

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

European Technical Assessment

ETA-08/0262

English translation prepared by DIBt

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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+

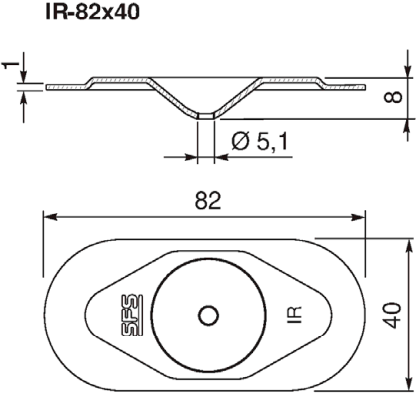
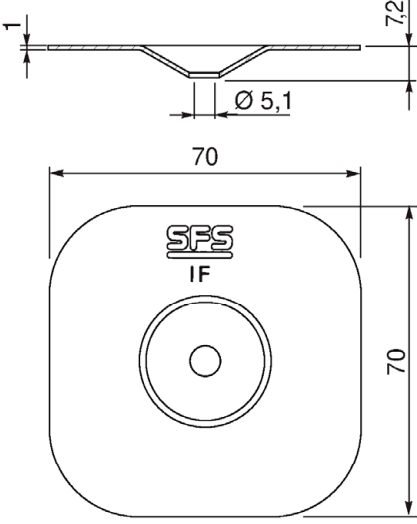
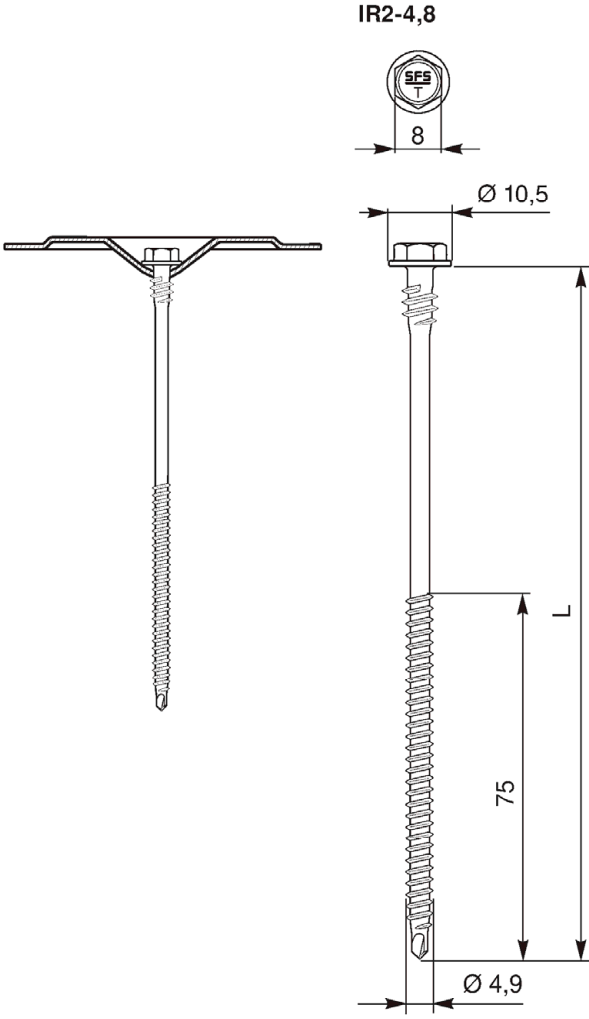
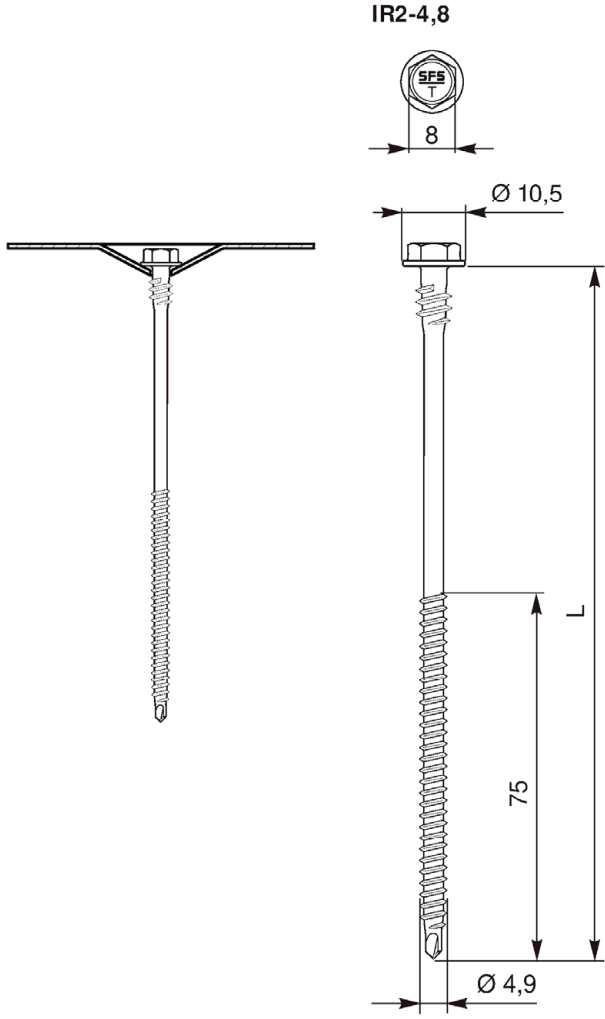
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

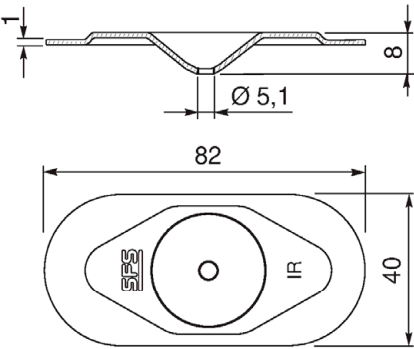
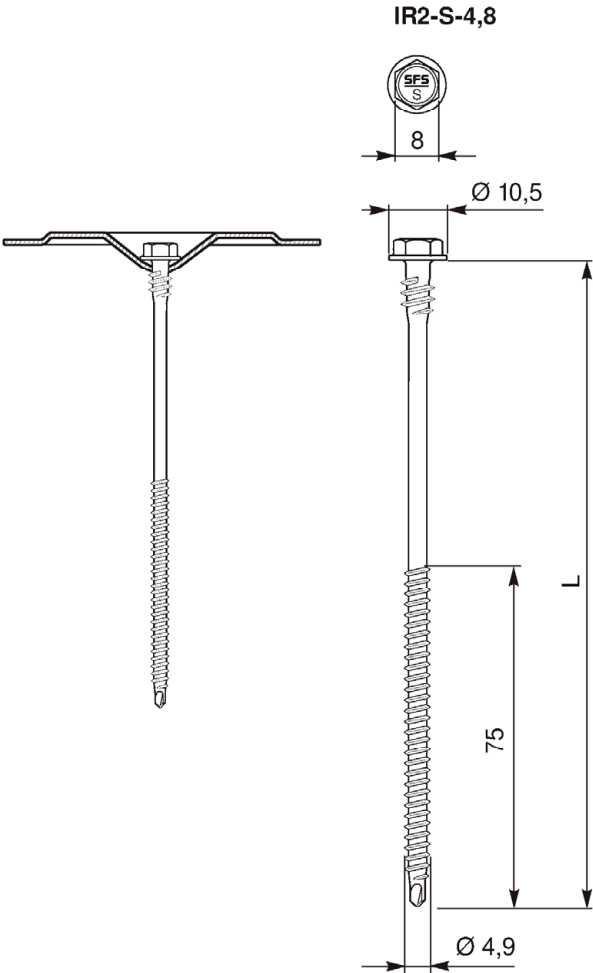
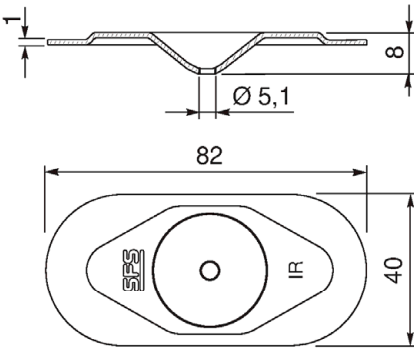
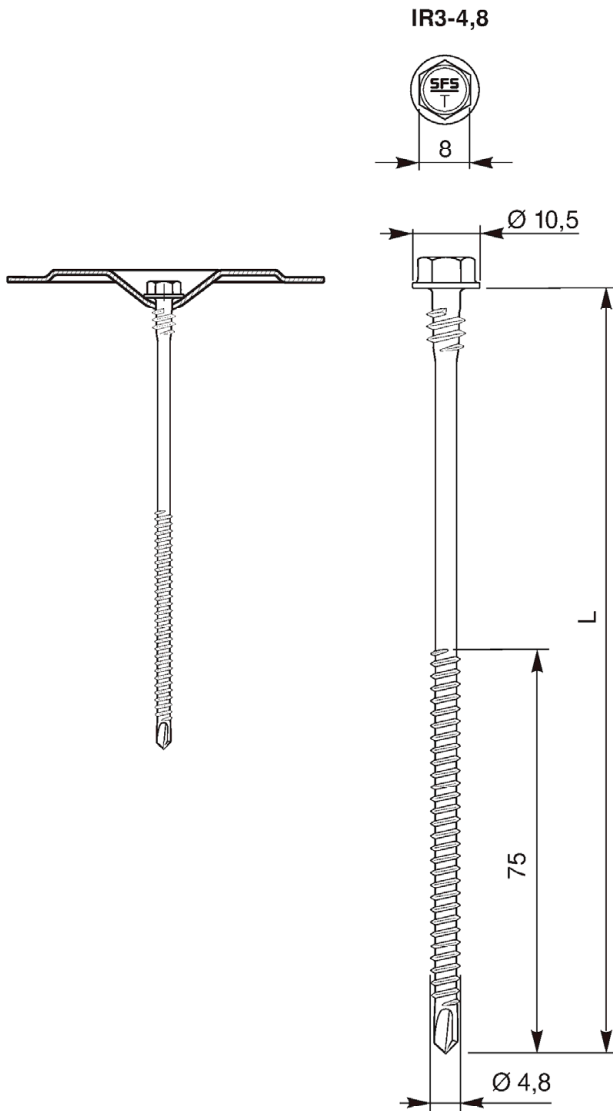
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

