, $\varnothing 6,2$, $\varnothing 19,8$, $\varnothing 15$, and length L. It also shows a top view of the tube head.  Technical drawing of the DT-4,8 roof fastener, showing a side view of the fastener with dimensions: $\varnothing 9,7$, $\varnothing 4,8$, and length L. It also shows a top view of the fastener head with the SFS logo.  Technical drawing of the DT-4,8 roof fastener, showing a side view of the fastener with dimensions: $\varnothing 9,7$, $\varnothing 4,8$, and length L. It also shows a top view of the fastener head with the SFS logo.
SFS Flat roof fasteners	Annex 77

Combination 78A DT-S-4,8 / Sarnabar		Combination 78B DT-S-4,8 / Sarnabar Tube SBT-20 / Sarnabar	
			
			
SFS Flat roof fasteners		Annex 78	

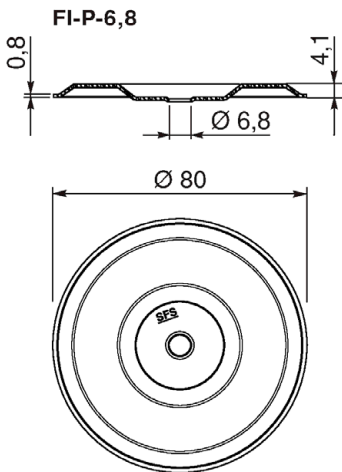
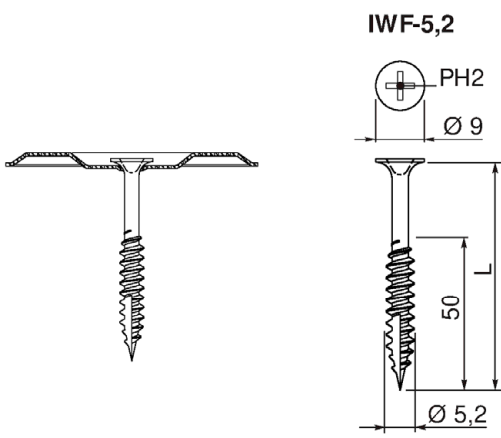
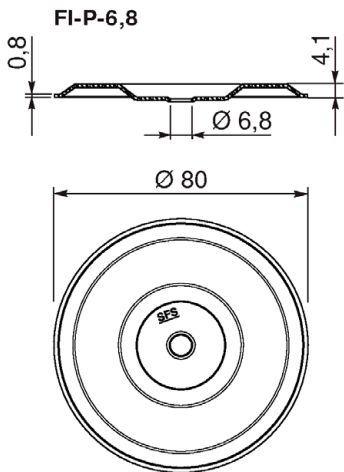
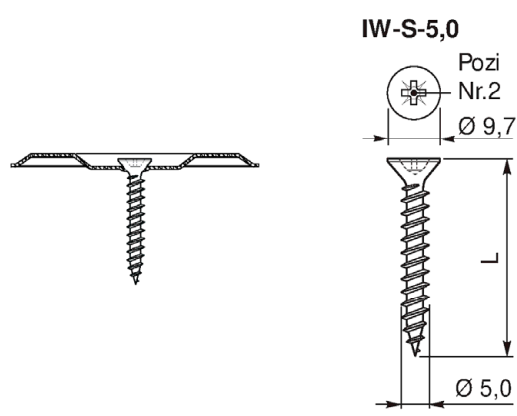
Combination 79A DT-6,3 / Sarnabar		Combination 79B DT-S-6,3 / Sarnabar	
			
			
SFS Flat roof fasteners			Annex 79

Combination 80A IW-S-5,0 / Sarnabar	Combination 80B No longer in product range
 Sarnabar  IW-S-5,0  Pozi Nr.2 Ø 9,7 L Ø 5,0	
SFS Flat roof fasteners	Annex 80

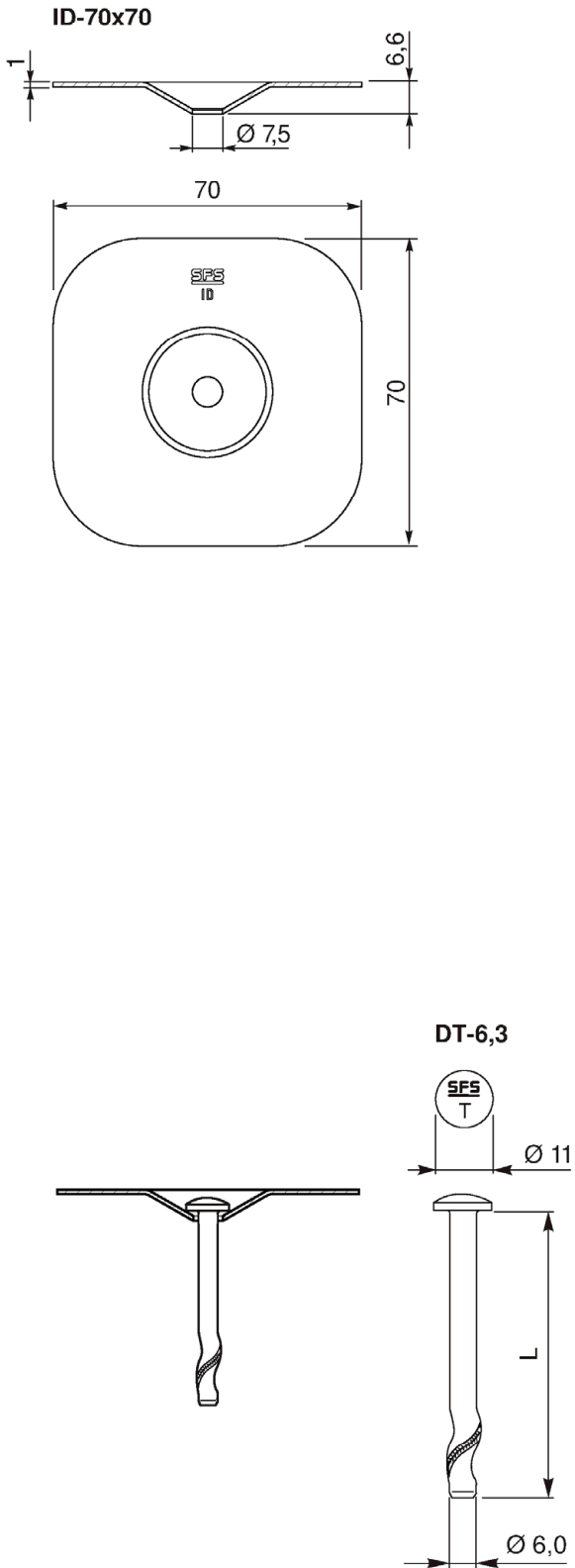
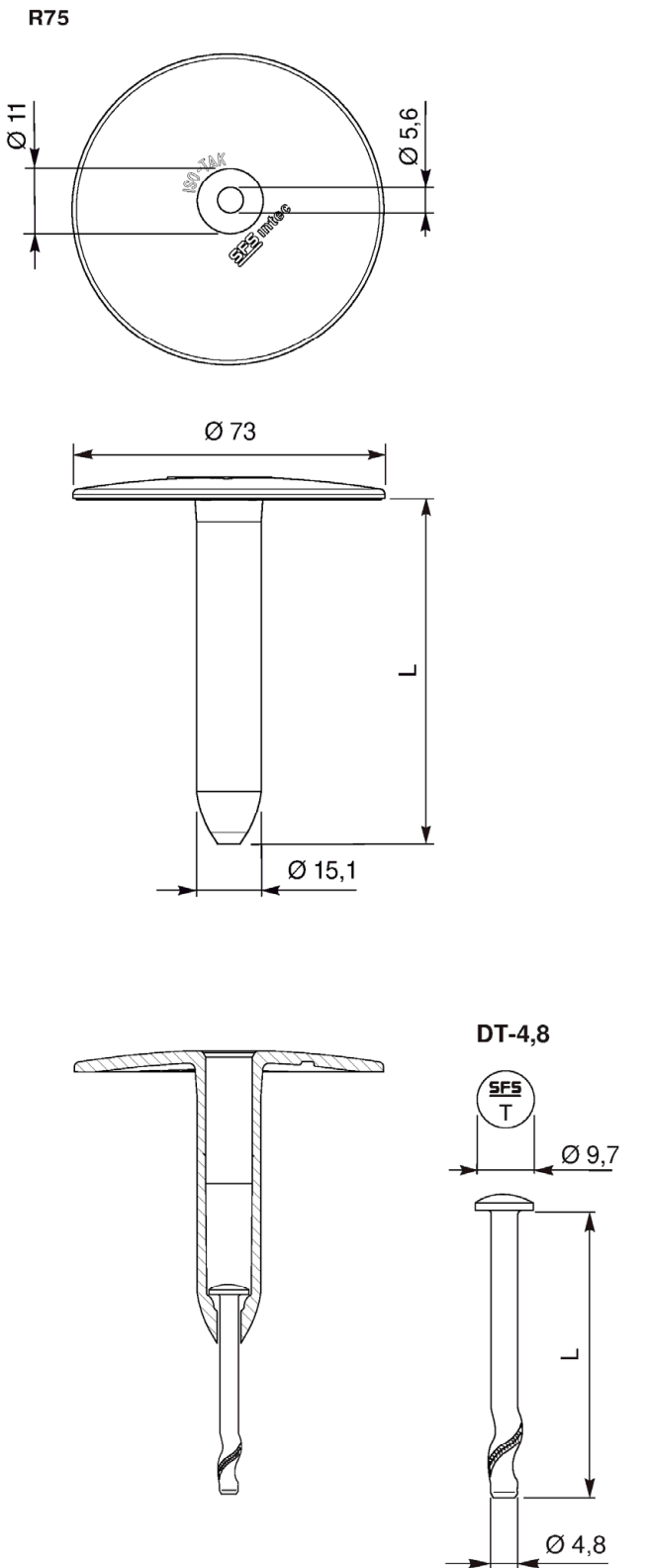
Combination 81A LBS-S-T25-8,0 / Sarnabar  Sarnabar LBS-S-T25-8,0 	Combination 81B BS-S-6,1 / FI-P-6,8 FI-P-6,8  BS-S-6,1 
SFS Flat roof fasteners	Annex 81

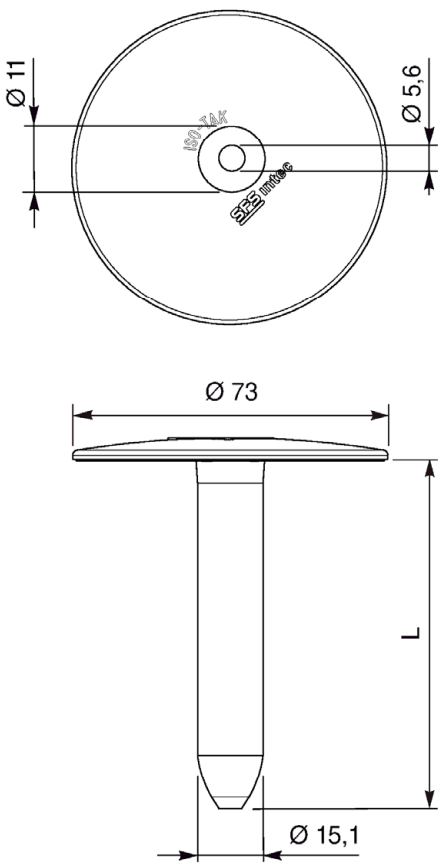
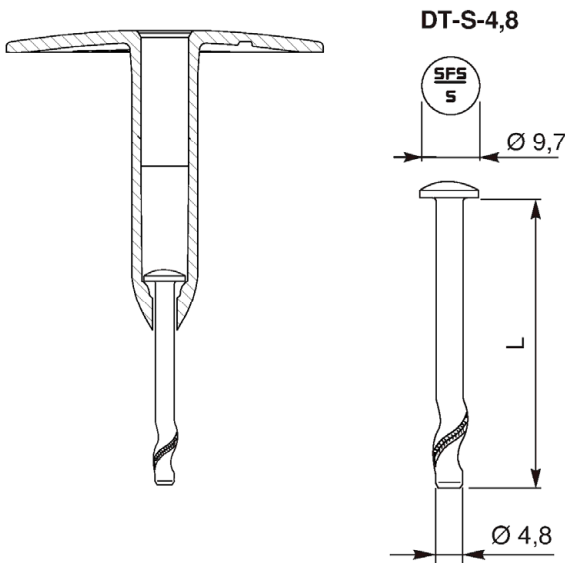
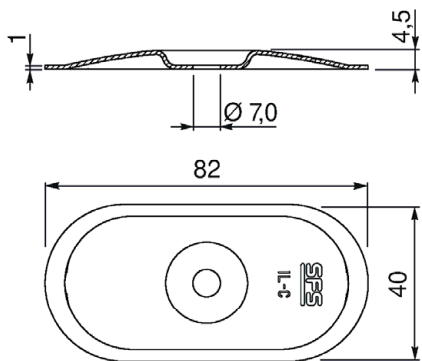
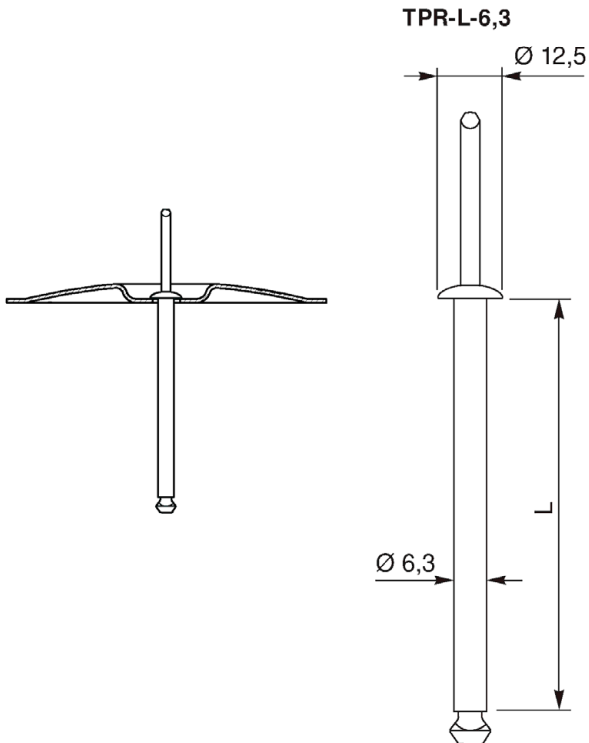
Combination 82A BS-S-6,1 / FI-P-16,0 / FI-R-20	Combination 82B LBS-S-T25-8,0 / IRD-82x40
 Technical drawings for Combination 82A components: FI-R-20: Top view shows a circular fastener with dimensions $\varnothing 12,4$ and $\varnothing 6,2$. The side view shows a length L and a base diameter of $\varnothing 15$. FI-P-16,0: Top view shows a circular fastener with dimensions $0,8$, $4,1$, and $\varnothing 15,2$. The side view shows a diameter of $\varnothing 80$. BS-S-6,1: Side view shows a fastener with a T25 head, a diameter of $\varnothing 9,7$, a threaded length of 75, and a base diameter of $\varnothing 6,0$. The total length is L.	 Technical drawings for Combination 82B components: IRD-82x40: Top view shows an oval fastener with dimensions 82 and 40, and a central hole diameter of $\varnothing 7,5$. LBS-S-T25-8,0: Side view shows a fastener with a T25 head, a diameter of $\varnothing 9,7$, a threaded length of 70, and a base diameter of $\varnothing 8,0$. The total length is L.
SFS Flat roof fasteners	Annex 82