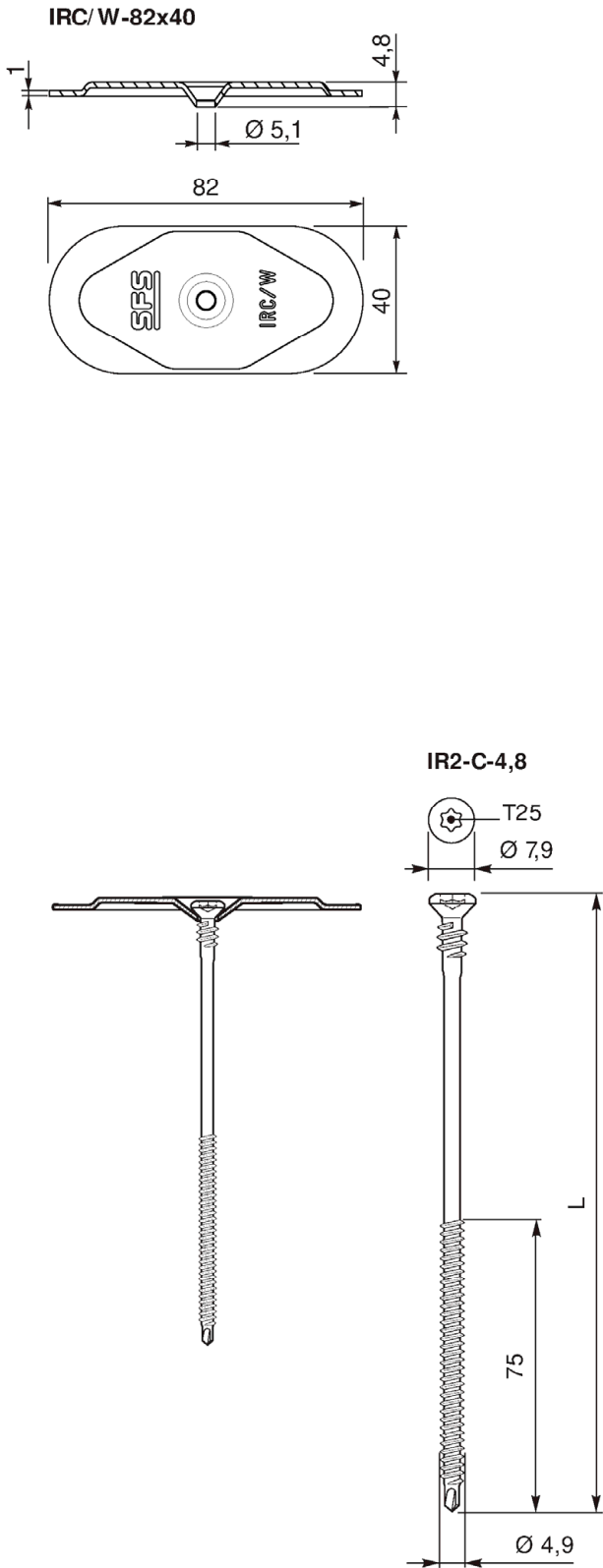
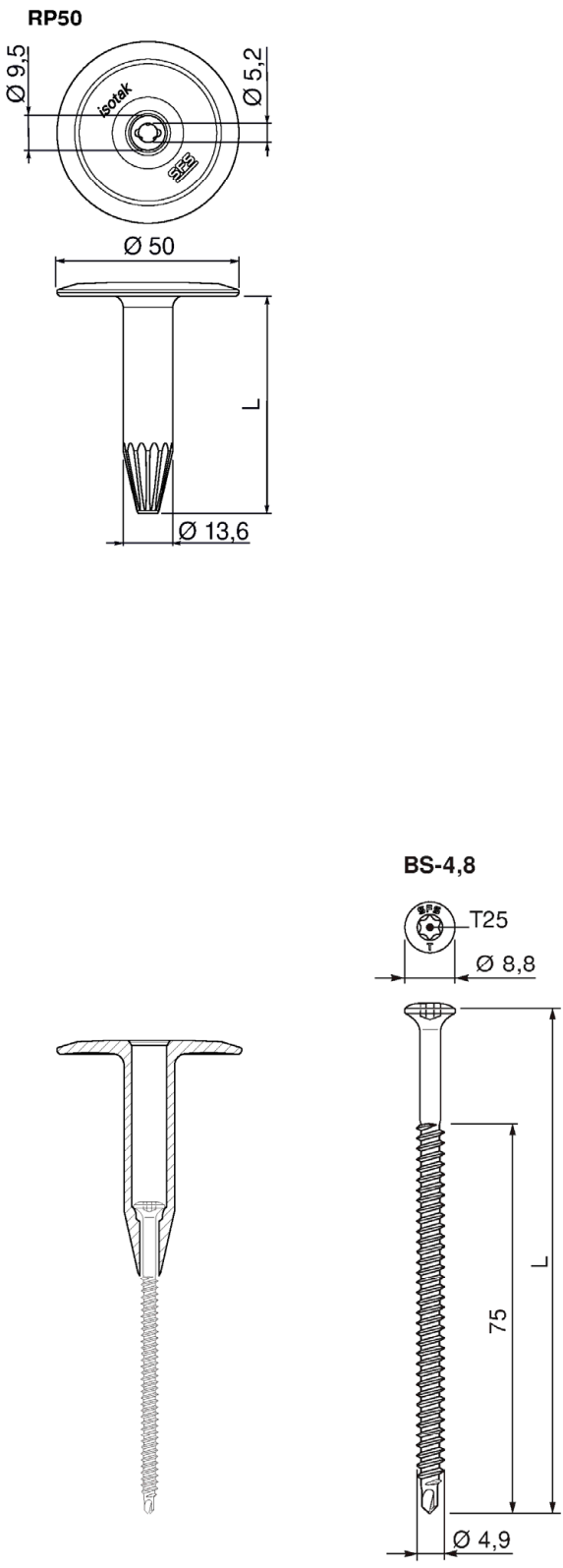
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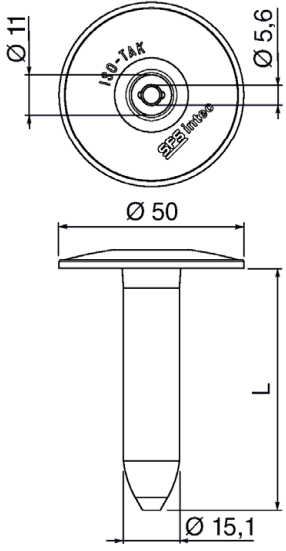
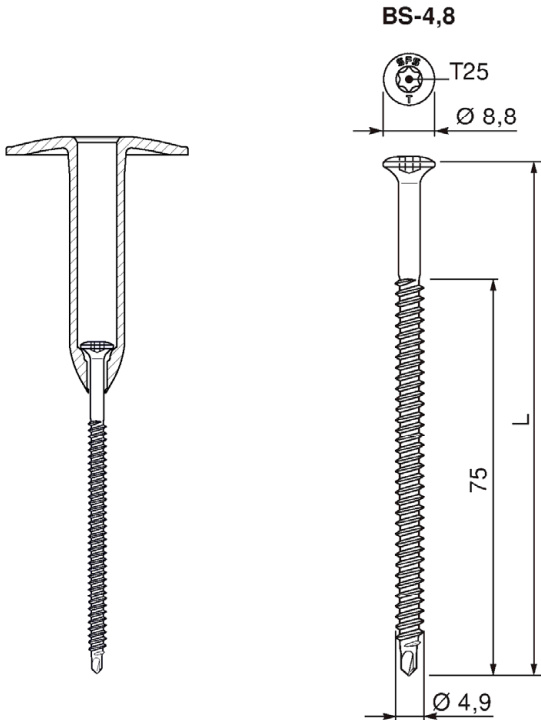
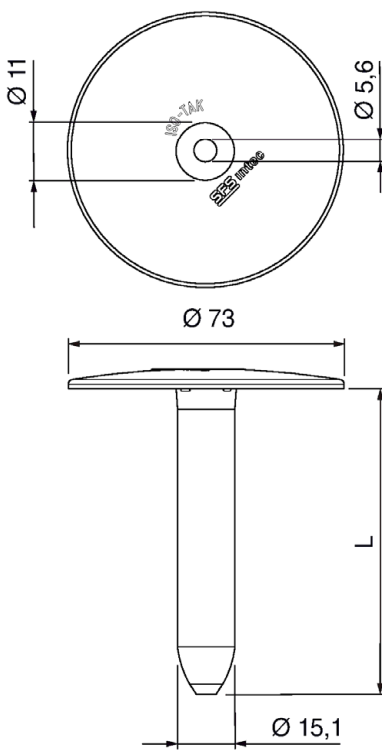
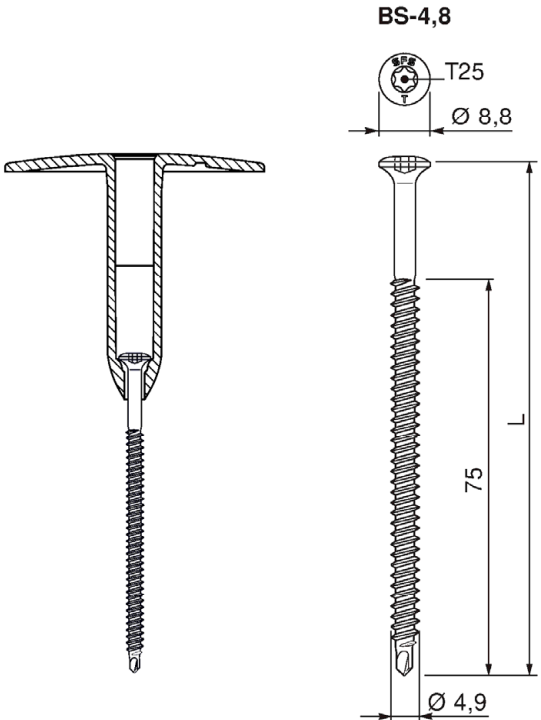
Andreas Schult
Head of Section

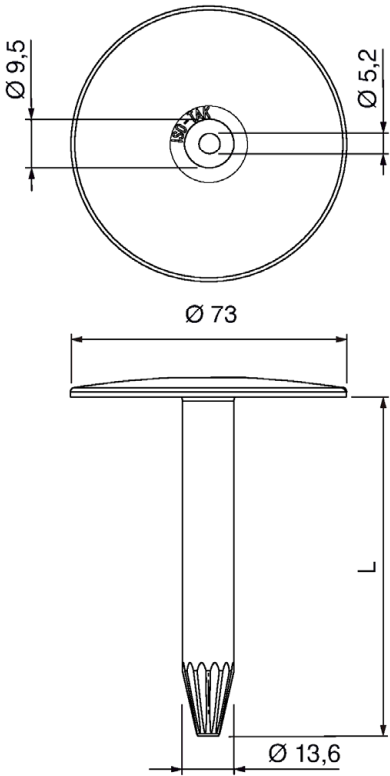
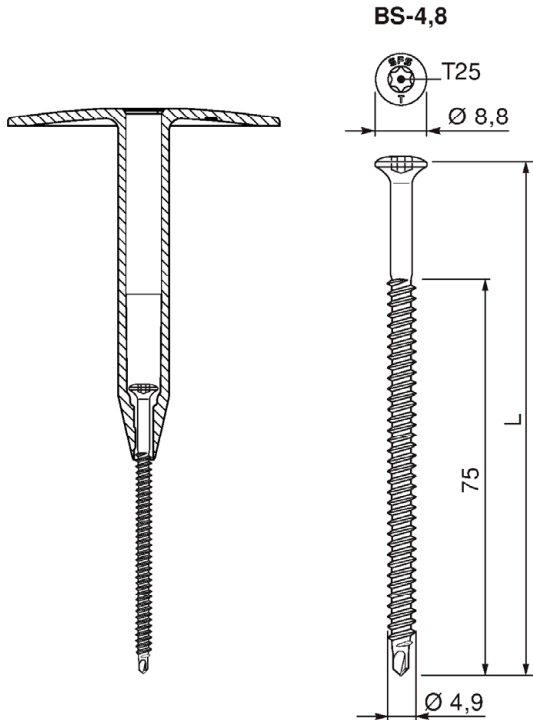
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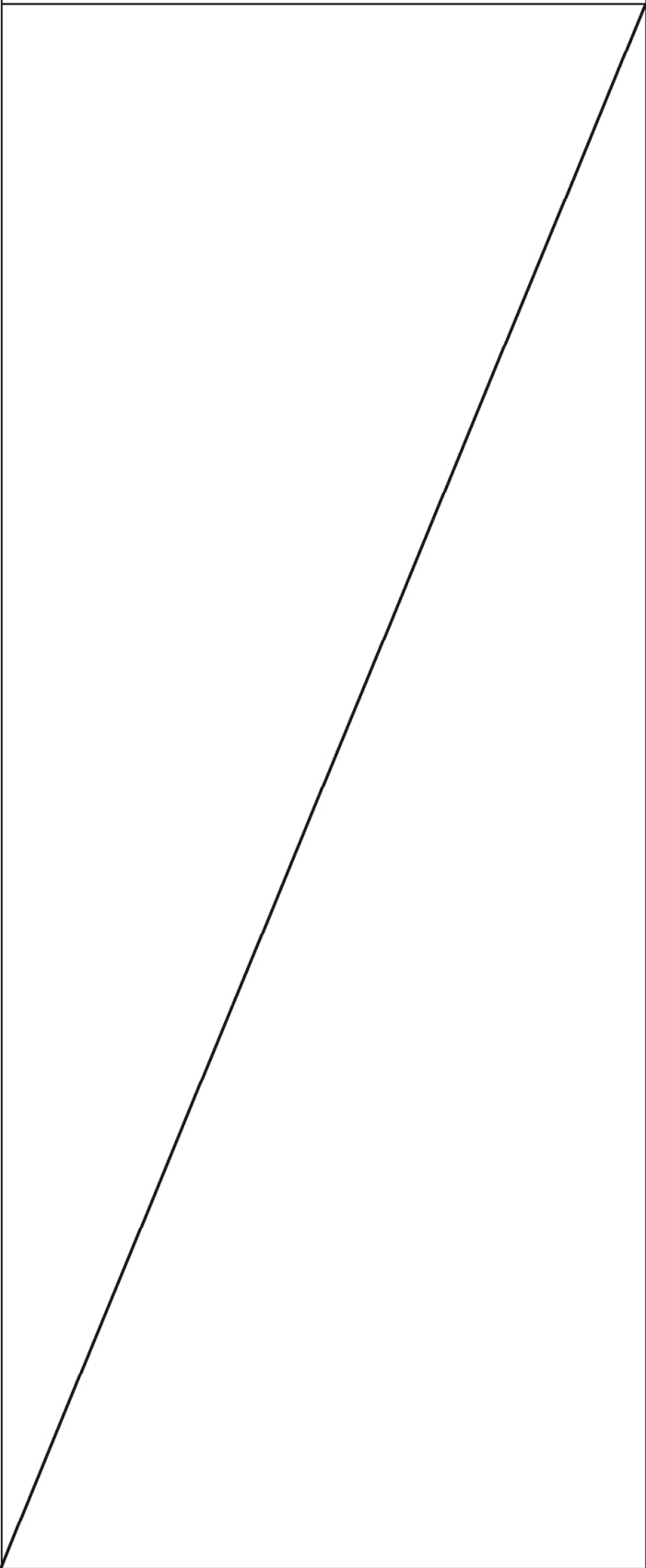
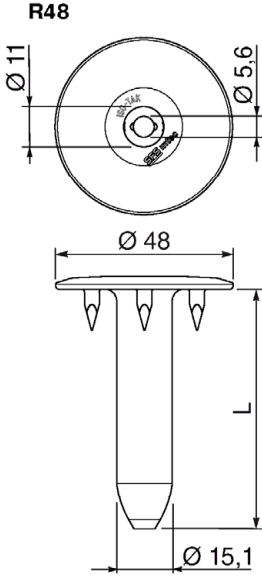
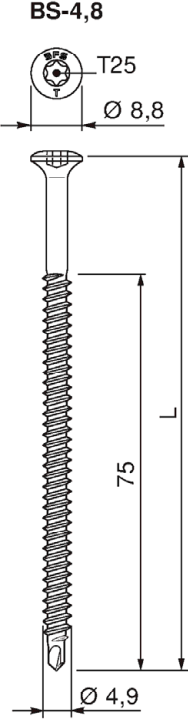
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IR-82x40 		IF-70x70 	
IR2-4,8 		IR2-4,8 	
SFS Flat roof fasteners			Annex 1

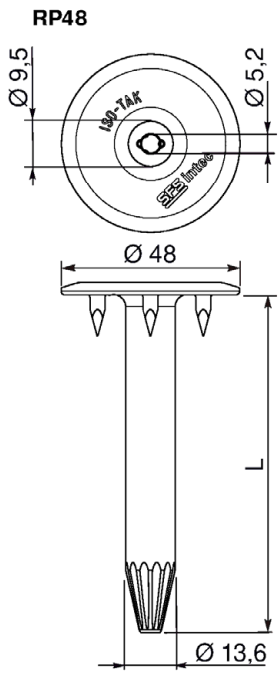
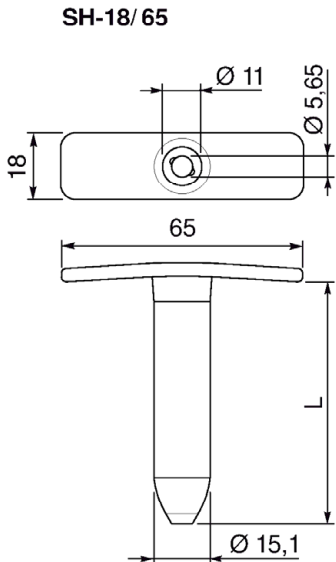
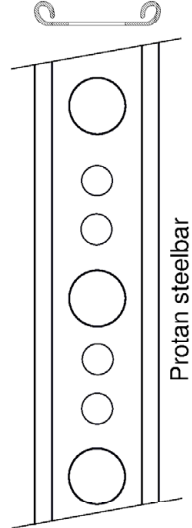
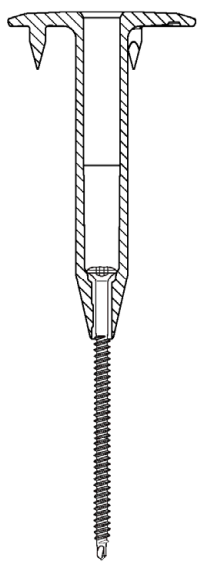
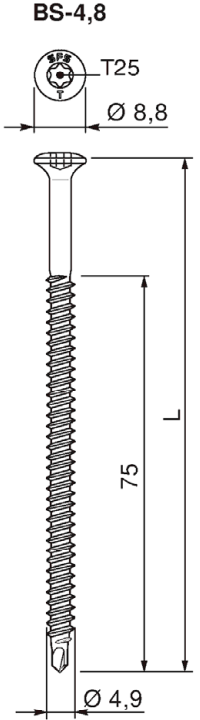
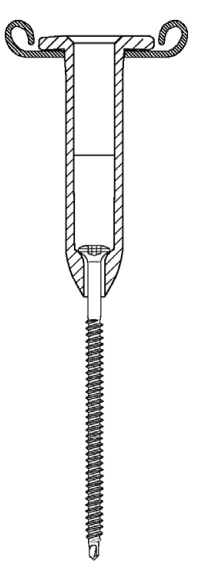
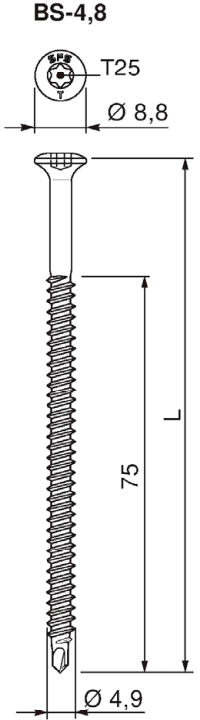
Combination 2A IR2-S-4,8 / IR-82x40	Combination 2B IR3-4,8 / IR-82x40
IR-82x40  IR2-S-4,8 	IR-82x40  IR3-4,8 
SFS Flat roof fasteners	Annex 2

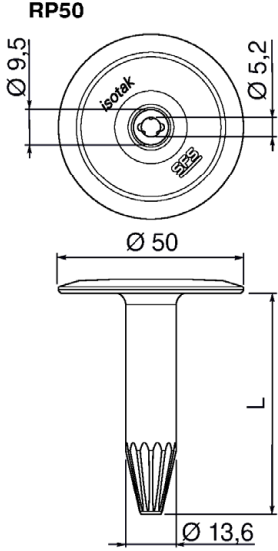
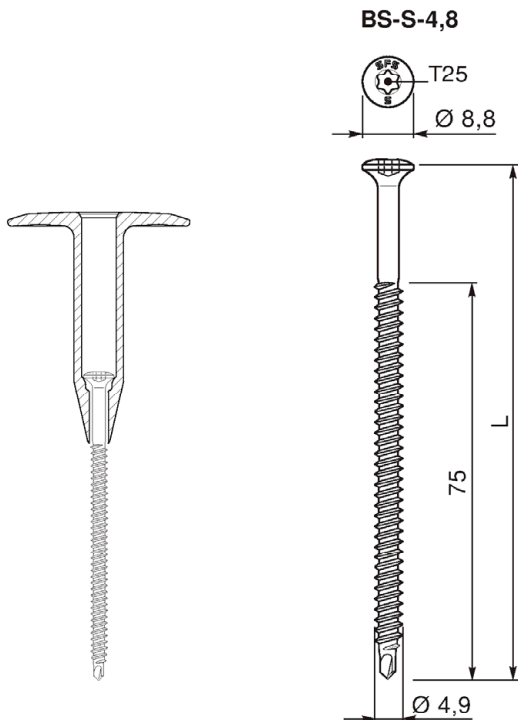
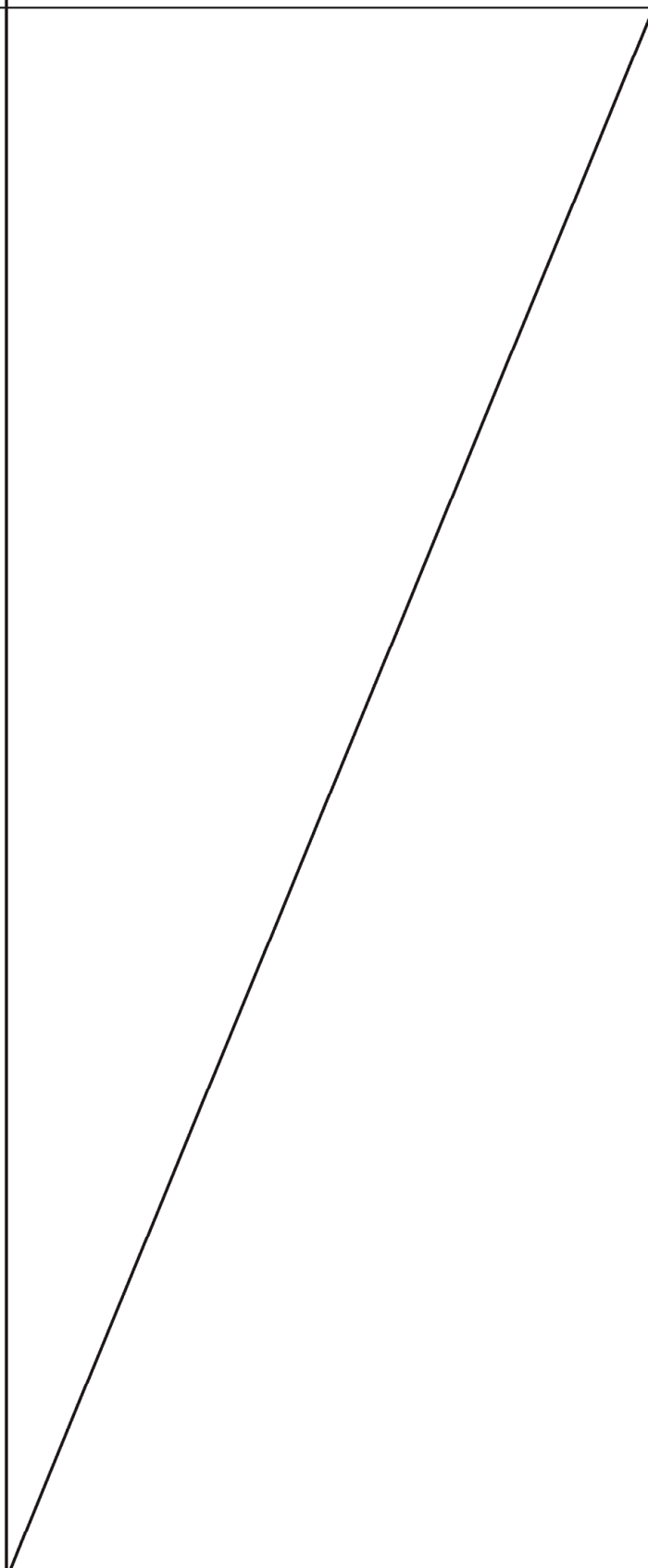
Combination 3A IR2-C-4,8 / IRC/W-82×40 	Combination 3B BS-4,8 / RP50 
SFS Flat roof fasteners	Annex 3

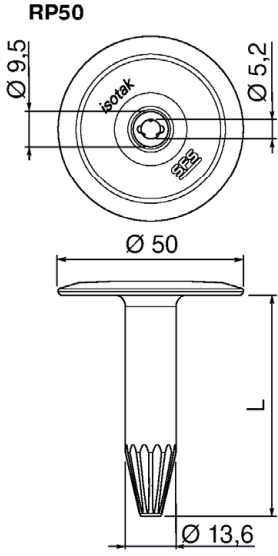
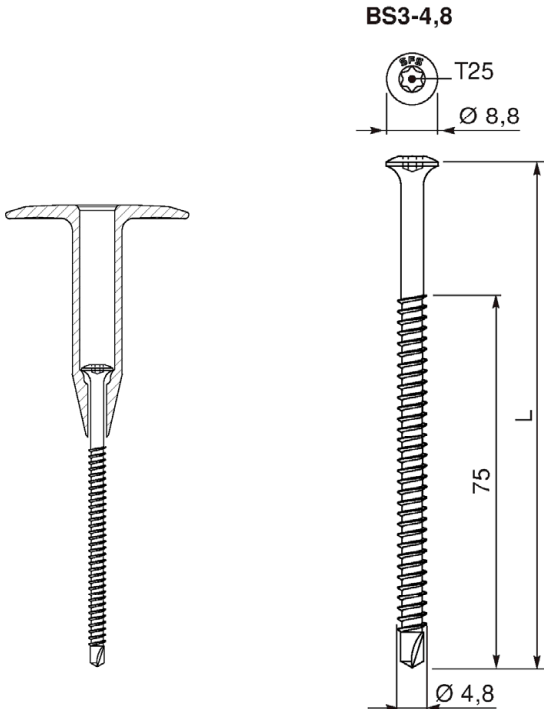
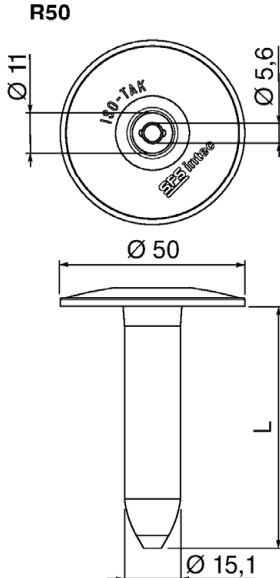
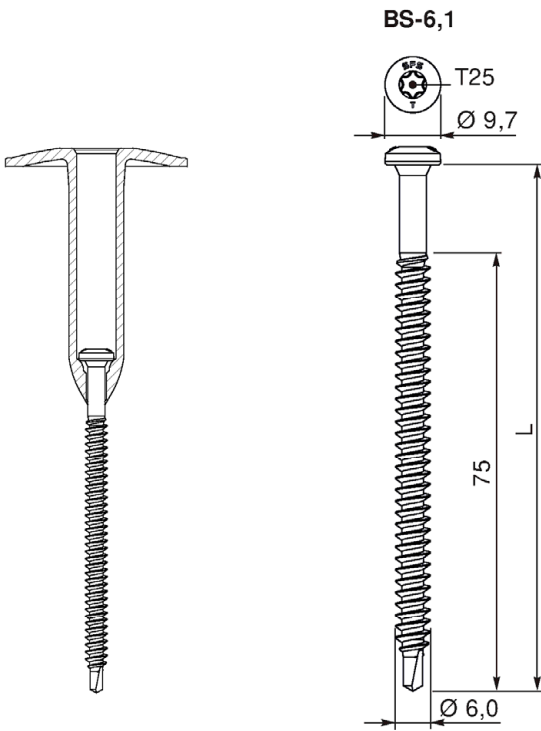
Combination 4A BS-4,8 / R50		Combination 4B BS-4,8 / R75	
R50  BS-4,8 		R75  BS-4,8 	
SFS Flat roof fasteners		Annex 4	