Combination 83A LBS-T25-8,0 / IRD-82x40	Combination 83B LBS-T25-8,0 / IF/IG-C-82x40
IRD-82x40 LBS-T25-8,0	IF/IG-C-82x40 LBS-T25-8,0
SFS Flat roof fasteners	Annex 83

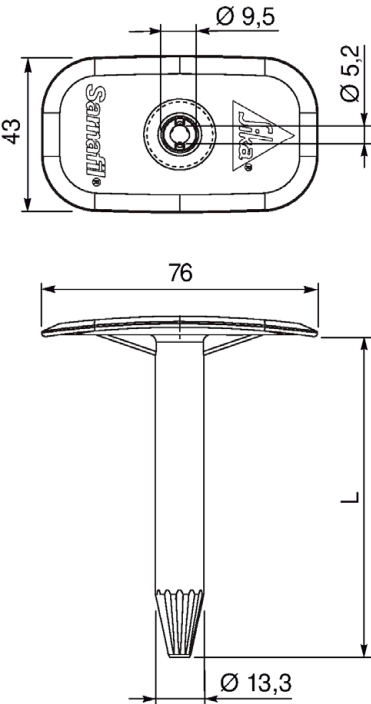
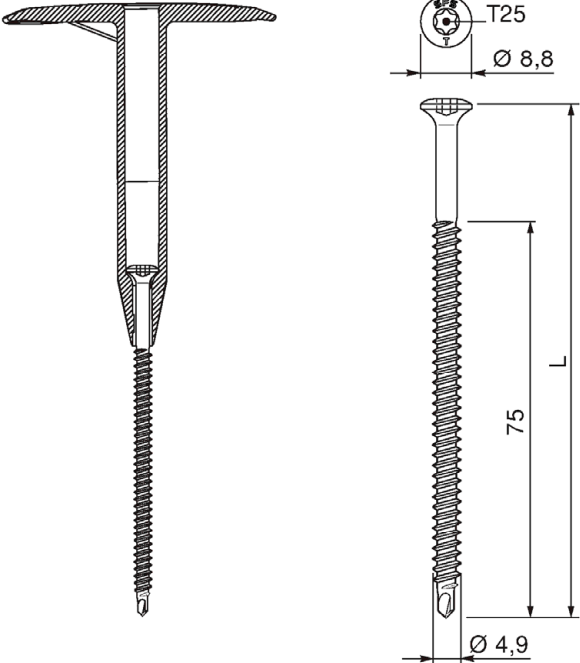
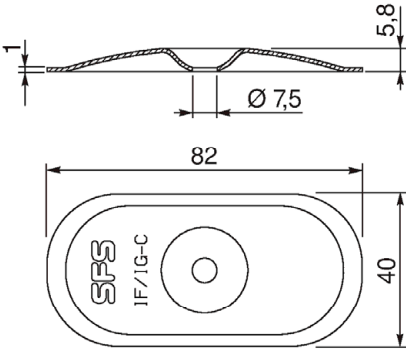
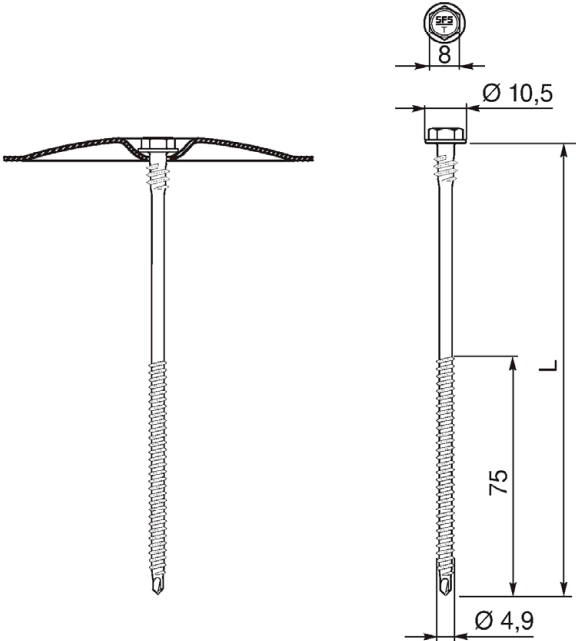
Combination 84A IWF-5,2 / FI-P-6,8	Combination 84B IW-S-5,0 / FI-P-6,8
FI-P-6,8  	FI-P-6,8  
SFS Flat roof fasteners	Annex 84

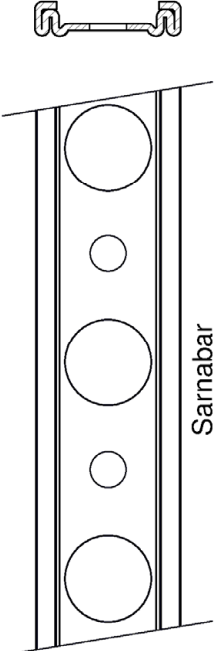
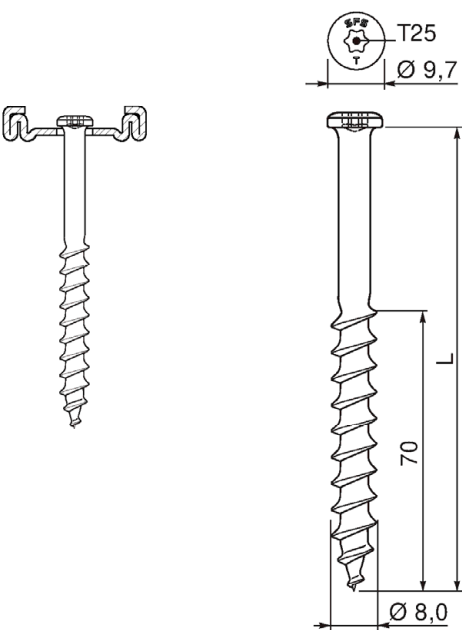
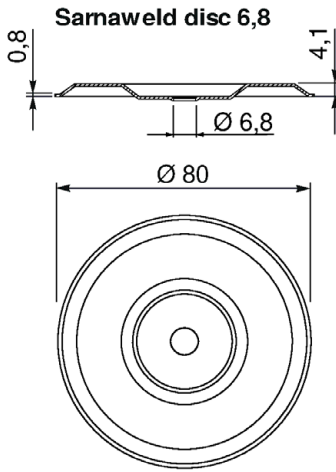
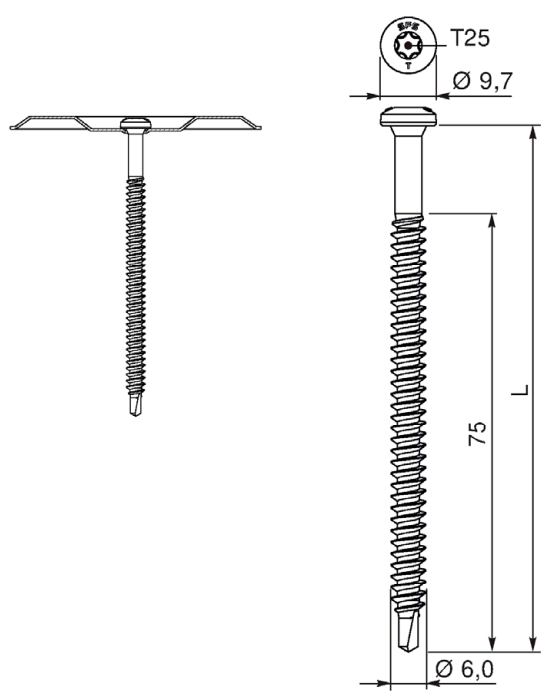
Combination 85A TPR-L-6,3 / FI-P-6,8	Combination 85B DT-4,8 / ID-70x70
FI-P-6,8 TPR-L-6,3	ID-70x70 DT-4,8
SFS Flat roof fasteners	Annex 85

Combination 86A DT-6,3 / ID-70x70	Combination 86B DT-4,8 / R75
 Technical drawings for Combination 86A: ID-70x70: Cross-section and top view of the square base fastener. Dimensions include 6.6mm height, 7.5mm hole diameter, and 70mm width. DT-6,3: Side view of the fastener showing a 11mm hole diameter, 6.0mm base diameter, and length L.	 Technical drawings for Combination 86B: R75: Top view and side view of the circular base fastener. Dimensions include 11mm hole diameter, 5.6mm hole diameter, 73mm base diameter, and 15.1mm hole diameter. DT-4,8: Side view of the fastener showing a 9.7mm hole diameter, 4.8mm base diameter, and length L.
SFS Flat roof fasteners	Annex 86