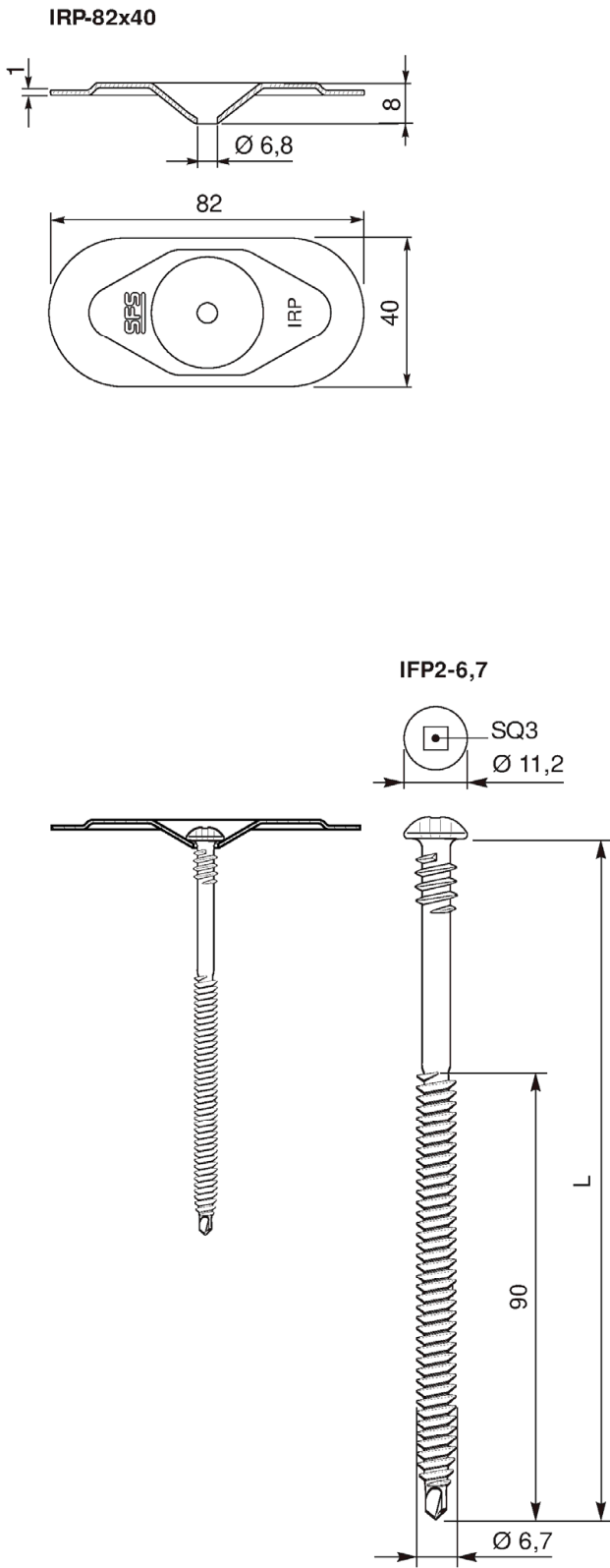
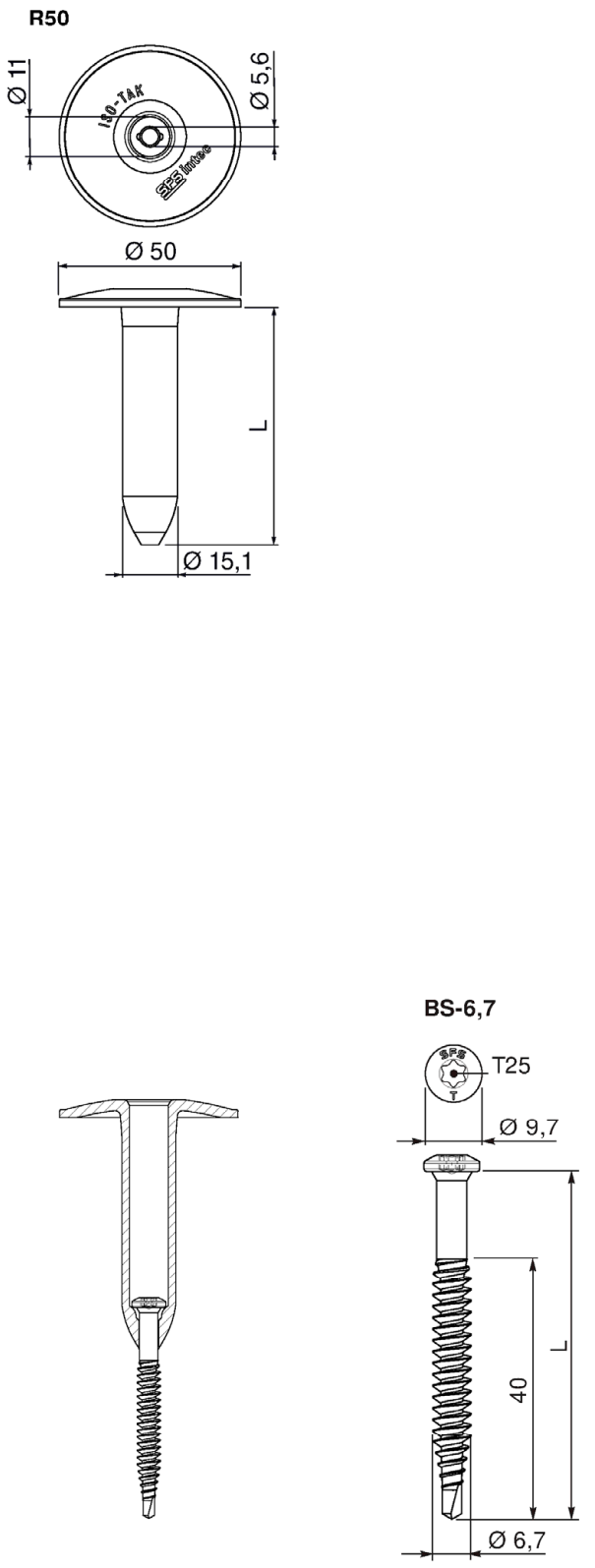
Combination 5A BS-4,8 / RP75	Combination 5B No longer in product range
RP75  BS-4,8 	
SFS Flat roof fasteners	Annex 5

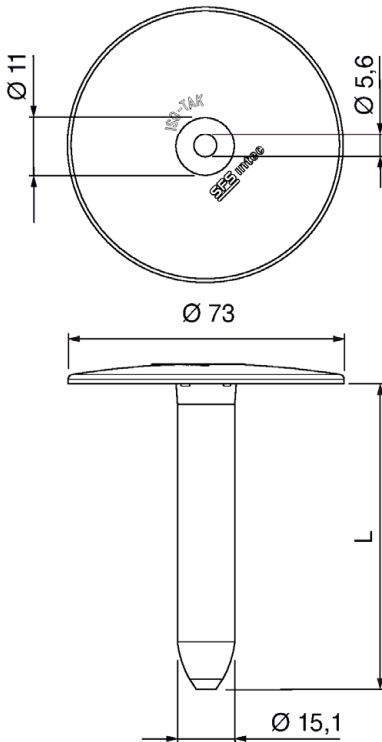
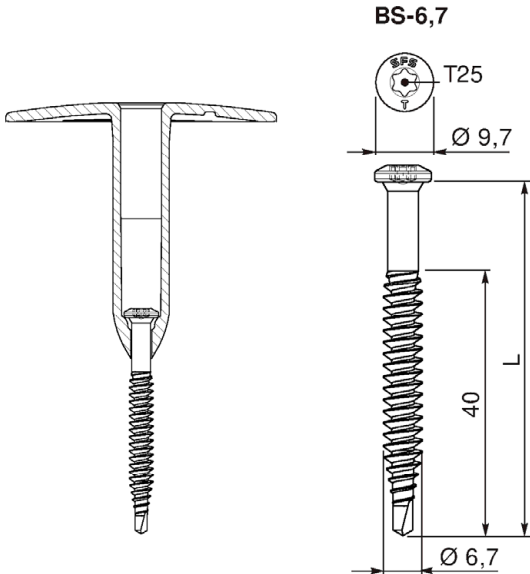
Combination 6A No longer in product range	Combination 6B BS-4,8 / R48
	R48  BS-4,8 
SFS Flat roof fasteners	Annex 6

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

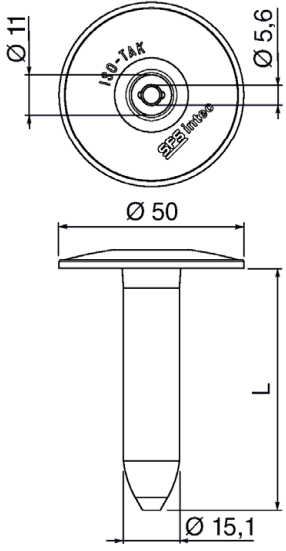
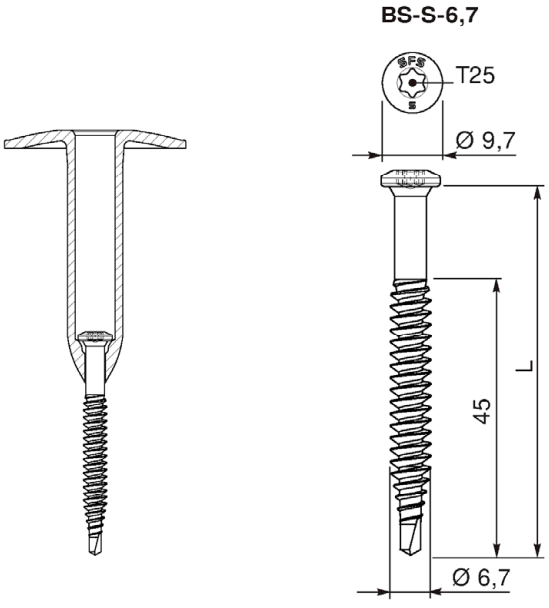
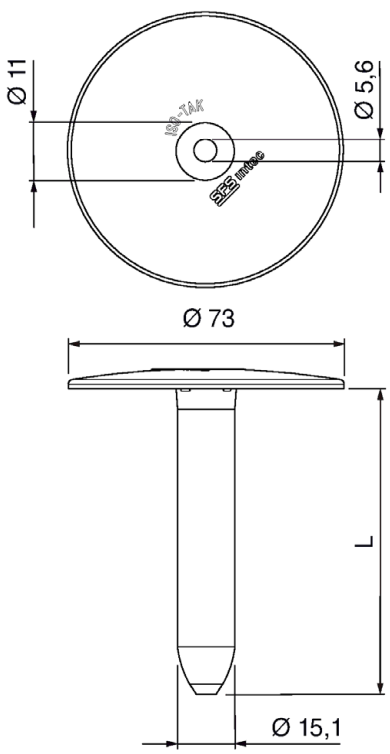
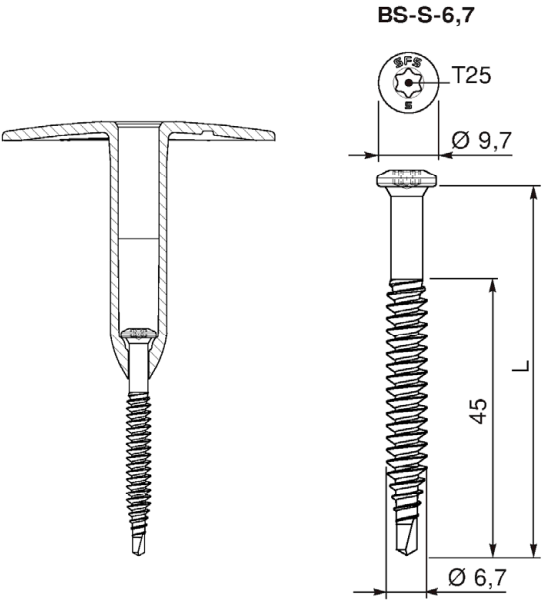
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RP50  BS-S-4,8 			
SFS Flat roof fasteners			

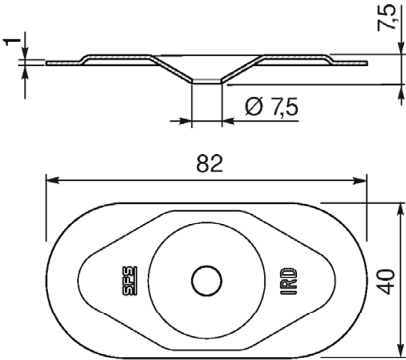
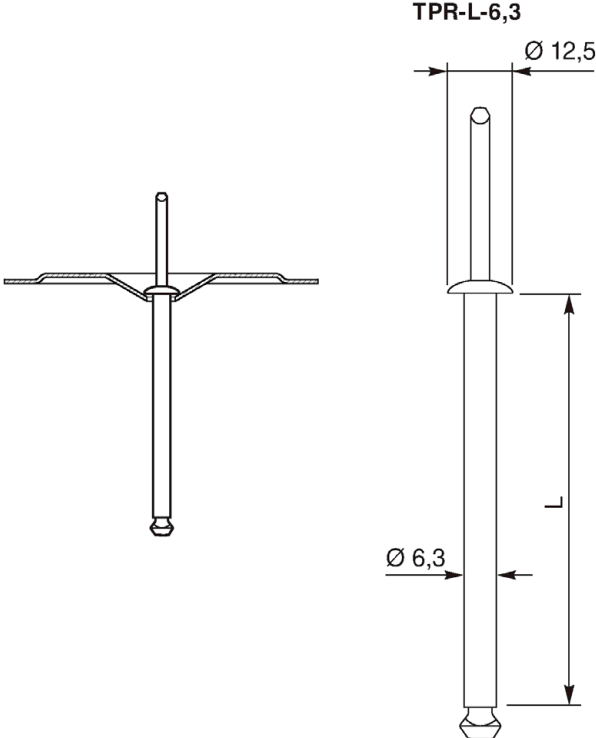
Combination 9A BS3-4,8 / RP50  RP50 Technical drawing of the RP50 fastener showing top and side views. The top view shows a circular head with a central hole, dimensions Ø 9,5 and Ø 5,2, and the text 'isotak' and 'SFS'. The side view shows a cylindrical body with a flange, dimensions Ø 50 and Ø 13,6, and a length L.  BS3-4,8 Technical drawing of the BS3-4,8 fastener showing top and side views. The top view shows a circular head with a central hole, dimensions T25 and Ø 8,8. The side view shows a threaded body with a flange, dimensions 75 and Ø 4,8, and a length L.	Combination 9B BS-6,1 / R50  R50 Technical drawing of the R50 fastener showing top and side views. The top view shows a circular head with a central hole, dimensions Ø 11 and Ø 5,6, and the text 'ISO-TAK' and 'SFS'. The side view shows a cylindrical body with a flange, dimensions Ø 50 and Ø 15,1, and a length L.  BS-6,1 Technical drawing of the BS-6,1 fastener showing top and side views. The top view shows a circular head with a central hole, dimensions T25 and Ø 9,7. The side view shows a threaded body with a flange, dimensions 75 and Ø 6,0, and a length L.
SFS Flat roof fasteners	Annex 9

Combination 10A IFP2-6,7 / IRP-82×40  The drawings show the IRP-82x40 fastener in side and top views. The side view shows a base plate with a central hole of diameter 6.8 mm and a total width of 82 mm. The top view shows an oval shape with a central hole and a width of 40 mm. The IFP2-6,7 fastener is shown in side and top views. The side view shows a threaded rod with a length of 90 mm and a diameter of 6.7 mm. The top view shows a circular head with a diameter of 11.2 mm and a central hole of diameter 3 mm.	Combination 10B BS-6,7 / R50  The drawings show the R50 fastener in side and top views. The side view shows a base plate with a diameter of 50 mm and a central hole of diameter 15.1 mm. The top view shows a circular head with a diameter of 11 mm and a central hole of diameter 5.6 mm. The BS-6,7 fastener is shown in side and top views. The side view shows a threaded rod with a length of 40 mm and a diameter of 6.7 mm. The top view shows a circular head with a diameter of 9.7 mm and a central hole of diameter 2.5 mm.
SFS Flat roof fasteners	Annex 10

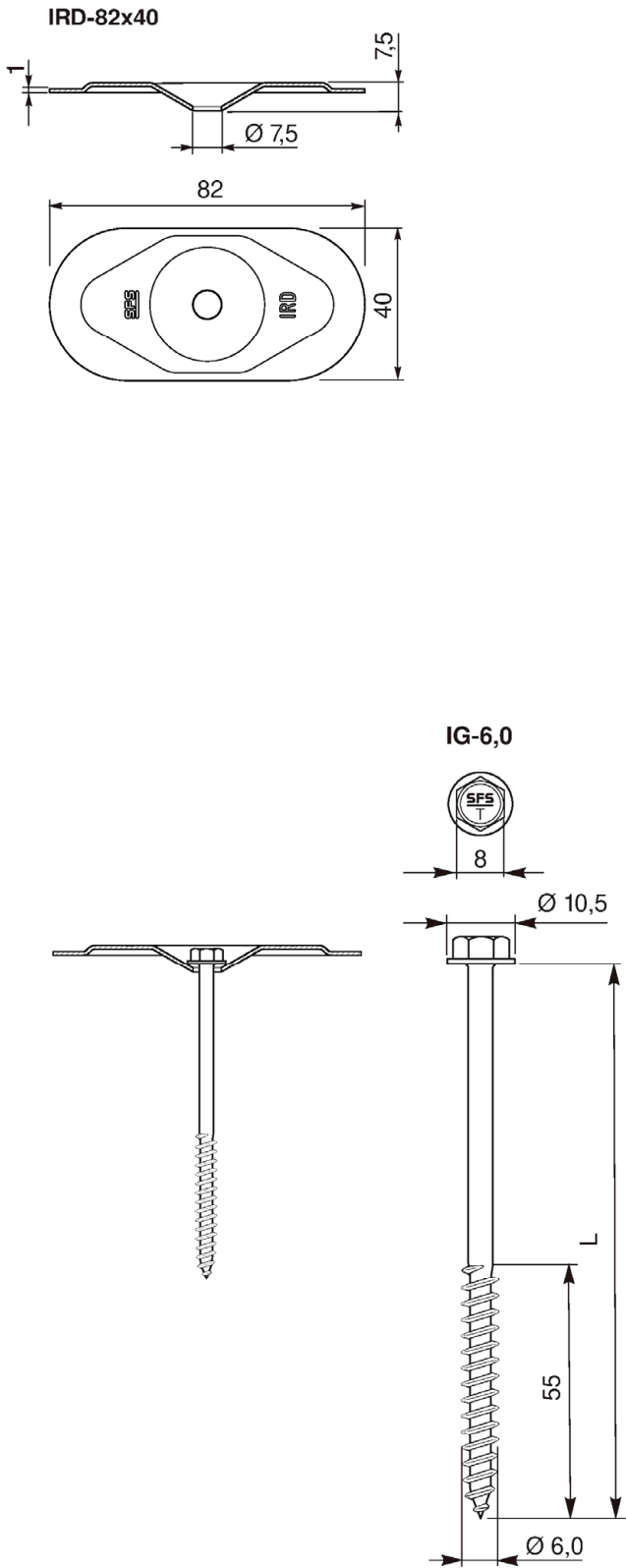
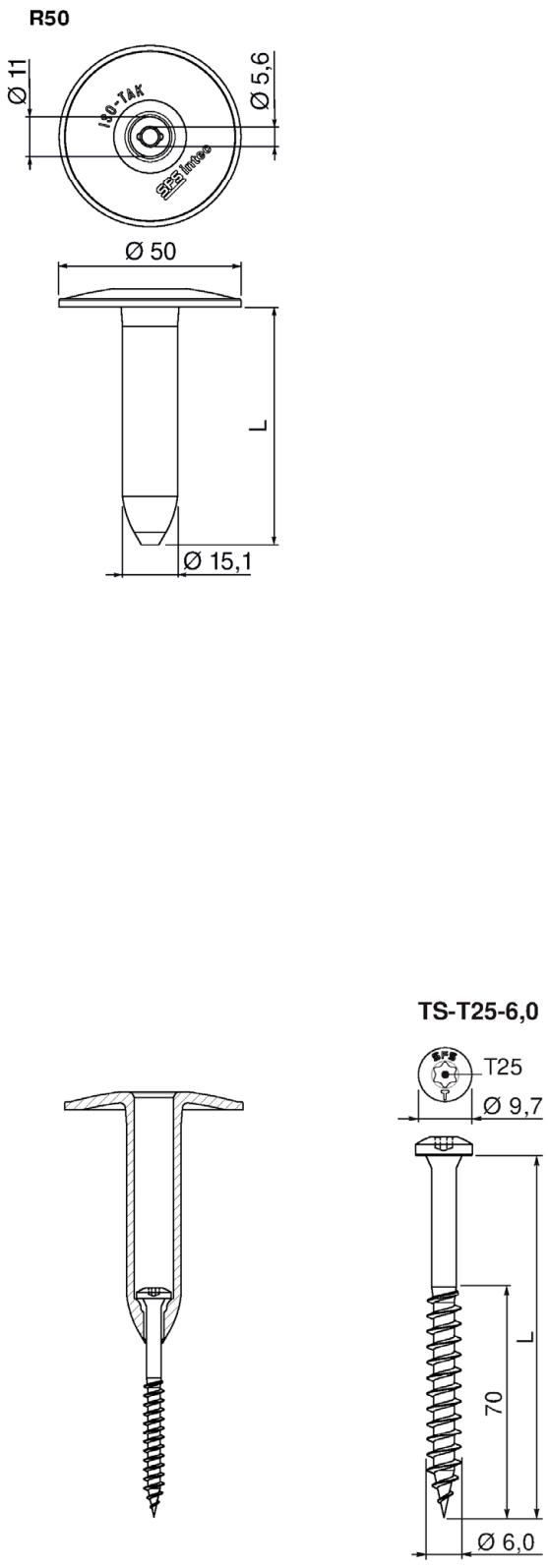
Combination 11A BS-6,7 / R75		Combination 11B No longer in product range	
R75  BS-6,7 			
SFS Flat roof fasteners			
		Annex	11

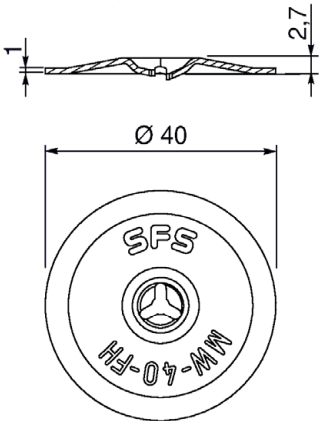
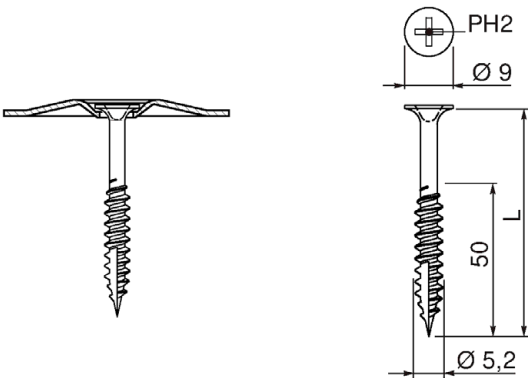
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Combination 12A BS-S-6,7 / R50		Combination 12B BS-S-6,7 / R75	
R50  BS-S-6,7 		R75  BS-S-6,7 	
SFS Flat roof fasteners		Annex 12	

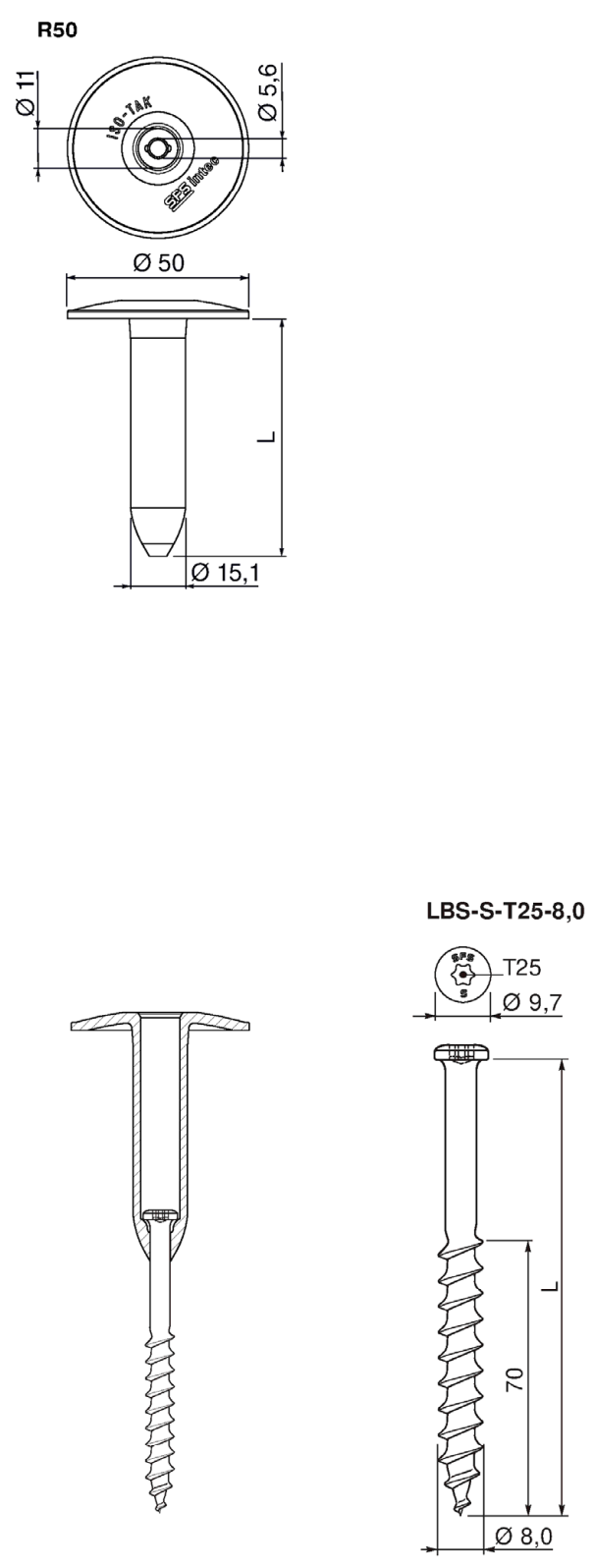
Combination 13A No longer in product range	Combination 13B TPR-L-6,3 / IRD-82x40
	IRD-82x40  TPR-L-6,3 
SFS Flat roof fasteners	Annex 13