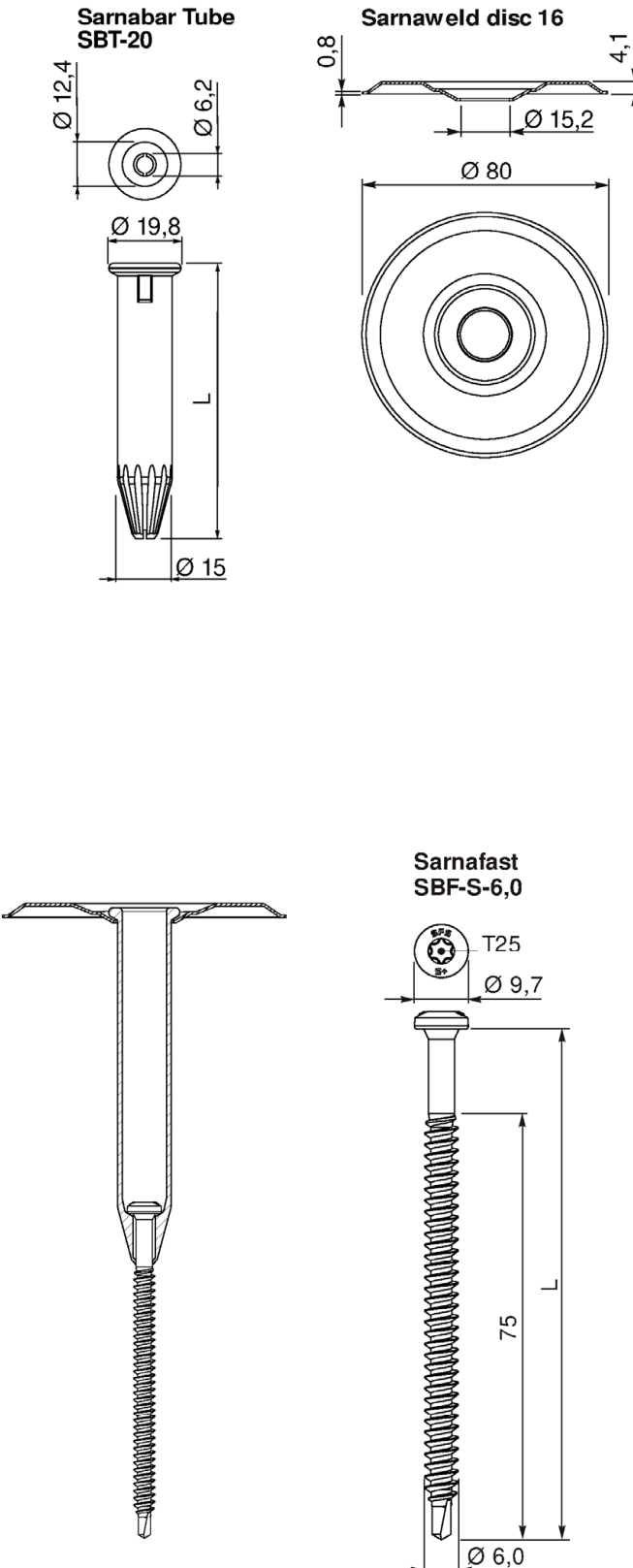
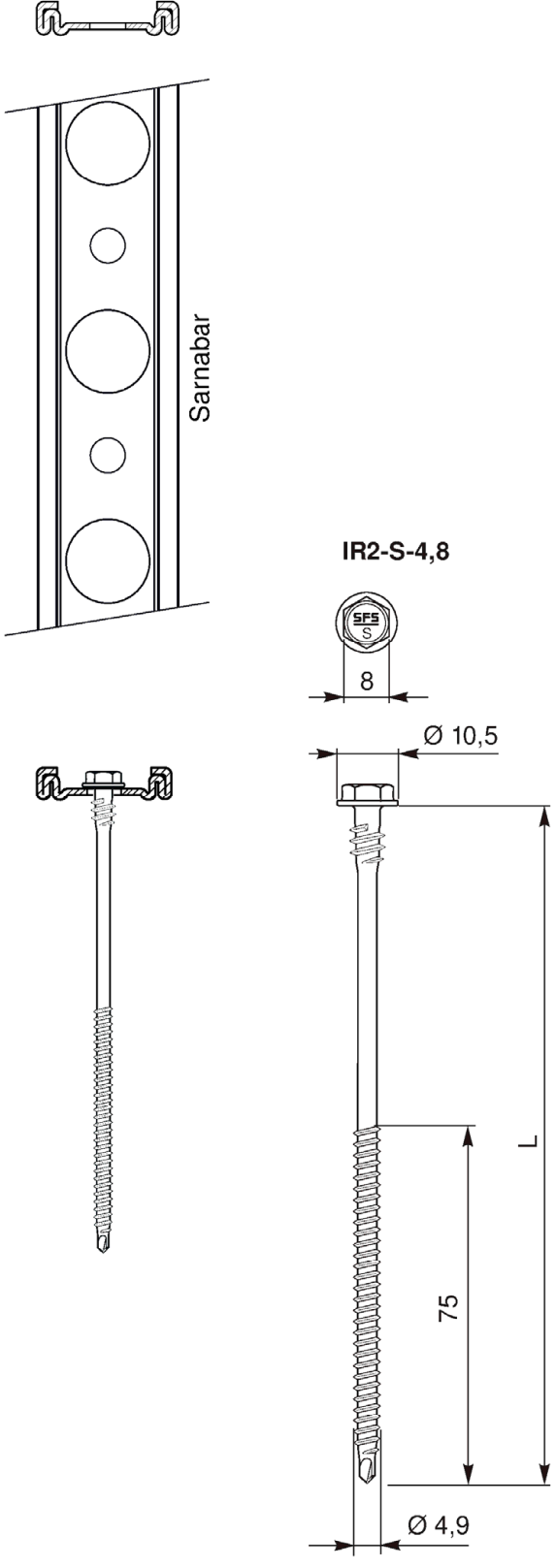
Combination 87A DT-S-4,8 / R75 R75  DT-S-4,8 	Combination 87B TPR-L-6,3 / IL-C-82x40 IL-C-82x40  TPR-L-6,3 
SFS Flat roof fasteners	Annex 87

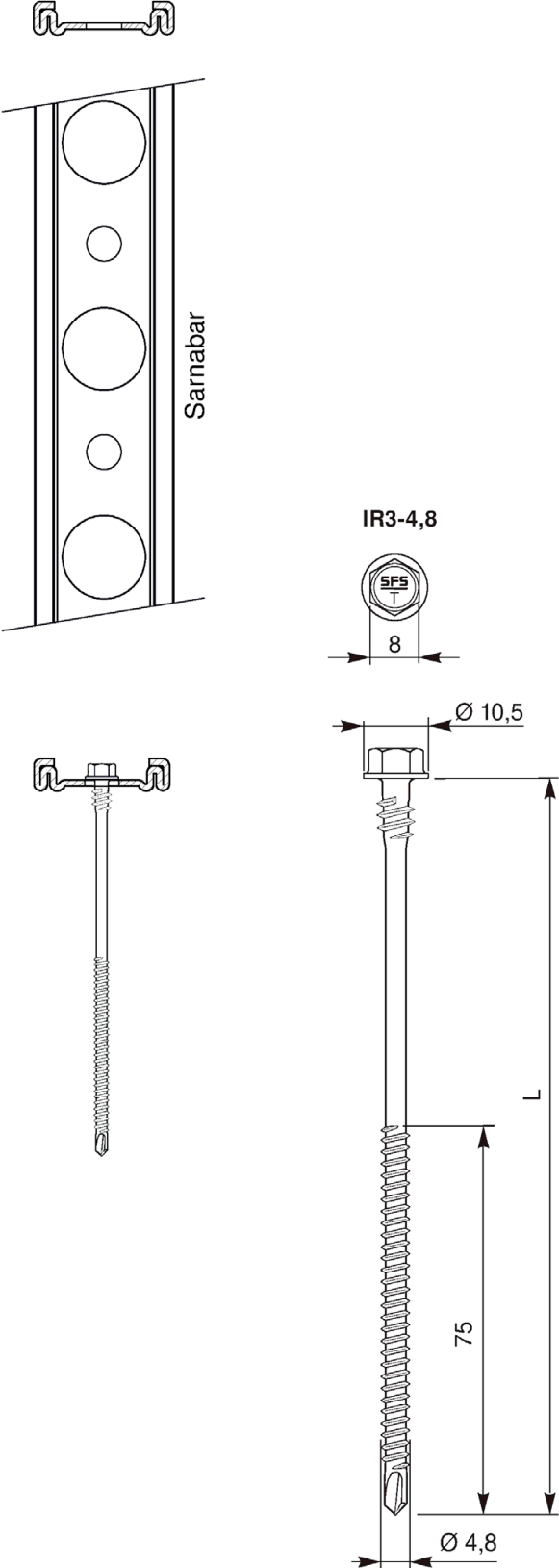
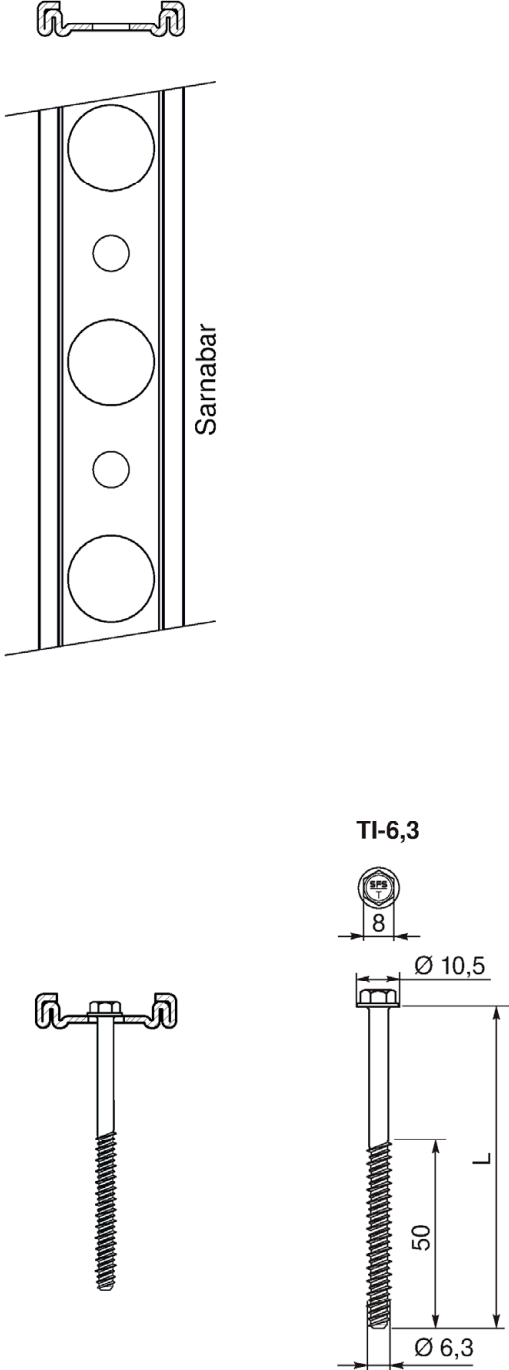
Combination 88A No longer in product range		Combination 88B No longer in product range	
SFS Flat roof fasteners		Annex	88

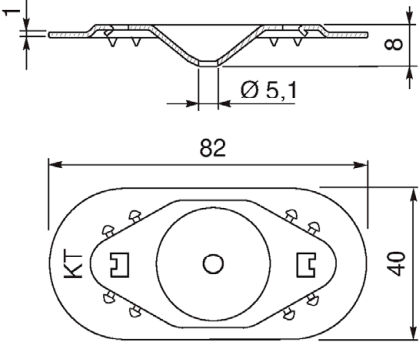
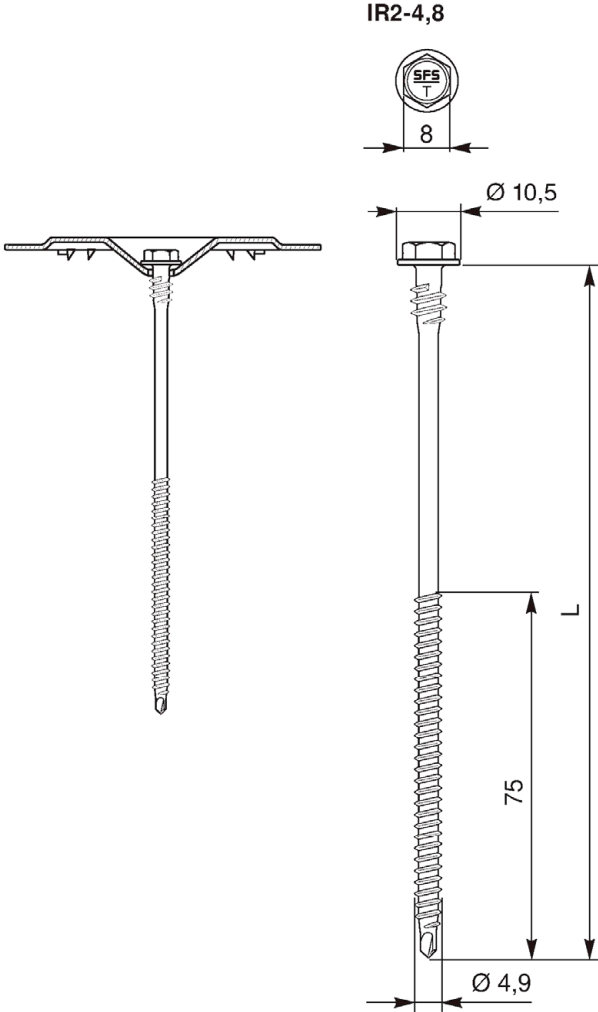
Combination 89A BS-4,8 / Isolfast SQT	Combination 89B Sarnafast SF-4,8 / IF/IG-C-82x40
Isolfast SQT  BS-4,8 	IF/IG-C-82x40  Sarnafast SF-4,8 
SFS Flat roof fasteners	Annex 89

Combination 90A LBS-T25-8,0 / Sarnabar	Combination 90B Sarnafast SBF-6,0 / Sarnaweld disc 6,8
 Sarnabar LBS-T25-8,0  T25 Ø 9,7 70 L Ø 8,0	 Sarnaweld disc 6,8 0,8 4,1 Ø 6,8 Ø 80 Sarnafast SBF-6,0  T25 Ø 9,7 75 L Ø 6,0
SFS Flat roof fasteners	Annex 90

Combination 91A Sarnafast SBF-6,0 / Sarnaweld disc 16 / Sarnabar Tube SBT-20	Combination 91B Sarnafast SBF-S-6,0 / Sarnaweld disc 6,8
SFS Flat roof fasteners	Annex 91