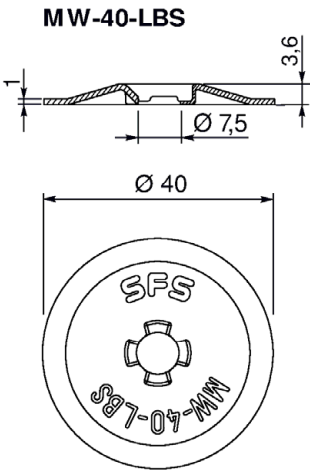
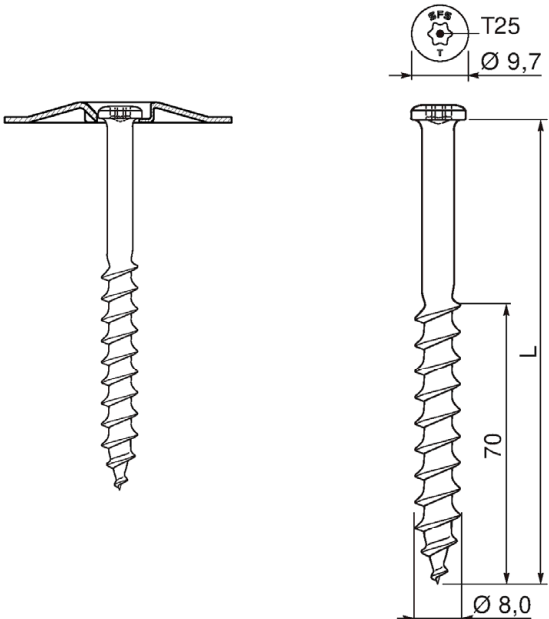
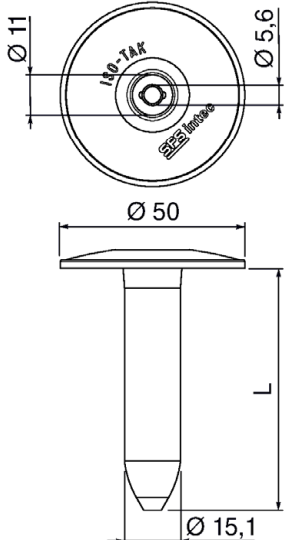
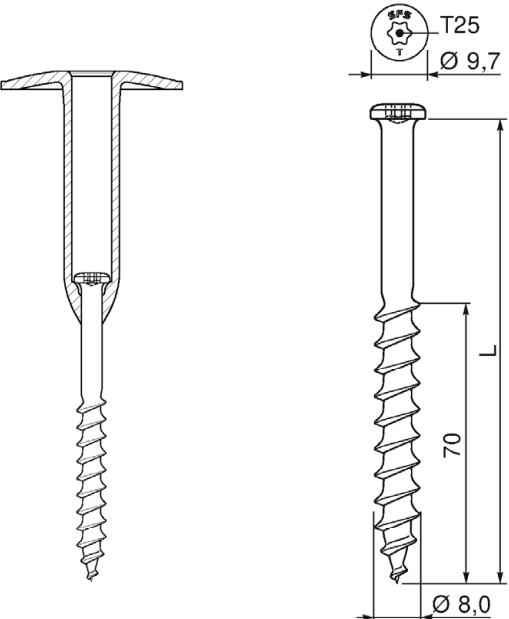
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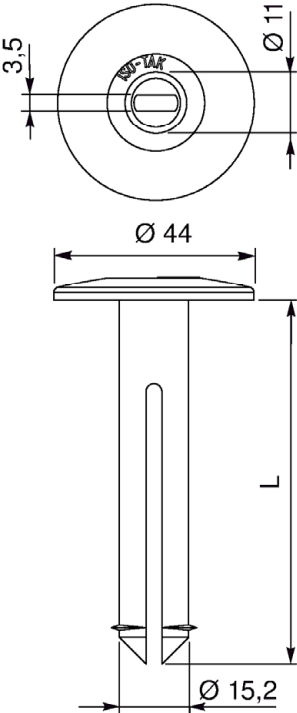
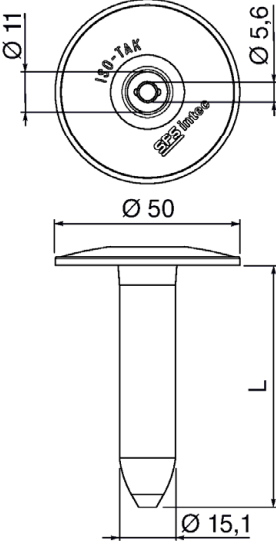
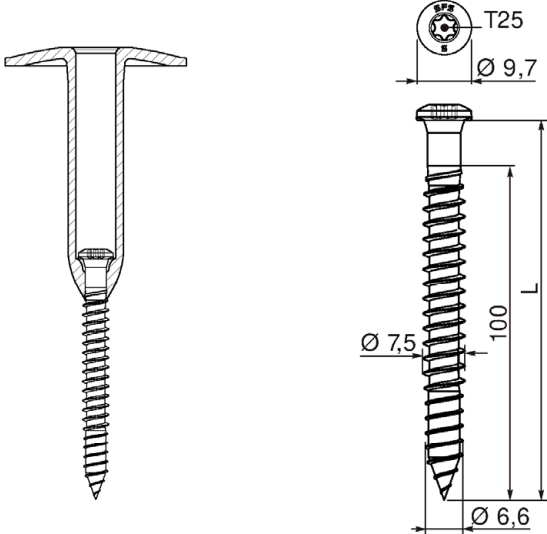
Combination 14A IG-6,0 / IRD-82x40  IRD-82x40 IG-6,0	Combination 14B TS-T25-6,0 / R50  R50 TS-T25-6,0
SFS Flat roof fasteners	Annex 14

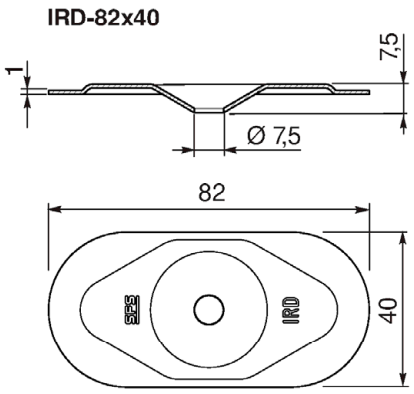
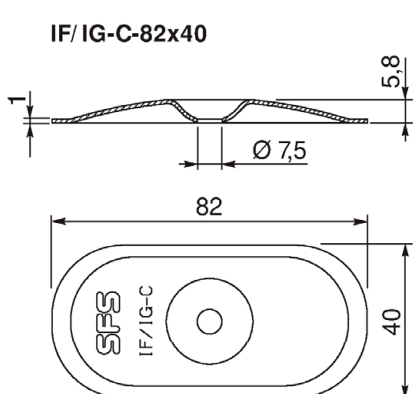
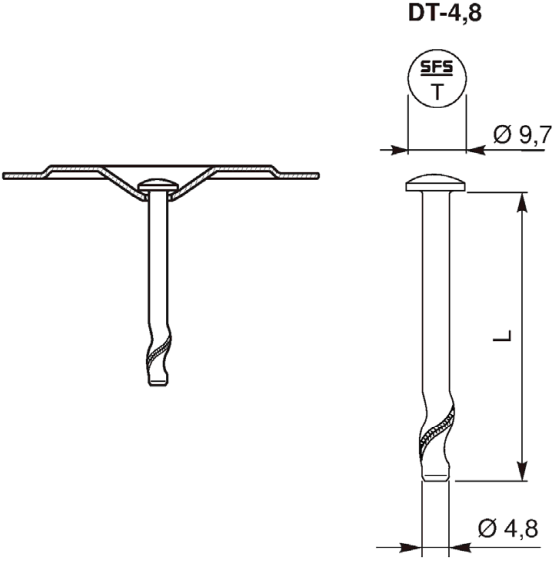
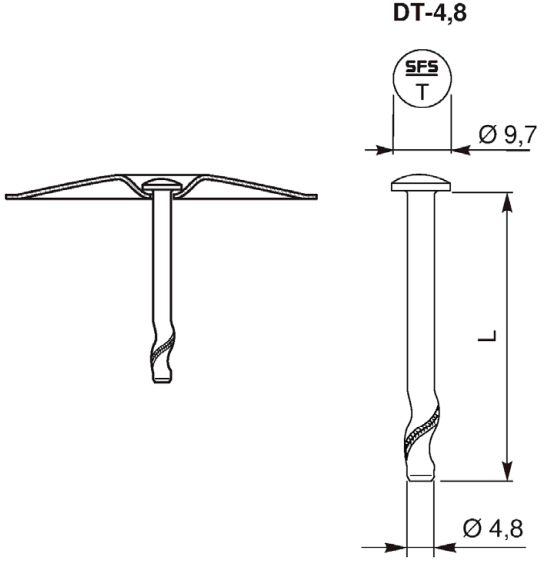
Combination 15A IWF-5,2 / MW-40-FH		Combination 15B No longer in product range	
MW-40-FH  IWF-5,2 			
SFS Flat roof fasteners			

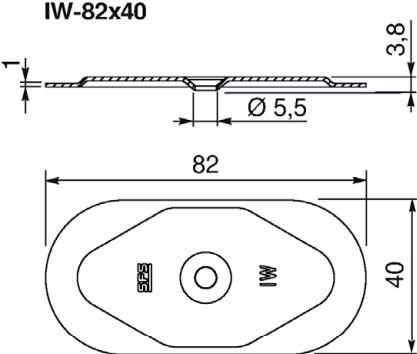
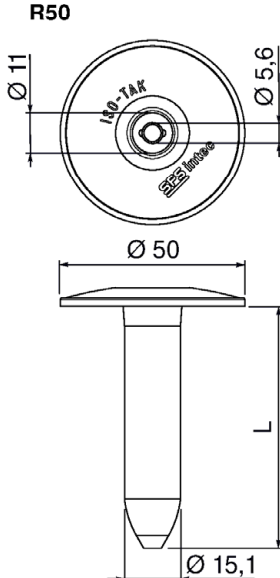
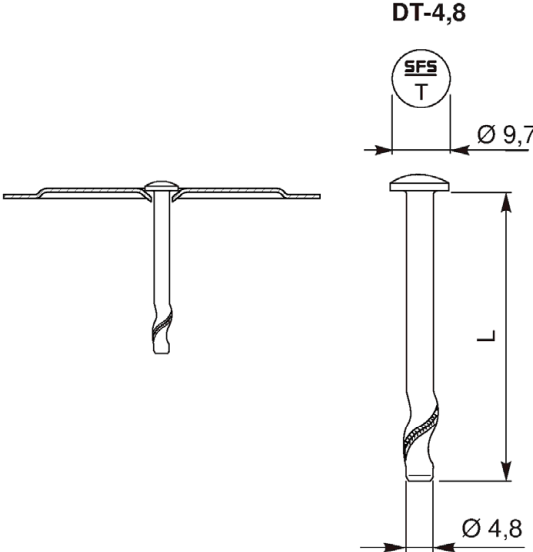
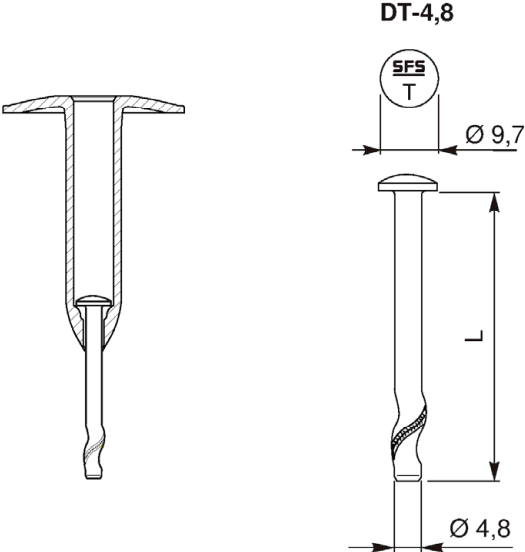
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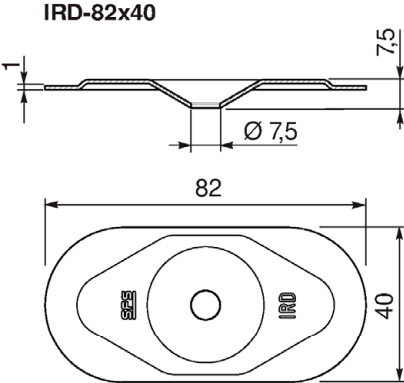
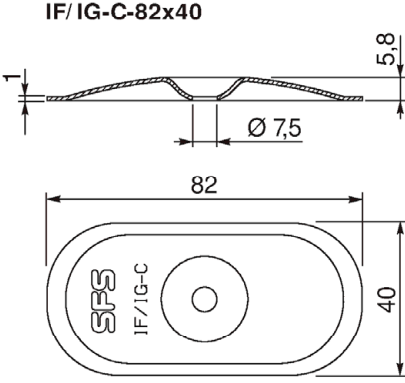
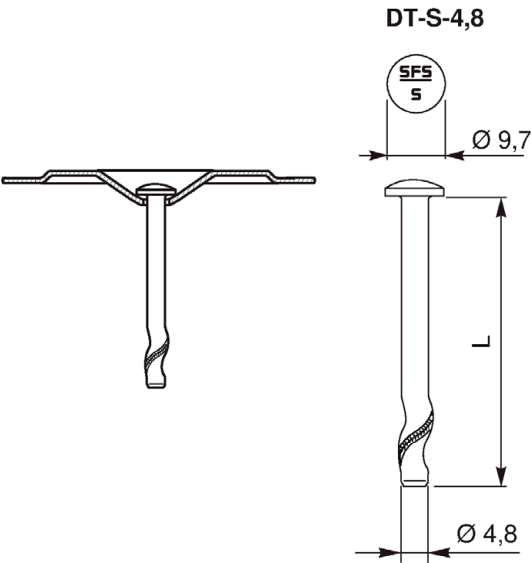
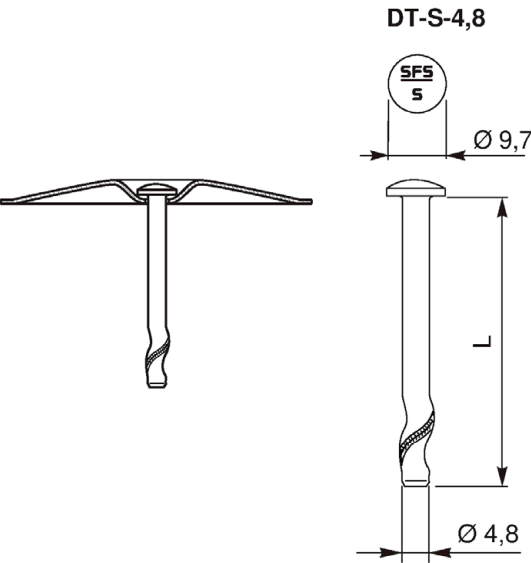
Combination 16A IW-S-5,0 / IRC/W-82x40  The drawings show the IRC/W-82x40 fastener from the side and top views. The side view shows a length of 82 mm, a width of 40 mm, and a hole diameter of 5.1 mm. The top view shows a central hole with a diameter of 5.1 mm and a distance of 4.8 mm from the edge. The IW-S-5,0 fastener is shown in a side view with a length of L, a hole diameter of 9.7 mm, and a base diameter of 5.0 mm. The top view shows a hexagonal head with a diameter of 9.7 mm and a distance of 9.7 mm from the edge.	Combination 16B LBS-S-T25-8,0 / R50  The drawings show the R50 fastener from the top and side views. The top view shows a circular head with a diameter of 50 mm, a hole diameter of 11 mm, and a distance of 5.6 mm from the edge. The side view shows a length of L and a base diameter of 15.1 mm. The LBS-S-T25-8,0 fastener is shown in a side view with a length of L, a hole diameter of 9.7 mm, and a base diameter of 8.0 mm. The top view shows a hexagonal head with a diameter of 9.7 mm and a distance of 9.7 mm from the edge.
SFS Flat roof fasteners	Annex 16