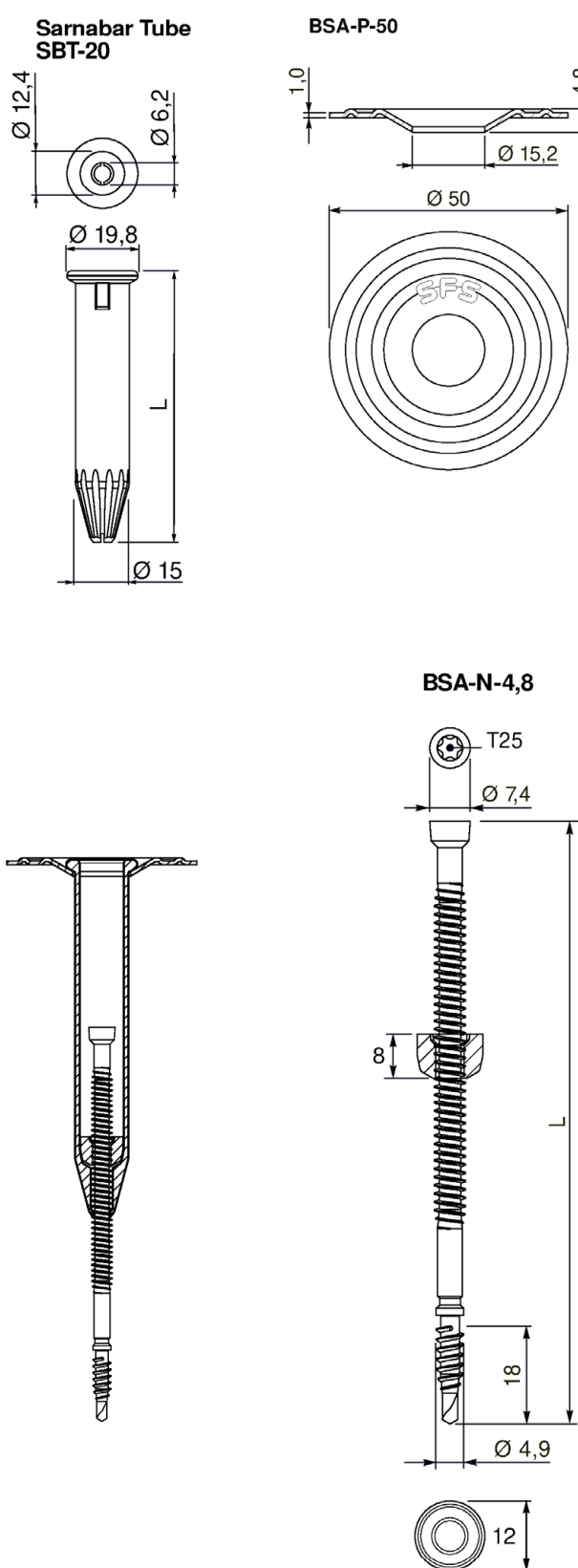
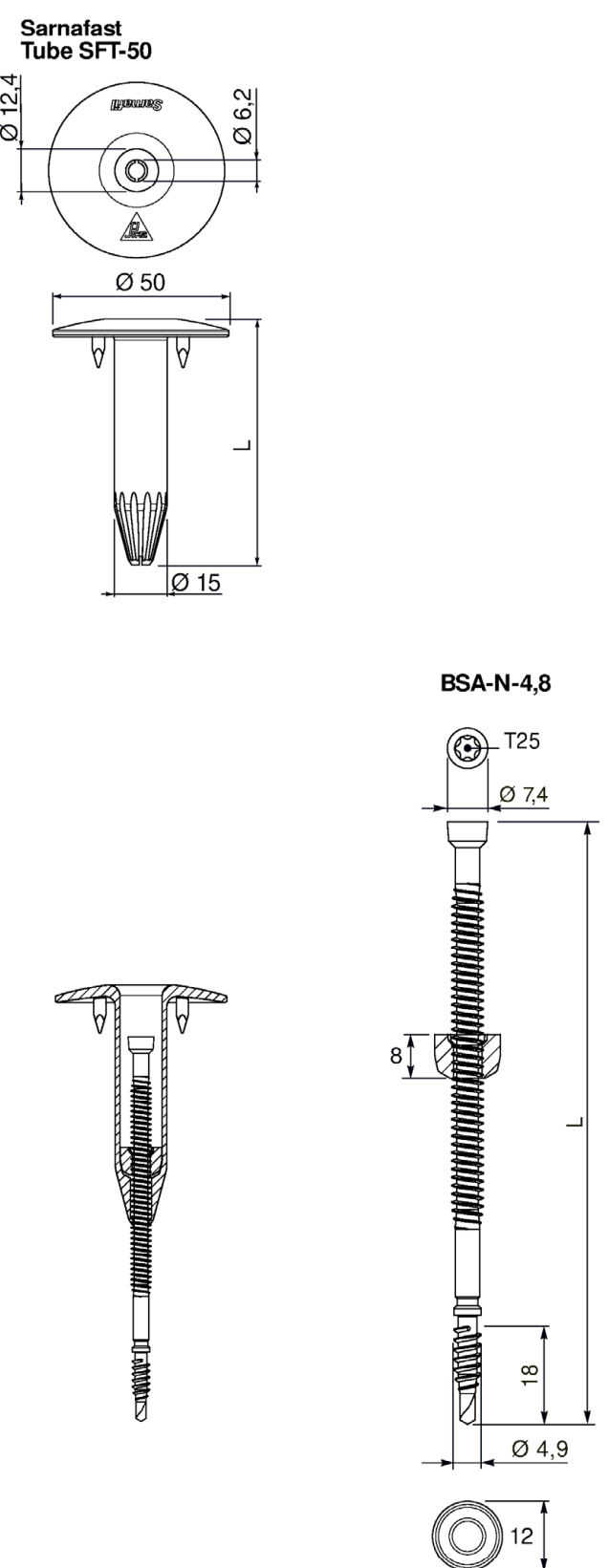
Combination 92A Sarnafast SBF-S-6,0 / Sarnaweld disc 16 / Sarnabar Tube SBT-20 	Combination 92B IR2-S-4,8 / Sarnabar 
SFS Flat roof fasteners	Annex 92

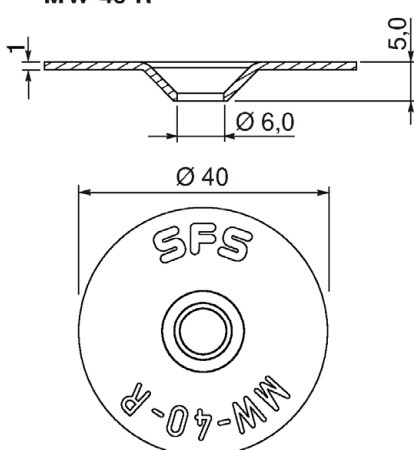
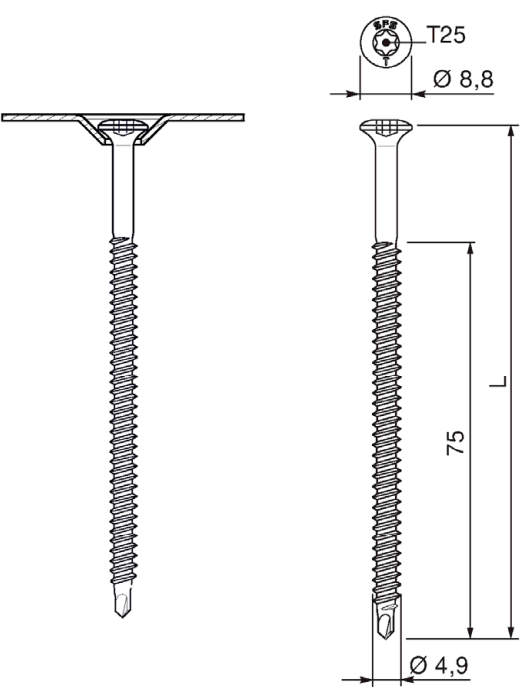
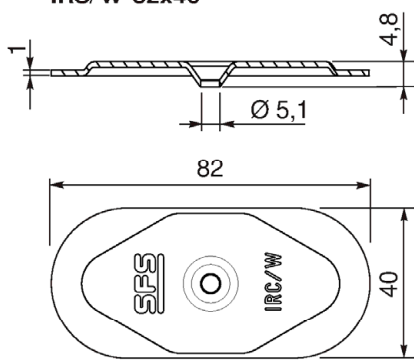
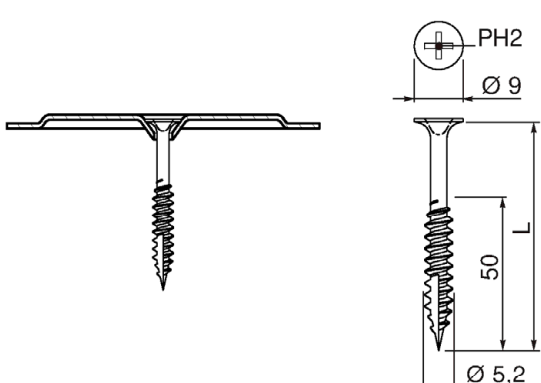
Combination 93A IR3-4,8 / Sarnabar  The drawing shows the IR3-4,8 fastener assembly. It includes a side view of the Sarnabar profile with four circular holes. A detail of the IR3-4,8 fastener head shows a width of 8 mm. A side view of the fastener shows a head diameter of Ø 10,5 mm, a threaded length of 75 mm, and a total length L. The fastener has a diameter of Ø 4,8 mm.	Combination 93B TI-6,3 / Sarnabar  The drawing shows the TI-6,3 fastener assembly. It includes a side view of the Sarnabar profile with four circular holes. A detail of the TI-6,3 fastener head shows a width of 8 mm. A side view of the fastener shows a head diameter of Ø 10,5 mm, a threaded length of 50 mm, and a total length L. The fastener has a diameter of Ø 6,3 mm.
SFS Flat roof fasteners	Annex 93

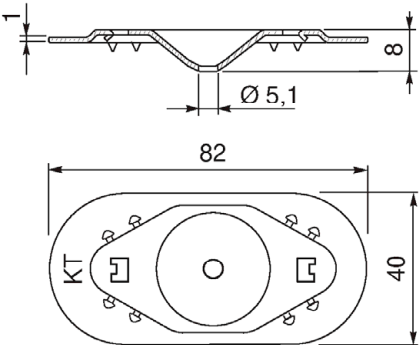
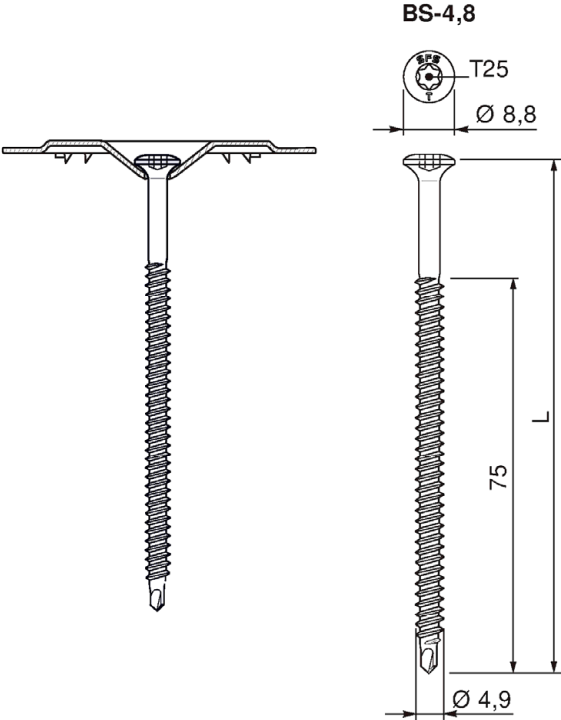
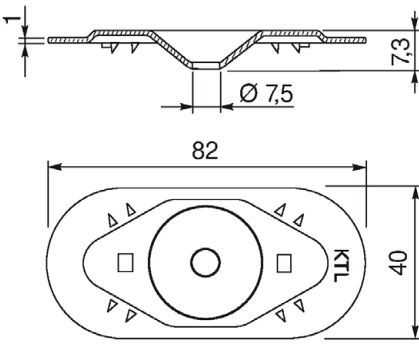
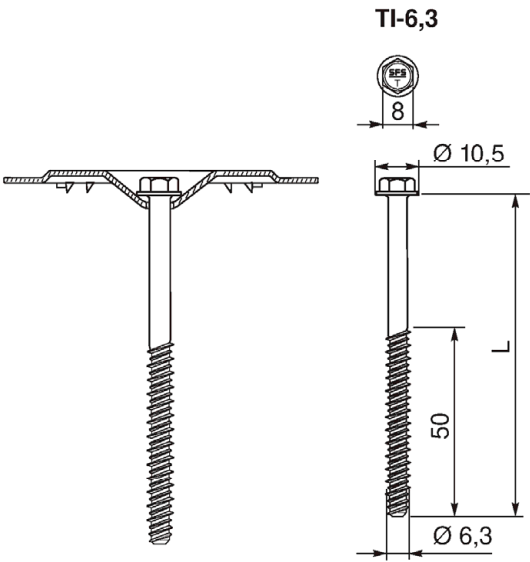
Combination 94A IR2-4,8 / Sarnafast KT-82x40 Sarnafast KT-82x40  IR2-4,8 	Combination 94B No longer in product range
SFS Flat roof fasteners	Annex 94

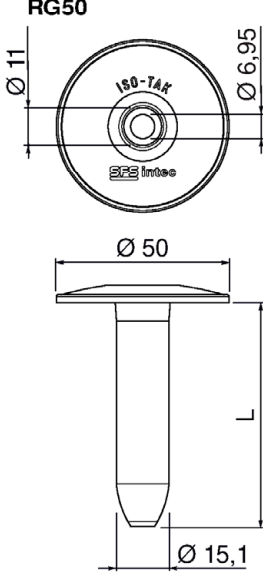
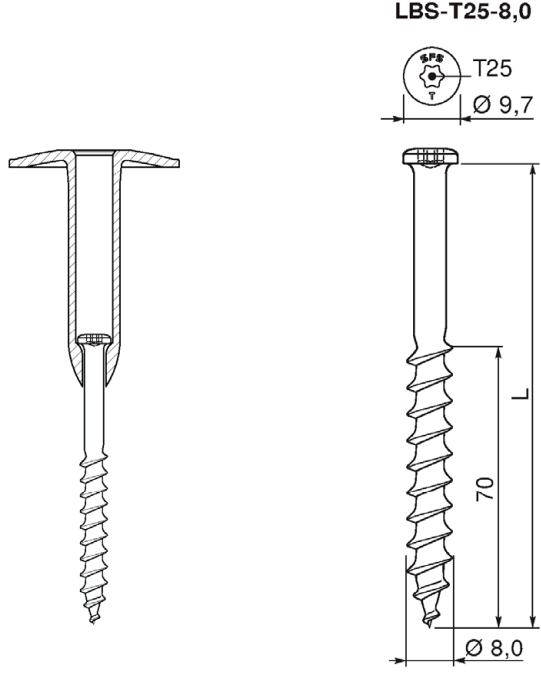
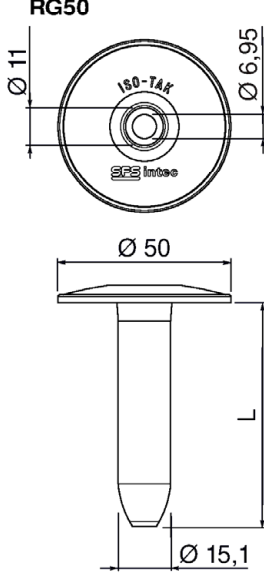
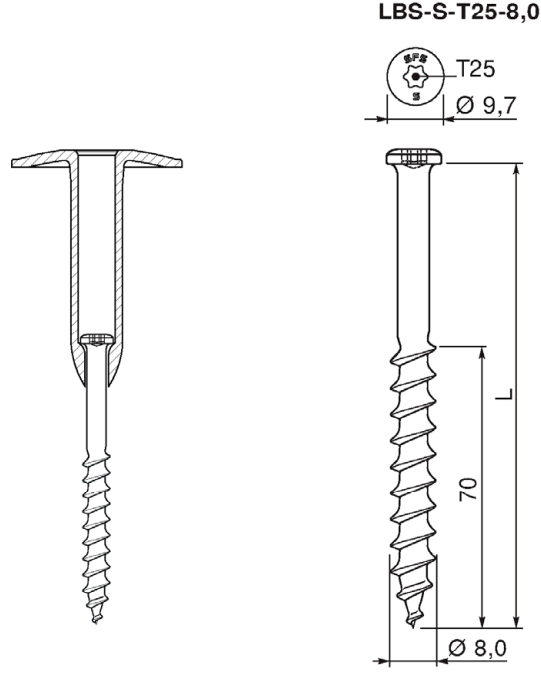
Combination 95A BSA-N-4,8 / FI-P-16,0 / FI-R-20	Combination 95B BSA-N-4,8 / BSA-P-50 / FI-R-20
SFS Flat roof fasteners	Annex 95

Combination 96A BSA-N-4,8 / BSA-P-70×70 / FI-R-20	Combination 96B BSA-N-4,8 / Sarnaweld disc 16 / Sarnabar Tube SBT-20
SFS Flat roof fasteners	Annex 96

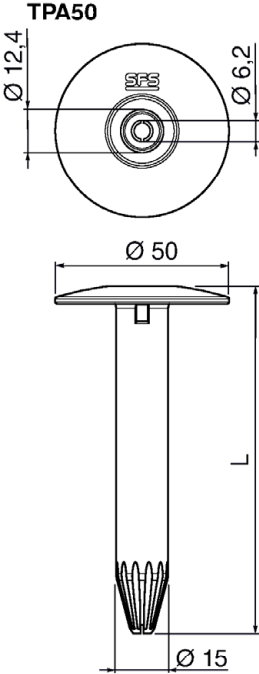
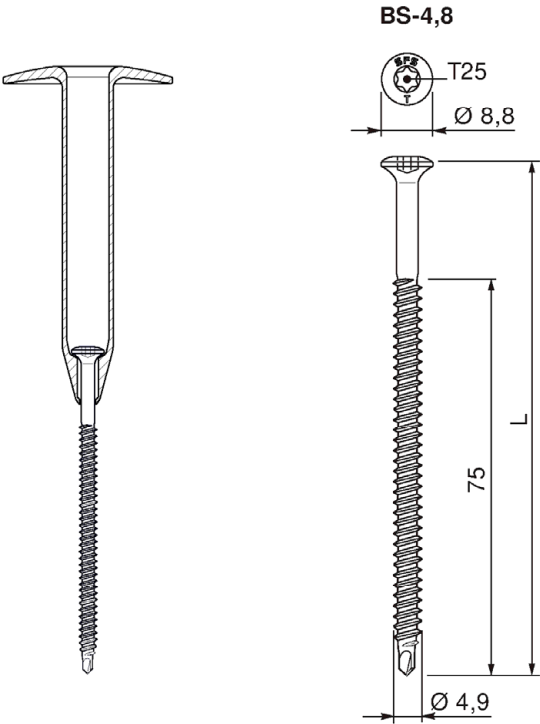
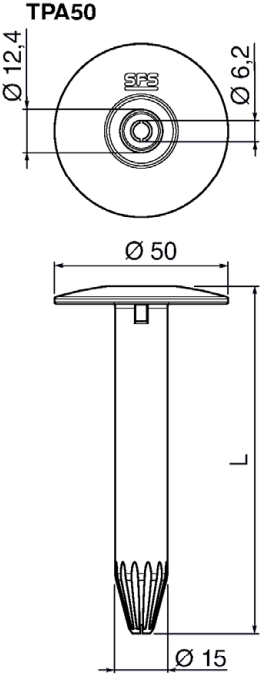
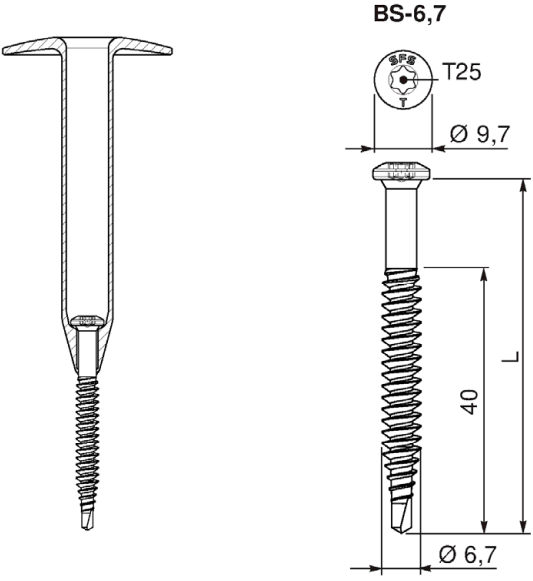
Combination 97A BSA-N-4,8 / BSA-P-50 / Sarnabar Tube SBT-20 	Combination 97B BSA-N-4,8 / Sarnafast Tube SFT-50 
SFS Flat roof fasteners	Annex 97

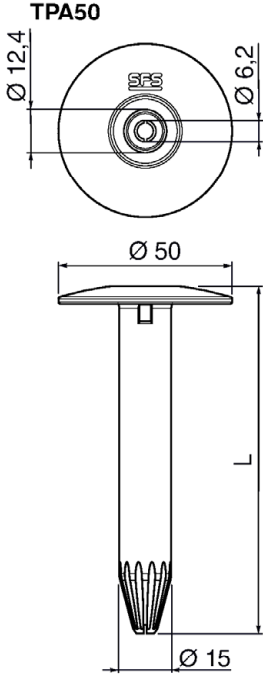
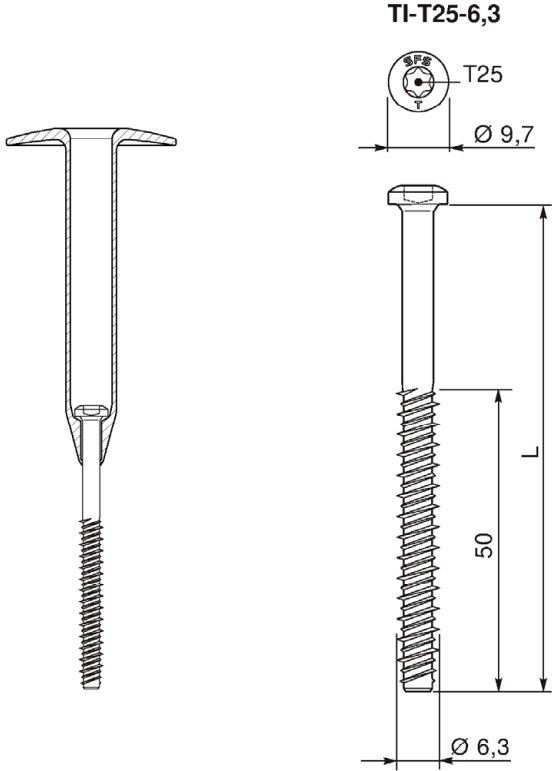
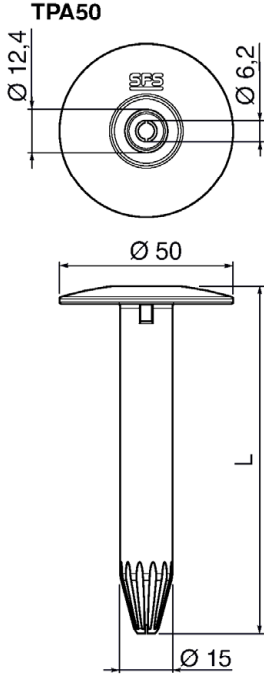
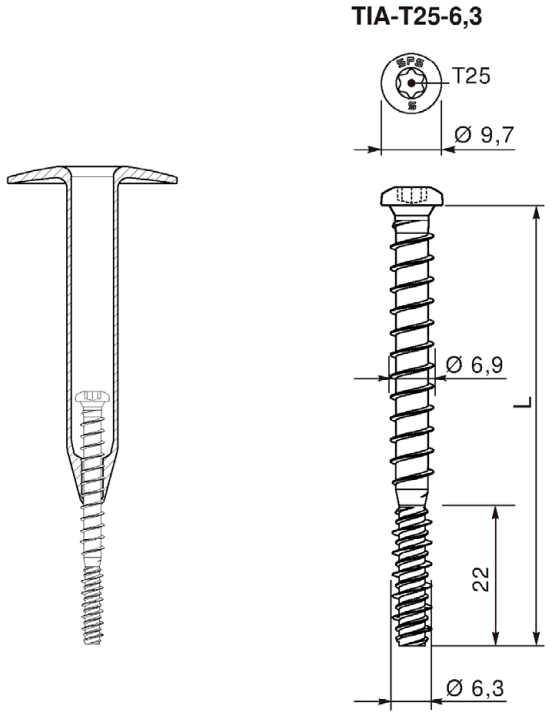
Combination 98A BS-4,8 / MW-40-R	Combination 98B IWF-5,2 / IRC/W-82x40
MW-40-R  BS-4,8 	IRC/W-82x40  IWF-5,2 
SFS Flat roof fasteners	Annex 98