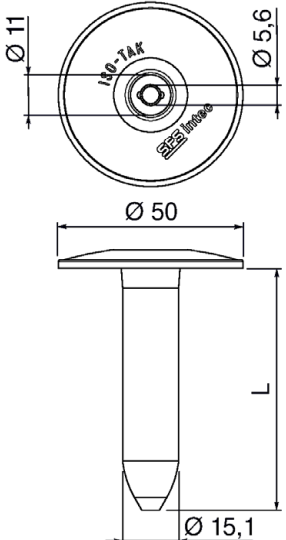
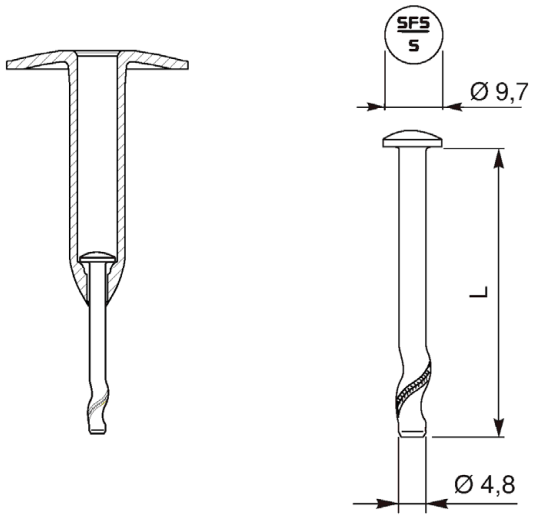
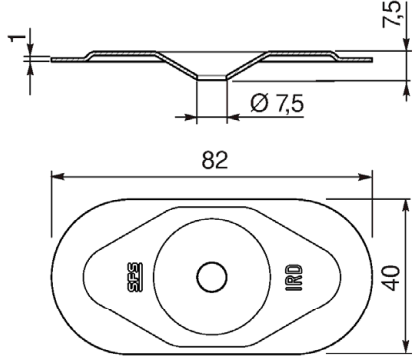
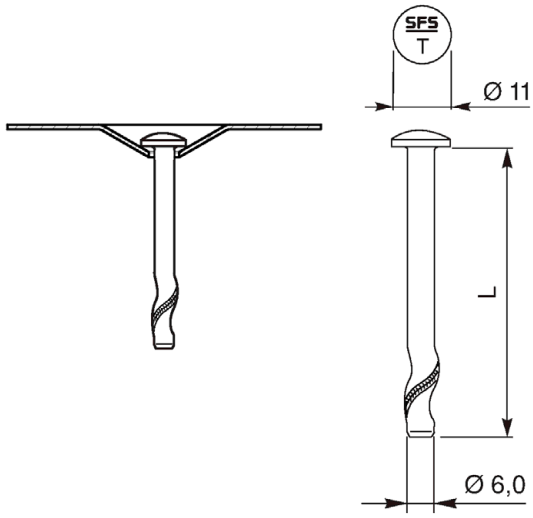
Combination 17A LBS-T25-8,0 / MW-40-LBS		Combination 17B LBS-T25-8,0 / R50	
MW-40-LBS  LBS-T25-8,0 		R50  LBS-T25-8,0 	
SFS Flat roof fasteners		Annex 17	

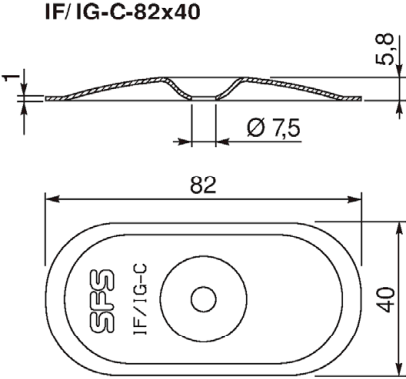
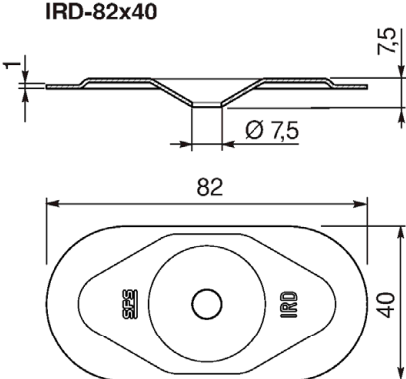
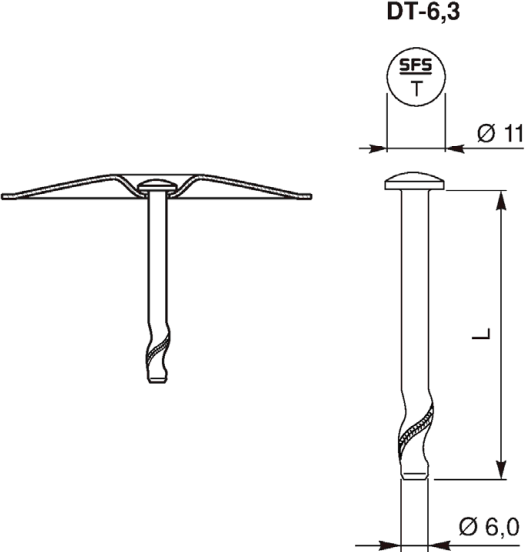
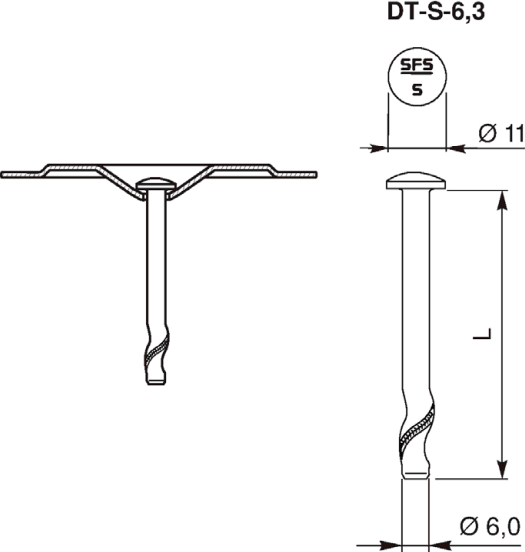
Combination 18A LB45	Combination 18B FB-S-T25-7,5 / R50
LB45 	R50  FB-S-T25-7,5 
SFS Flat roof fasteners	Annex 18

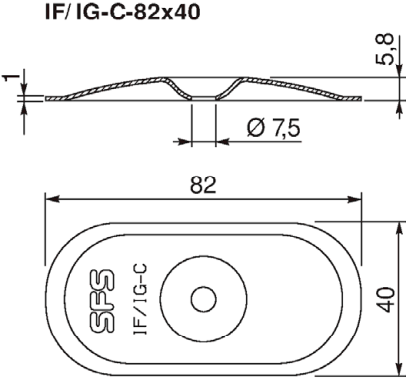
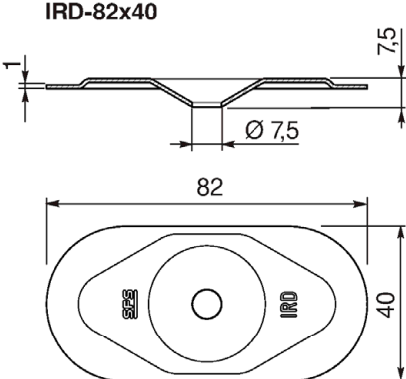
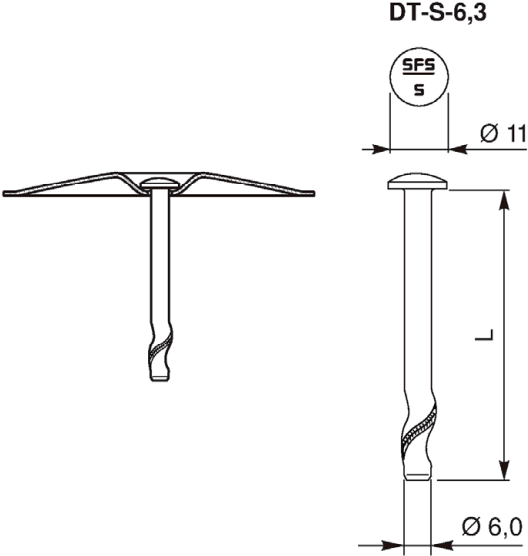
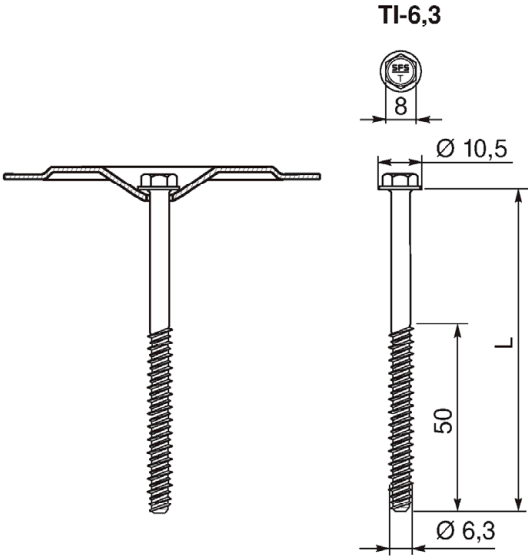
Combination 19A DT-4,8 / IRD-82x40		Combination 19B DT-4,8 / IF/IG-C-82x40	
IRD-82x40 		IF/IG-C-82x40 	
DT-4,8 		DT-4,8 	
SFS Flat roof fasteners			Annex 19

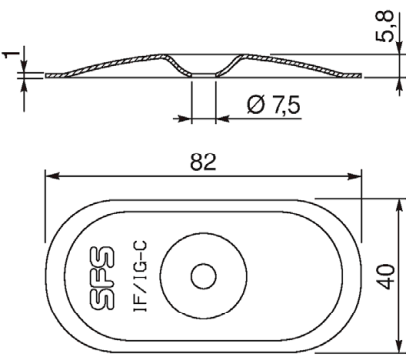
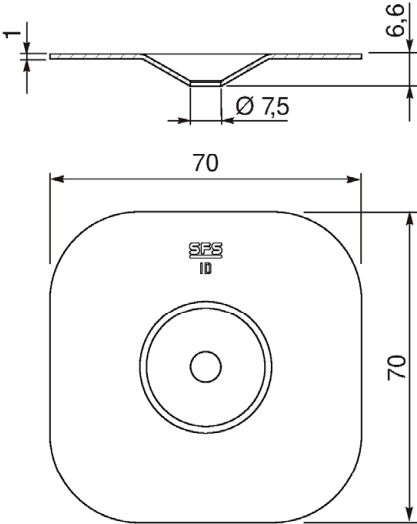
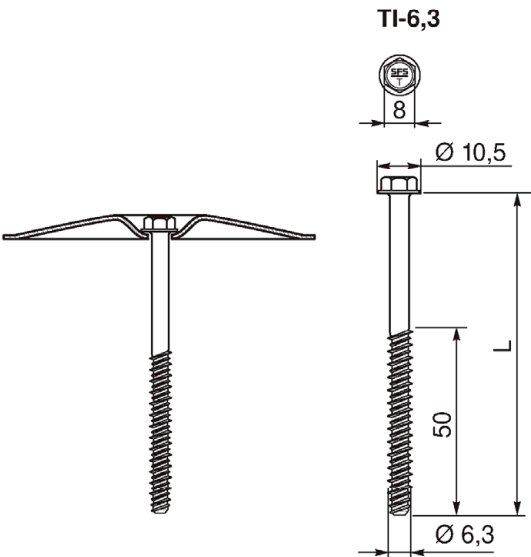
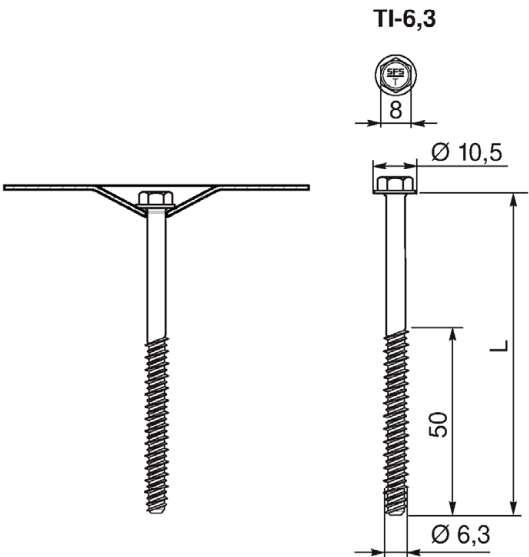
Combination 20A DT-4,8 / IW-82x40		Combination 20B DT-4,8 / R50	
			