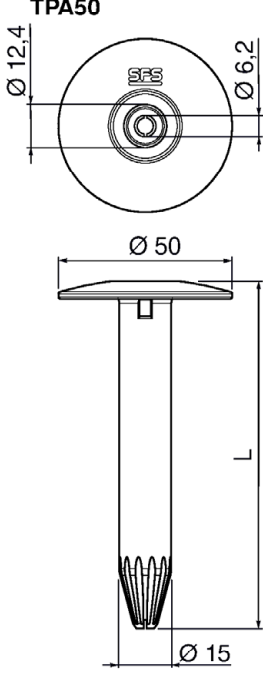
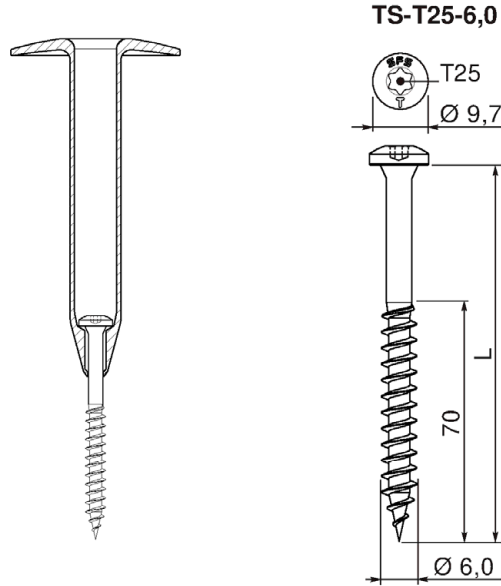
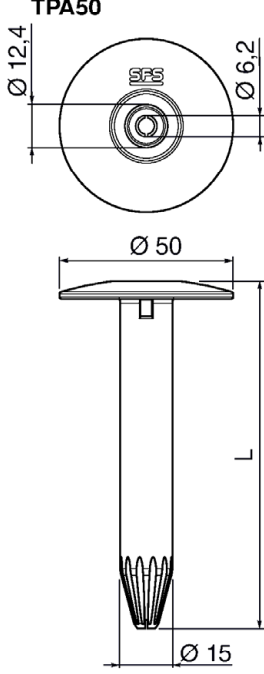
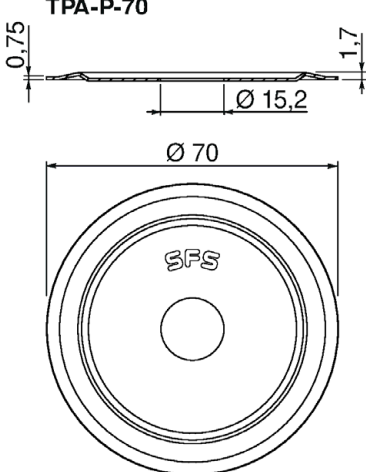
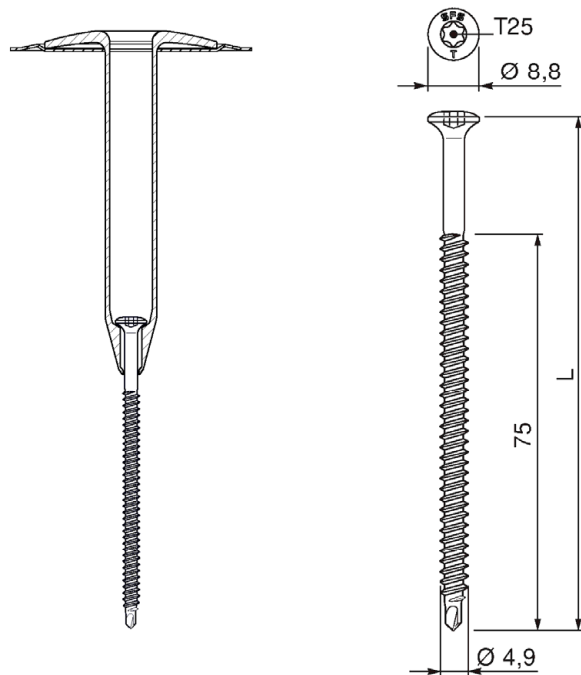
Combination 99A BS-4,8 / Sarnafast KT-82x40	Combination 99B TI-6,3 / Sarnafast KTL-82x40
Sarnafast KT-82x40  BS-4,8 	Sarnafast KTL-82x40  TI-6,3 
SFS Flat roof fasteners	Annex 99

Combination 100A LBS-T25-8,0 / RG50		Combination 100B LBS-S-T25-8,0 / RG50	
RG50  LBS-T25-8,0 		RG50  LBS-S-T25-8,0 	
SFS Flat roof fasteners		Annex	100

Combination 101A FB-S-T25-7,5 / RG50	Combination 101B BSA-N-4,8 / TPA50
RG50 FB-S-T25-7,5	TPA50 BSA-N-4,8
SFS Flat roof fasteners	Annex 101

Combination 102A BS-4,8 / TPA50	Combination 102B BS-6,7 / TPA50
TPA50  	TPA50  BS-6,7 
SFS Flat roof fasteners	Annex 102

Combination 103A TI-T25-6,3 / TPA50 TPA50   TI-T25-6,3	Combination 103B TIA-T25-6,3 / TPA50 TPA50   TIA-T25-6,3
SFS Flat roof fasteners	Annex 103

Combination 104A TS-T25-6,0 / TPA50	Combination 104B BS-4,8 / TPA-P-70 / TPA50
TPA50  TS-T25-6,0 	TPA50  TPA-P-70  BS-4,8 
SFS Flat roof fasteners	Annex 104

Combination 105A BS-6,7 / TPA-P-70 / TPA50	Combination 105B TI-T25-6,3 / TPA-P-70 / TPA50
TPA50 TPA-P-70 BS-6,7	TPA50 TPA-P-70 TI-T25-6,3
SFS Flat roof fasteners	Annex 105

Combination 106A TIA-T25-6,3 / TPA-P-70 / TPA50	Combination 106B TS-T25-6,0 / TPA-P-70 / TPA50
TPA50 TPA-P-70 TIA-T25-6,3	TPA50 TPA-P-70 TS-T25-6,0
SFS Flat roof fasteners	Annex 106

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for metallic substructures																		
			Steel sheet acc. to EN 10346																		Alu ³⁾
			S320GD ¹⁾										S350GD		S420GD		Perf ²⁾				
	Fastener	Stress Plate / Sleeve / Bar	Sheet thickness 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		
1A	IR2-4,8	IR-82×40	-	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	-	-	
1B	IR2-4,8	IF-70×70	-	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	-	-	
2A	IR2-S-4,8	IR-82×40	-	1,04	1,04	1,31	1,5	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
2B	IR3-4,8	IR-82×40	-	-	-	-	-	-	-	1,26	2,00	2,63	-	-	-	-	-	-	-	-	
3A	IR2-C-4,8	IRC/W-82×40	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	2,83	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
3B	BS-4,8	RP50	-	1,03	1,09	1,23	1,23	1,23	1,23	1,23	1,23	-	1,23	1,23	1,23	1,23	1,23	1,23	-	-	
4A	BS-4,8	R50	-	1,03	1,09	1,34	1,38	1,38	1,38	1,38	1,38	-	1,32	1,38	1,38	1,38	1,38	1,38	-	-	
4B	BS-4,8	R75	-	1,03	1,09	1,34	1,38	1,38	1,38	1,38	1,38	-	1,32	1,38	1,38	1,38	1,38	1,38	-	-	
5A	BS-4,8	RP75	-	1,03	1,09	1,23	1,23	1,23	1,23	1,23	1,23	-	1,23	1,23	1,23	1,23	1,23	1,23	-	-	
6B	BS-4,8	R48	-	1,03	1,09	1,34	1,38	1,38	1,38	1,38	1,38	-	1,32	1,38	1,38	1,38	1,38	1,38	-	-	
7A	BS-4,8	RP48	-	1,03	1,09	1,23	1,23	1,23	1,23	1,23	1,23	-	1,23	1,23	1,23	1,23	1,23	1,23	-	-	
7B	BS-4,8	SH-18/65 / Protan steelbar	-	1,03	1,03	1,03	1,03	1,03	1,03	1,03	1,03	-	1,03	1,03	1,03	1,03	1,03	1,03	-	-	
8A	BS-S-4,8	RP50	-	1,04	1,04	1,23	1,23	1,23	1,23	1,23	-	-	-	-	-	-	-	-	-	-	
9A	BS3-4,8	RP50	-	-	-	-	-	-	-	1,23	1,23	1,23	-	-	-	-	-	-	-	-	
9B	BS-6,1	R50	0,97	1,17	1,17	1,38	1,42	1,42	1,42	1,42	1,42	-	1,42	1,42	1,42	1,42	1,42	1,42	-	0,50	
10A	IFP2-6,7	IRP-82×40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	-	
10B	BS-6,7	R50	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
11A	BS-6,7	R75	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
12A	BS-S-6,7	R50	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
12B	BS-S-6,7	R75	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
13B	TPR-L-6,3 ⁴⁾	IRD-82×40	0,99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,69	

1)

2)

3)

4)

For steel sheet of S280GD the values have to be reduced to 92%

Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm

Aluminium sheet, R_m ≥ 195N/mm²

Pre-drill diameter = 7,0mm

- 1) For steel sheet of S280GD the values have to be reduced to 92%
2) Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm
3) Aluminium sheet, $R_m \geq 195N/mm^2$
4) Pre-drill diameter = 7,0mm

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for metallic substructures																		
			Steel sheet acc. to EN 10346																		Alu ³⁾
			S320GD ¹⁾										S350GD		S420GD		Perf ²⁾				
	Fastener	Stress Plate / Sleeve / Bar	Sheet thickness 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		
28B	BS-4,8	Sarnafast Tube SFT-50	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	3,08	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
29A	BS-4,8	Sarnabar Tube SBT-20 / Sarnabar	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	3,00	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
29B	BS-S-4,8	Sarnafast Tube SFT-50	-	1,04	1,04	1,31	1,50	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
30A	BS-S-4,8	Sarnabar Tube SBT-20 / Sarnabar	-	1,04	1,04	1,31	1,50	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
30B	Sarnafast SF-4,8	Sarnafast KT-82x40	-	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	-	-	
31A	Sarnafast SF-4,8	Sarnafast DT-70x70	-	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	-	-	
31B	Sarnafast SBF-6,0	Sarnafast Tube SFT-50	0,97	1,17	1,17	1,38	1,53	1,63	1,8	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
32A	Sarnafast SBF-6,0	Sarnabar Tube SBT-20 / Sarnabar	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
35A	IF2-6,1	IRD-82×40	-	-	1,11	-	-	-	-	1,16	-	-	-	-	-	-	-	-	-	-	
35B	IF2-6,1	ID-70×70	-	-	1,11	-	-	-	-	1,16	-	-	-	-	-	-	-	-	-	-	
39A	BS-4,8	FI-P-6,8	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	2,29	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
39B	BS-S-4,8	FI-P-6,8	-	1,04	1,04	1,31	1,50	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
40B	BS-6,1	FI-P-6,8	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,83	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
44B	Sarnafast SBF-6,0	FI-P-6,8	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,83	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
45A	Sarnafast SBF-S-6,0	FI-P-6,8	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
46A	BS-4,8	FI-P-16,0 / FI-R-20	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	3,00	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
46B	BS-S-4,8	FI-P-16,0 / FI-R-20	-	1,04	1,04	1,31	1,50	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
47B	BS-6,1	FI-P-16,0 / FI-R-20	0,97	1,17	1,17	1,38	1,53	1,63	1,8	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
49B	Sarnafast SBF-6,0	FI-P-16,0 / FI-R-20	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
50A	Sarnafast SBF-S-6,0	FI-P-16,0 / FI-R-20	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	

1)

2)

3)

For steel sheet of S280GD the values have to be reduced to 92%

Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm

Aluminium sheet, R_m ≥ 195N/mm²

- ¹⁾ For steel sheet of S280GD the values have to be reduced to 92%
²⁾ Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm
³⁾ Aluminium sheet, $R_m \geq 195N/mm^2$

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for metallic substructures																		
			Steel sheet acc. to EN 10346																	Alu ³⁾	
			S320GD ¹⁾										S350GD		S420GD		Perf ²⁾				
	Fastener	Stress Plate / Sleeve / Bar	Sheet thickness 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		
51B	IRF-4,8	IRF-40x40	-	-	-	-	1,30	1,31	1,33	1,35	-	-	-	-	-	-	-	-	-	-	
52A	IRF-4,8	IRF-64x64	-	-	-	-	1,30	1,31	1,33	1,35	-	-	-	-	-	-	-	-	-	-	
52B	IRF-4,8	IRF-82x40	-	-	-	-	1,30	1,31	1,33	1,35	-	-	-	-	-	-	-	-	-	-	
53A	IRF-4,8	IRF-40	-	-	-	-	1,30	1,31	1,33	1,35	-	-	-	-	-	-	-	-	-	-	
53B	IRFP-6,3	IRFP-40x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,91	-	
54A	IRFP-6,3	IRFP-64x64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,91	-	
54B	IRFP-6,3	IRFP-82x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,91	-	
55A	IRFP-6,3	IRFP-40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,91	-	
56A	Sarnafast SBF-6,0	Isolfix SRT	0,97	1,17	1,17	1,38	1,42	1,42	1,42	1,42	1,42	-	1,42	1,42	1,42	1,42	1,42	1,42	-	0,50	
56B	Sarnafast SBF-S-6,0	Isolfix SRT	1,00	1,21	1,21	1,42	1,42	1,42	1,42	1,42	-	-	-	-	-	-	-	-	-	0,50	
57A	BS-6,7	Isolfix SRT	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
57B	Sarnafast SBF-6,0	Sarnafast KTL-82x40	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,56	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
58A	Sarnafast SBF-6,0	Sarnafast DTL-70x70	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,56	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
58B	Sarnafast SBF-6,0	IF/IG-C-82x40	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,68	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
59A	Sarnafast SBF-S-6,0	Sarnafast KTL-82x40	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
59B	Sarnafast SBF-S-6,0	Sarnafast DTL-70x70	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
60A	Sarnafast SBF-S-6,0	IF/IG-C-82x40	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
60B	Sarnafast SBF-S-6,0	Sarnafast Tube SFT-50	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
61A	Sarnafast SBF-S-6,0	Sarnabar Tube SBT-20 / Sarnabar	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
61B	Sarnafast SBF-6,0	SBIW-70x70 / Sarnabar Tube SBT-20	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	

1)

2)

3)

For steel sheet of S280GD the values have to be reduced to 92%

Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm

Aluminium sheet, R_m ≥ 195N/mm²

- 1) For steel sheet of S280GD the values have to be reduced to 92%
2) Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm
3) Aluminium sheet, $R_m \geq 195N/mm^2$

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for metallic substructures																	
			Steel sheet acc. to EN 10346																	Alu ³⁾
			S320GD ¹⁾										S350GD		S420GD		Perf ²⁾			
	Fastener	Stress Plate / Sleeve / Bar	Sheet thickness 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	
63B	BS-4,8	ST-25	-	1,03	1,09	1,34	1,38	1,38	1,38	1,38	1,38	-	1,32	1,38	1,38	1,38	1,38	1,38	-	-
64B	TPR-L-6,3 ⁴⁾	IF/IG-C-82x40	0,99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,69
65B	BS-4,8	NPP	-	1,03	1,09	1,34	1,45	1,45	1,45	1,45	1,45	-	1,32	1,44	1,45	1,44	1,44	1,45	-	-
66A	BS-S-4,8	NPP	-	1,04	1,04	1,31	1,45	1,45	1,45	1,45	-	-	-	-	-	-	-	-	-	-
66B	BS-4,8	NPS	-	1,03	1,09	1,34	1,38	1,38	1,38	1,38	1,38	-	1,32	1,38	1,38	1,38	1,38	1,38	-	-
67A	BS-6,7	NPS	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54
67B	BS-S-6,7	NPS	1,42	1,42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54
70A	Sarnafast SBF-6,0	R75	0,97	1,17	1,17	1,38	1,42	1,42	1,42	1,42	1,42	-	1,42	1,42	1,42	1,42	1,42	1,42	-	0,50
70B	BS3-4,8	RP48	-	-	-	-	-	-	-	1,23	1,23	1,23	-	-	-	-	-	-	-	-
71A	BS-4,8	MW-40-F	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	2,60	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-
71B	BS-6,1	MW-40-F	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50
72A	BS-4,8	IR-82x40	-	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	-	-
72B	BS-6,1	IRD-82x40	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,56	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50
75A	Sarnafast SF-4,8	Sarnabar	-	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	-	-
75B	Sarnafast SBF-6,0	Sarnabar	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50
76A	Sarnafast SBF-S-6,0	Sarnabar	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50
76B	IR2-4,8	Sarnabar	-	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	-	-
81B	BS-S-6,1	FI-P-6,8	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50
82A	BS-S-6,1	FI-P-16,0 / FI-R-20	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50
85A	TPR-L-6,3 ⁴⁾	FI-P-6,8	0,99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,69
87B	TPR-L-6,3 ⁴⁾	IL-C-82x40	0,99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,69

1)

For steel sheet of S280GD the values have to be reduced to 92%

2)

Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm

3)

Aluminium sheet, R_m ≥ 195N/mm²

4)

Pre-drill diameter = 7,0mm

¹⁾ For steel sheet of S280GD the values have to be reduced to 92%

²⁾ Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm

³⁾ Aluminium sheet, $R_m \geq 195N/mm^2$ ⁴⁾ Pre-drill diameter = 7,0mm

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for metallic substructures																		
			Steel sheet acc. to EN 10346																	Alu ³⁾	
			S320GD ¹⁾										S350GD		S420GD		Perf ²⁾				
	Fastener	Stress Plate / Sleeve / Bar	Sheet thickness 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		
89A	BS-4,8	Isolfast SQT	-	1,03	1,09	1,34	1,45	1,45	1,45	1,45	1,45	-	1,32	1,44	1,45	1,44	1,44	1,45	-	-	
89B	Sarnafast SF-4,8	IF/IG-C-82x40	-	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	-	-	
90B	Sarnafast SBF-6,0	Sarnaweld disc 6,8	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,83	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
91A	Sarnafast SBF-6,0	Sarnaweld disc 16 / Sarnabar Tube SBT-20	0,97	1,17	1,17	1,38	1,53	1,63	1,80	2,04	2,91	-	1,44	1,58	2,19	1,44	1,57	1,92	-	0,50	
91B	Sarnafast SBF-S-6,0	Sarnaweld disc 6,8	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
92A	Sarnafast SBF-S-6,0	Sarnaweld disc 16 / Sarnabar Tube SBT-20	1,00	1,21	1,21	1,47	1,66	1,81	2,04	2,39	-	-	-	-	-	-	-	-	-	0,50	
92B	IR2-S-4,8	Sarnabar	-	1,04	1,04	1,31	1,50	1,63	1,84	2,16	-	-	-	-	-	-	-	-	-	-	
93A	IR3-4,8	Sarnabar	-	-	-	-	-	-	-	1,26	2,00	2,63	-	-	-	-	-	-	-	-	
94A	IR2-4,8	Sarnafast KT-82x40	-	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	-	-	
95A	BSA-N-4,8	FI-P-16,0 / FI-R-20	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
95B	BSA-N-4,8	BSA-P-50 / FI-R-20	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
96A	BSA-N-4,8	BSA-P-70×70 / FI-R-20	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
96B	BSA-N-4,8	Sarnaweld disc 16 / Sarnabar Tube SBT-20	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
97A	BSA-N-4,8	BSA-P-50 / Sarnabar Tube SBT-20	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
97B	BSA-N-4,8	Sarnabar Tube SFT-50	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
98A	BS-4,8	MW-40-R	-	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	-	-	
99A	BS-4,8	Sarnafast KT-82x40	-	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	-	-	
101B	BSA-N-4,8	TPA50	-	0,89	0,89	1,08	1,22	1,29	1,40	1,57	2,04	-	-	-	-	-	-	-	-	-	
102A	BS-4,8	TPA50	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	3,08	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
102B	BS-6,7	TPA50	1,47	1,47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
104B	BS-4,8	TPA-P-70 / TPA50	-	1,03	1,09	1,34	1,52	1,67	1,91	2,27	3,08	-	1,32	1,44	2,27	1,44	1,44	1,74	-	-	
105A	BS-6,7	TPA-P-70 / TPA50	1,47	1,47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,87	0,54	
1) For steel sheet of S280GD the values have to be reduced to 92% 2) Perforated steel sheet of S320GD (EN 10346), triangular array of holes, hole diameter 5,0mm, distance of holes 12,5mm 3) Aluminium sheet, R_m ≥ 195N/mm²																					

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]
1A	IR2-4,8	IR-82×40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1B	IR2-4,8	IF-70×70	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2A	IR2-S-4,8	IR-82×40	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3A	IR2-C-4,8	IRC/W-82×40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3B	BS-4,8	RP50	1,23	1,23	1,23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4A	BS-4,8	R50	1,38	1,32	1,38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4B	BS-4,8	R75	1,38	1,32	1,38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5A	BS-4,8	RP75	1,23	1,23	1,23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6B	BS-4,8	R48	1,38	1,32	1,38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7A	BS-4,8	RP48	1,23	1,23	1,23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7B	BS-4,8	SH-18/65 / Protan steelbar	1,03	1,03	1,03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8A	BS-S-4,8	RP50	1,12	1,23	1,23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9B	BS-6,1	R50	1,32	1,42	1,42	0,72	1,42	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
14A	IG-6,0	IRD-82×40	1,31	1,43	2,49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14B	TS-T25-6,0	R50	1,31	1,42	1,42	0,44	0,89	32	5,0	1,42	1,42	50	5,0	1,07	1,42	75	-	-	-	-
15A	IWF-5,2	MW-40-FH	1,35	1,74	1,74	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16A	IW-S-5,0	IRC/W-82×40	1,08	1,12	2,04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16B	LBS-S-T25-8,0	R50	-	-	-	-	-	-	-	-	-	-	-	0,93	1,43	60	-	-	-	-
17A	LBS-T25-8,0	MW-40-LBS	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
17B	LBS-T25-8,0	R50	-	-	-	-	-	-	-	-	-	-	-	0,93	1,43	60	-	-	-	-
18A	LB45		-	-	-	-	-	-	-	-	-	-	-	1,44	1,44	65	15,0	-	-	-
18B	FB-S-T25-7,5	R50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter			$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m ³ $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m ³ $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m ³																	

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]
19A	DT-4,8	IRD-82×40	-	-	-	2,40	2,56	25	4,8	-	-	-	-	-	-	-	-	-	-	-
19B	DT-4,8	IF/IG-C-82×40	-	-	-	2,40	2,68	25	4,8	-	-	-	-	-	-	-	-	-	-	-
20A	DT-4,8	IW-82×40	-	-	-	2,40	3,34	25	4,8	-	-	-	-	-	-	-	-	-	-	-
20B	DT-4,8	R50	-	-	-	1,39	1,39	25	4,8	-	-	-	-	-	-	-	-	-	-	-
21A	DT-S-4,8	IRD-82×40	-	-	-	2,56	2,56	25	4,8	-	-	-	-	-	-	-	-	-	-	-
21B	DT-S-4,8	IF/IG-C-82×40	-	-	-	2,65	2,68	25	4,8	-	-	-	-	-	-	-	-	-	-	-
22A	DT-S-4,8	R50	-	-	-	1,39	1,39	25	4,8	-	-	-	-	-	-	-	-	-	-	-
22B	DT-6,3	IRD-82x40	-	-	-	2,93	3,68	32	6,3	-	-	-	-	-	-	-	-	-	-	-
23A	DT-6,3	IF/IG-C-82x40	-	-	-	2,93	4,07	32	6,3	-	-	-	-	-	-	-	-	-	-	-
23B	DT-S-6,3	IRD-82x40	-	-	-	2,23	3,10	32	6,3	-	-	-	-	-	-	-	-	-	-	-
24A	DT-S-6,3	IF/IG-C-82×40	-	-	-	2,23	3,10	32	6,3	-	-	-	-	-	-	-	-	-	-	-
24B	TI-6,3	IRD-82×40	-	-	-	1,83	1,83	20	5,0	2,56	2,56	30	5,0	-	-	-	-	-	-	-
25A	TI-6,3	IF/IG-C-82×40	-	-	-	1,83	1,83	20	5,0	2,73	3,79	30	5,0	-	-	-	-	-	-	-
25B	TI-6,3	ID-70×70	-	-	-	1,83	1,83	20	5,0	2,73	3,79	30	5,0	-	-	-	-	-	-	-
26A	TI-T25-6,3	R75	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
27A	TI-T25-6,3	R48	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
27B	TI-T25-6,3	R50	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
28A	TIA-T25-6,3	R50	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
28B	BS-4,8	Sarnafast Tube SFT-50	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29A	BS-4,8	Sarnabar Tube SBT-20 / Sarnabar	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29B	BS-S-4,8	Sarnafast Tube SFT-50	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30A	BS-S-4,8	Sarnabar Tube SBT-20 / Sarnabar	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter																				

$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m^3
 $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m^3
 $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m^3

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]
30B	Sarnafast SF-4,8	Sarnafast KT-82x40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31A	Sarnafast SF-4,8	Sarnafast DT-70x70	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31B	Sarnafast SBF-6,0	Sarnafast Tube SFT-50	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
32A	Sarnafast SBF-6,0	Sarnabar Tube SBT-20 / Sarnabar	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
32B	TI-6,3	Sarnafast DTL-70x70	-	-	-	1,83	1,83	20	5,0	2,56	2,56	30	5,0	-	-	-	-	-	-	-
33A	TI-T25-6,3	Sarnafast Tube SFT-50	-	-	-	1,83	1,83	20	5,0	2,73	3,08	30	5,0	-	-	-	-	-	-	-
33B	TI-T25-6,3	Sarnabar Tube SBT-20 / Sarnabar	-	-	-	1,83	1,83	20	5,0	2,73	3,00	30	5,0	-	-	-	-	-	-	-
34A	TI-S-Z10-6,3	R50	-	-	-	0,53	1,05	20	5,0	-	-	-	-	-	-	-	-	-	-	-
34B	TI-S-Z10-6,3	R75	-	-	-	0,53	1,05	20	5,0	-	-	-	-	-	-	-	-	-	-	-
35A	IF2-6,1	IRD-82x40	1,07	2,04	2,40	1,56	2,56	32	5,0					1,27	2,11	75	-	-	-	-
35B	IF2-6,1	ID-70x70	1,07	2,04	2,40	1,56	3,12	32	5,0					1,27	2,11	75	-	-	-	-
36A	FB-S-T25-7,5	IRD-82x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8
36B	FB-S-T25-7,5	IF/IG-C-82x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8
37A	FB-S-T25-7,5	R75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8
37B	IW-S-5,0	IW-82x40	1,08	1,12	2,04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38B	IWF-5,2	IW-82x40	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39A	BS-4,8	FI-P-6,8	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39B	BS-S-4,8	FI-P-6,8	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40A	TI-T25-6,3	FI-P-6,8	-	-	-	1,83	1,83	20	5,0	2,73	2,83	30	5,0	-	-	-	-	-	-	-
40B	BS-6,1	FI-P-6,8	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
41A	DT-4,8	FI-P-6,8	-	-	-	2,40	2,83	25	4,8	-	-	-	-	-	-	-	-	-	-	-
41B	DT-S-4,8	FI-P-6,8	-	-	-	2,65	2,83	25	4,8	-	-	-	-	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter																				

$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m³
 $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m³
 $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m³

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	pdd ⁵⁾ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	pdd ⁵⁾ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	pdd ⁵⁾ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	pdd ⁵⁾ [mm]
42A	DT-6,3	FI-P-6,8	-	-	-	2,93	3,82	32	6,3	-	-	-	-	-	-	-	-	-	-	-
42B	DT-S-6,3	FI-P-6,8	-	-	-	2,23	3,10	32	6,3	-	-	-	-	-	-	-	-	-	-	-
43A	LBS-T25-8,0	FI-P-6,8	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
43B	LBS-S-T25-8,0	FI-P-6,8	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
44A	TS-T25-6,0	FI-P-6,8	1,31	1,43	2,30	0,44	0,89	32	5,0	2,83	2,83	50	5,0	1,07	1,78	75	-	-	-	-
44B	Sarnafast SBF-6,0	FI-P-6,8	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
45A	Sarnafast SBF-S-6,0	FI-P-6,8	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
45B	FB-S-T25-7,5	FI-P-6,8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8
46A	BS-4,8	FI-P-16,0 / FI-R-20	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46B	BS-S-4,8	FI-P-16,0 / FI-R-20	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47A	TI-T25-6,3	FI-P-16,0 / FI-R-20	-	-	-	1,83	1,83	20	5,0	2,73	3,00	30	5,0	-	-	-	-	-	-	-
47B	BS-6,1	FI-P-16,0 / FI-R-20	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
48A	DT-4,8	FI-P-16,0 / FI-R-20	-	-	-	2,40	3,00	25	4,8	-	-	-	-	-	-	-	-	-	-	-
48B	DT-S-4,8	FI-P-16,0 / FI-R-20	-	-	-	2,65	3,00	25	4,8	-	-	-	-	-	-	-	-	-	-	-
49A	TS-T25-6,0	FI-P-16,0 / FI-R-20	1,31	1,43	2,30	0,44	0,89	32	5,0	3,00	3,00	50	5,0	1,07	1,78	75	-	-	-	-
49B	Sarnafast SBF-6,0	FI-P-16,0 / FI-R-20	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
50A	Sarnafast SBF-S-6,0	FI-P-16,0 / FI-R-20	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
50B	TIA-T25-6,3	FI-P-16,0 / FI-R-20	-	-	-	1,83	1,83	20	5,0	-	-	-	-	-	-	-	-	-	-	-
51A	TIA-T25-6,3	FI-R-20 / Sarnabar	-	-	-	1,83	1,83	20	5,0	-	-	-	-	-	-	-	-	-	-	-
55B	TI-T25-6,3	Isolfix SRT	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter			$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m^3 $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m^3 $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m^3																	

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]
56A	Sarnafast SBF-6,0	Isolfix SRT	1,32	1,42	1,42	0,72	1,42	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
56B	Sarnafast SBF-S-6,0	Isolfix SRT	1,25	1,42	1,42	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
57B	Sarnafast SBF-6,0	Sarnafast KTL-82x40	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
58A	Sarnafast SBF-6,0	Sarnafast DTL-70x70	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
58B	Sarnafast SBF-6,0	IF/IG-C-82x40	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
59A	Sarnafast SBF-S-6,0	Sarnafast KTL-82x40	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
59B	Sarnafast SBF-S-6,0	Sarnafast DTL-70x70	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
60A	Sarnafast SBF-S-6,0	IF/IG-C-82x40	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
60B	Sarnafast SBF-S-6,0	Sarnafast Tube SFT-50	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
61A	Sarnafast SBF-S-6,0	Sarnabar Tube SBT-20 / Sarnabar	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
61B	Sarnafast SBF-6,0	SBIW-70x70 / Sarnabar Tube SBT-20	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
62A	TIF-N-6,3	RH50	-	-	-	1,54	1,54	20	5,0	-	-	-	-	-	-	-	-	-	-	-
62B	TIA-T25-6,3	R75	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
63A	TIA-T25-6,3	ST-25	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
63B	BS-4,8	ST-25	1,38	1,32	1,38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64A	TI-T25-6,3	ST-25	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
65A	LBS-S-T25-8,0	IF/IG-C-82x40	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
65B	BS-4,8	NPP	1,45	1,32	1,45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66A	BS-S-4,8	NPP	1,12	1,45	1,45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
66B	BS-4,8	NPS	1,38	1,32	1,38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
68A	TI-T25-6,3	NPS	-	-	-	1,42	1,42	20	5,0	-	-	-	-	-	-	-	-	-	-	-
68B	TIA-T25-6,3	Sarnabar Tube SBT-20 / Sarnabar	-	-	-	1,83	1,83	20	5,0	-	-	-	-	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter																				

$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m³
 $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m³
 $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m³

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)} \geq$ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)} \geq$ [mm]	$pdd^{5)}$ [mm]	P3.3 density $\geq 0,45$	P4.4 density $\geq 0,55$	$sd^{4)} \geq$ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)} \geq$ [mm]	$pdd^{5)}$ [mm]
69A	IWF-5,2	MW-40-F	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
69B	IWF-5,2	MW-40-R	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70A	Sarnafast SBF-6,0	R75	1,32	1,42	1,42	0,72	1,42	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
71A	BS-4,8	MW-40-F	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
71B	BS-6,1	MW-40-F	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
72A	BS-4,8	IR-82x40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
72B	BS-6,1	IRD-82x40	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
73A	TI-T25-6,3	MW-40-F	-	-	-	1,83	1,83	20	5,0	2,73	3,34	30	5,0	-	-	-	-	-	-	-
73B	TS-T25-6,0	MW-40-F	1,31	1,43	2,30	0,44	0,89	32	5,0	3,07	3,34	50	5,0	1,07	1,78	75	-	-	-	-
74A	TI-T25-6,3	IRD-82x40	-	-	-	1,83	1,83	20	5,0	2,56	2,56	30	5,0	-	-	-	-	-	-	-
74B	IWF-5,2	IR-82x40	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75A	Sarnafast SF-4,8	Sarnabar	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75B	Sarnafast SBF-6,0	Sarnabar	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
76A	Sarnafast SBF-S-6,0	Sarnabar	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
76B	IR2-4,8	Sarnabar	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
77A	DT-4,8	Sarnabar	-	-	-	2,40	3,34	25	4,8	-	-	-	-	-	-	-	-	-	-	-
77B	DT-4,8	Sarnabar Tube SBT-20 / Sarnabar	-	-	-	2,40	3,00	25	4,8	-	-	-	-	-	-	-	-	-	-	-
78A	DT-S-4,8	Sarnabar	-	-	-	2,65	3,69	25	4,8	-	-	-	-	-	-	-	-	-	-	-
78B	DT-S-4,8	Sarnabar Tube SBT-20 / Sarnabar	-	-	-	2,65	3,00	25	4,8	-	-	-	-	-	-	-	-	-	-	-
79A	DT-6,3	Sarnabar	-	-	-	2,93	4,07	32	6,3	-	-	-	-	-	-	-	-	-	-	-
79B	DT-S-6,3	Sarnabar	-	-	-	2,23	3,10	32	6,3	-	-	-	-	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter			$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m^3 $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m^3 $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m^3																	

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N_{Rk} [kN] for non-metallic substructures																	
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)		
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	$sd_1^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	C12/15	C25/30	$sd_2^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]	LAC 6 D 1,0	$sd^{4)}$ ≥ [mm]	$pdd^{5)}$ [mm]
80A	IW-S-5,0	Sarnabar	1,08	1,12	2,04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81A	LBS-S-T25-8,0	Sarnabar	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
81B	BS-S-6,1	FI-P-6,8	1,25	2,02	2,22	-	-	-	-	-	-	-	-	0,82	1,37	75	-	-	-	-
82A	BS-S-6,1	FI-P-16,0 / FI-R-20	1,25	2,02	2,22	-	-	-	-	-	-	-	-	0,82	1,37	75	-	-	-	-
82B	LBS-S-T25-8,0	IRD-82x40	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
83A	LBS-T25-8,0	IRD-82x40	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
83B	LBS-T25-8,0	IF/IG-C-82x40	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
84A	IWF-5,2	FI-P-6,8	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
84B	IW-S-5,0	FI-P-6,8	1,08	1,12	2,04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85B	DT-4,8	ID-70x70	-	-	-	2,40	2,56	25	4,8	-	-	-	-	-	-	-	-	-	-	-
86A	DT-6,3	ID-70x70	-	-	-	2,93	3,68	32	6,3	-	-	-	-	-	-	-	-	-	-	-
86B	DT-4,8	R75	-	-	-	1,39	1,39	25	4,8	-	-	-	-	-	-	-	-	-	-	-
87A	DT-S-4,8	R75	-	-	-	1,39	1,39	25	4,8	-	-	-	-	-	-	-	-	-	-	-
89A	BS-4,8	Isolfast SQT	1,45	1,32	1,45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89B	Sarnafast SF-4,8	IF/IG-C-82x40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90A	LBS-T25-8,0	Sarnabar	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-
90B	Sarnafast SBF-6,0	Sarnaweld disc 6,8	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
91A	Sarnafast SBF-6,0	Sarnaweld disc 16 / Sarnabar Tube SBT-20	1,32	2,16	2,11	0,72	1,45	32	5,0	-	-	-	-	0,35	0,58	75	-	-	-	-
91B	Sarnafast SBF- S-6,0	Sarnaweld disc 6,8	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
92A	Sarnafast SBF-S-6,0	Sarnaweld disc 16 / Sarnabar Tube SBT-20	1,25	2,02	2,22	0,42	0,84	32	5,0	-	-	-	-	0,82	1,37	75	-	-	-	-
92B	IR2-S-4,8	Sarnabar	1,12	1,90	1,88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
93B	TI-6,3	Sarnabar	-	-	-	1,83	1,83	20	5,0	2,73	3,79	30	5,0	-	-	-	-	-	-	-
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter			$t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m ³ $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m ³ $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m ³																	

Combination	SFS Flat roof fasteners		Characteristic axial loading resistance N _{Rk} [kN] for non-metallic substructures																		
			Timber			Concrete (EN 206-1)								Aerated Concrete (DIN 4223-1)				Pumice Panel (EN 1520)			
	Fastener	Stress Plate / Sleeve / Bar	OSB3 ¹⁾	C24 ²⁾	Ply ³⁾	C12/15	C25/30	sd _i ⁴⁾ ≥ [mm]	pdd ⁵⁾ [mm]	C12/15	C25/30	sd ₂ ⁴⁾ ≥ [mm]	pdd ⁵⁾ [mm]	P3.3 density ≥ 0,45	P4.4 density ≥ 0,55	sd ⁴⁾ ≥ [mm]	pdd ⁵⁾ [mm]	LAC 6 D 1,0	sd ⁴⁾ ≥ [mm]	pdd ⁵⁾ [mm]	
94A	IR2-4,8	Sarnafast KT-82x40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
98A	BS-4,8	MW-40-R	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
98B	IWF-5,2	IRC/W-82×40	1,35	1,94	2,20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
99A	BS-4,8	Sarnafast KT-82×40	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
99B	TI-6,3	Sarnafast KTL-82×40	-	-	-	1,83	1,83	20	5,0	2,56	2,56	30	5,0	-	-	-	-	-	-	-	
100A	LBS-T25-8,0	RG50	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-	
100B	LBS-S-T25-8,0	RG50	-	-	-	-	-	-	-	-	-	-	-	0,93	1,44	60	-	-	-	-	
101A	FB-S-T25-7,5	RG50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0,59	50	4,8	
102A	BS-4,8	TPA50	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
103A	TI-T25-6,3	TPA50	-	-	-	1,83	1,83	20	5,0	2,73	3,08	30	5,0	-	-	-	-	-	-	-	
103B	TIA-T25-6,3	TPA50	-	-	-	1,83	1,83	20	5,0	-	-	-	-	-	-	-	-	-	-	-	
104A	TS-T25-6,0	TPA50	1,31	1,43	2,30	0,44	0,89	32	5,0	3,07	3,08	50	5,0	1,07	1,78	75	-	-	-	-	
104B	BS-4,8	TPA-P-70 / TPA50	1,45	1,32	2,18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
105B	TI-T25-6,3	TPA-P-70 / TPA50	-	-	-	1,83	1,83	20	5,0	2,73	3,08	30	5,0	-	-	-	-	-	-	-	
106A	TIA-T25-6,3	TPA-P-70 / TPA50	-	-	-	1,83	1,83	20	5,0	-	-	-	-	-	-	-	-	-	-	-	
106B	TS-T25-6,0	TPA-P-70 / TPA50	1,31	1,43	2,30	0,44	0,89	32	5,0	3,07	3,08	50	5,0	1,07	1,78	75	-	-	-	-	
¹⁾ OSB3 (EN 300), ²⁾ C24/Structural Timber (EN 338), ³⁾ Plywood (EN 636), ⁴⁾ sd = setting depth ⁵⁾ pdd = pre-drill diameter t ≥ 18mm, effective setting depth (penetration length of threaded part) ≥ 18mm, minimum density = 550kg/m³ t ≥ 22mm, effective setting depth (penetration length of threaded part) ≥ 22mm, minimum density = 350kg/m³ t ≥ 18mm, effective setting depth (penetration length of threaded part) ≥ 18mm, minimum density = 400kg/m³																					