			
SFS Flat roof fasteners			Annex 20

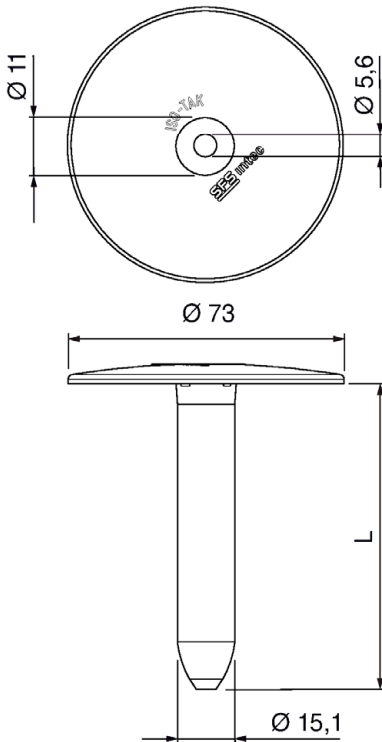
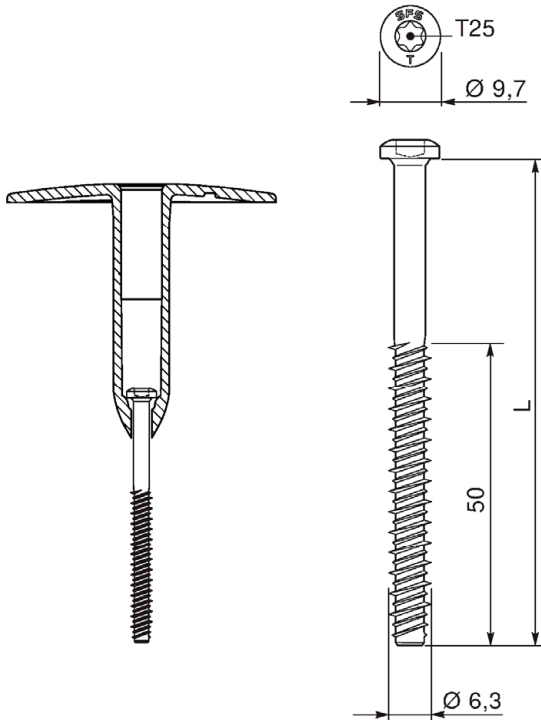
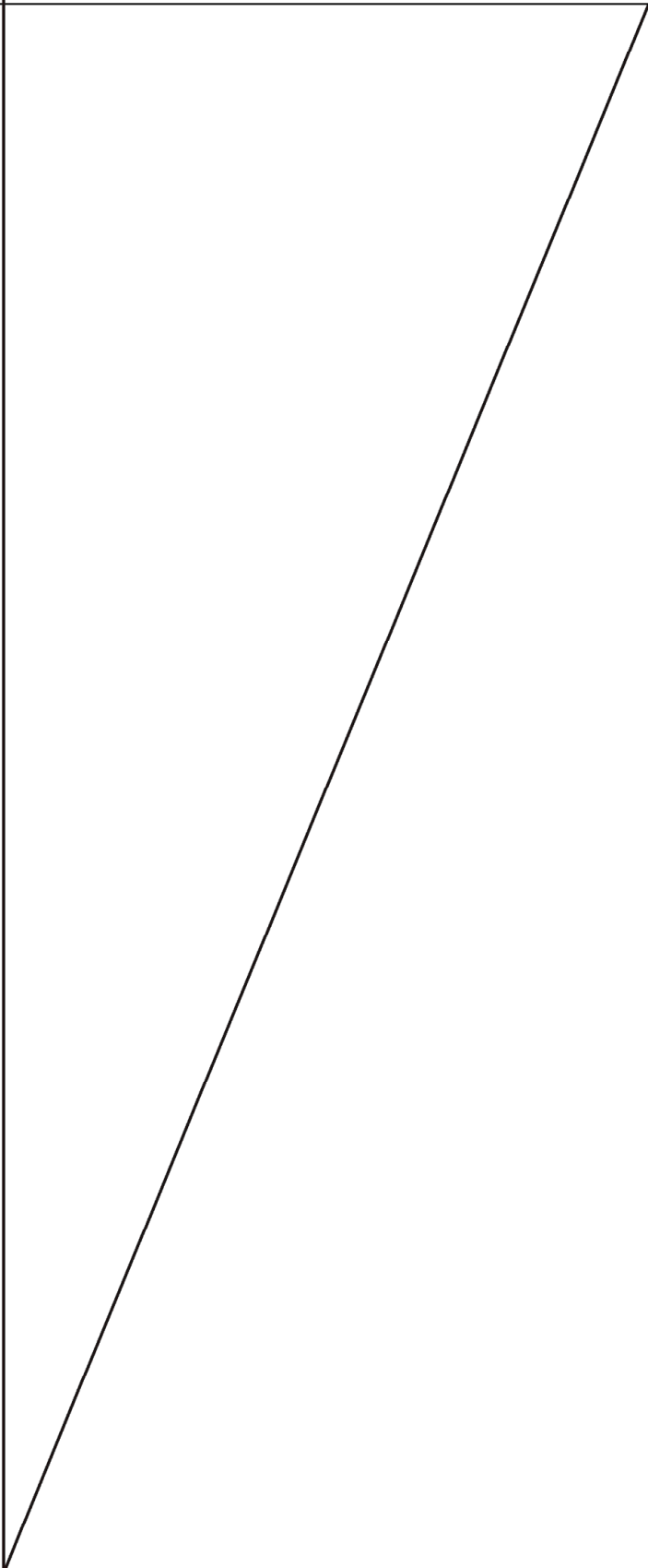
Combination 21A DT-S-4,8 / IRD-82x40		Combination 21B DT-S-4,8 / IF/IG-C-82x40	
			
			
SFS Flat roof fasteners		Annex 21	

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	

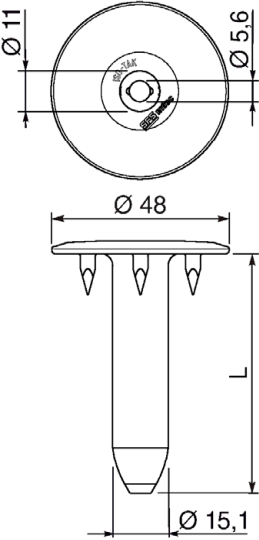
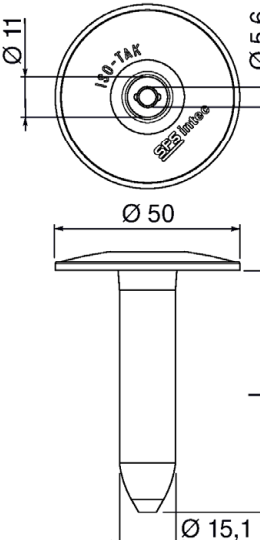
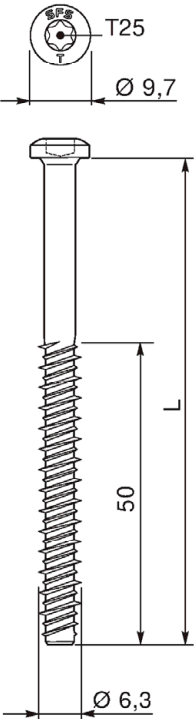
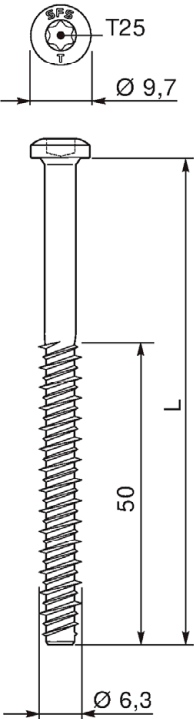
Combination 23A DT-6,3 / IF/IG-C-82x40		Combination 23B DT-S-6,3 / IRD-82x40	
IF/IG-C-82x40 		IRD-82x40 	
DT-6,3 		DT-S-6,3 	
SFS Flat roof fasteners			Annex 23

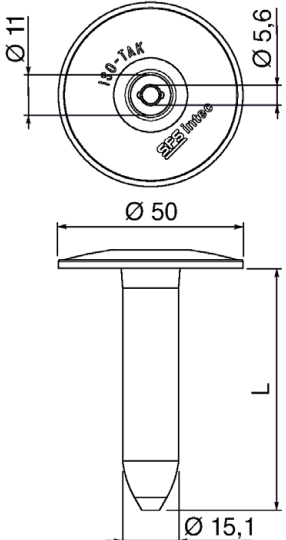
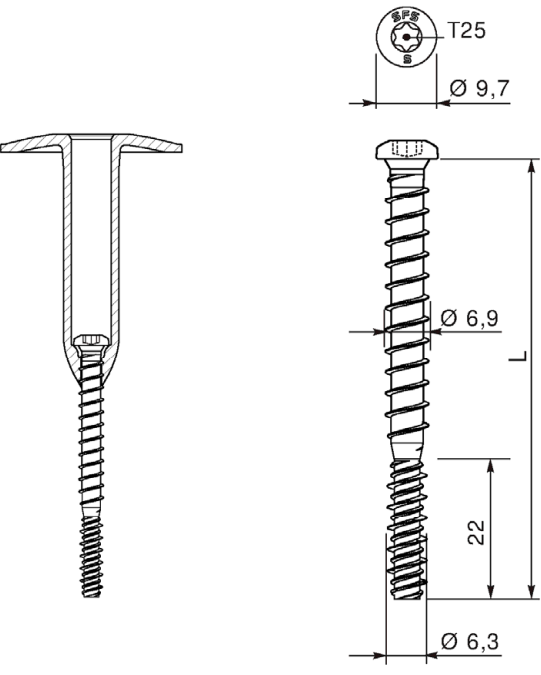
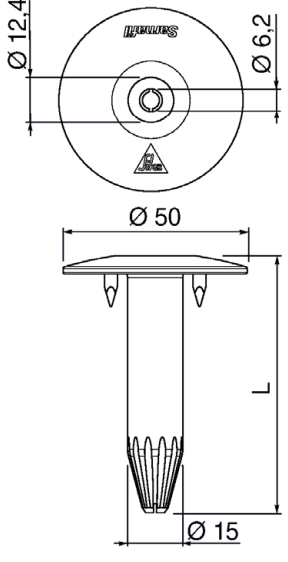
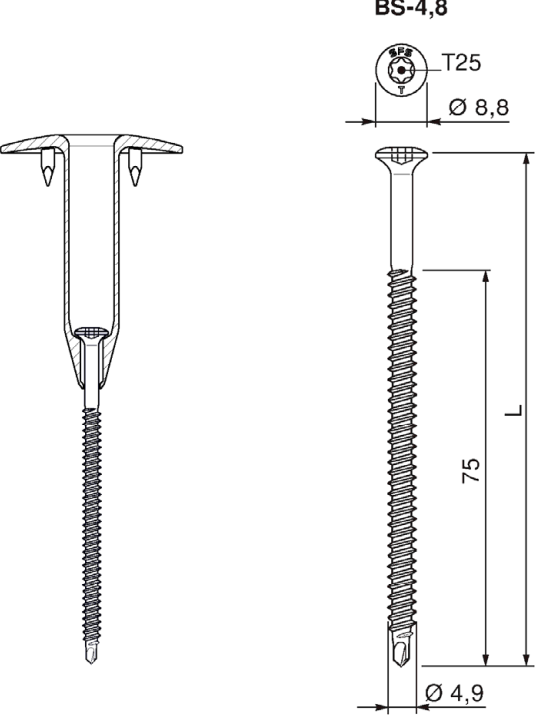
Combination 24A DT-S-6,3 / IF/IG-C-82x40		Combination 24B TI-6,3 / IRD-82x40	
IF/IG-C-82x40 		IRD-82x40 	
DT-S-6,3 		TI-6,3 	
SFS Flat roof fasteners			Annex 24

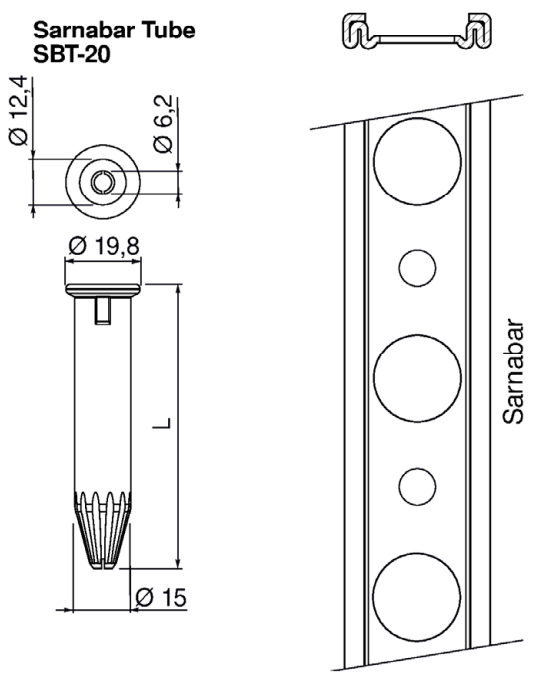
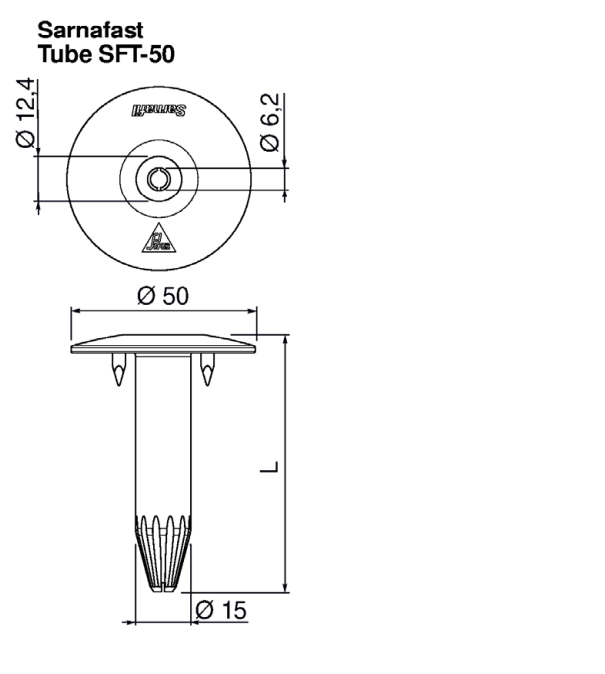
Combination 25A TI-6,3 / IF/IG-C-82x40		Combination 25B TI-6,3 / ID-70x70	
IF/IG-C-82x40 		ID-70x70 	
TI-6,3 		TI-6,3 	
SFS Flat roof fasteners			Annex 25

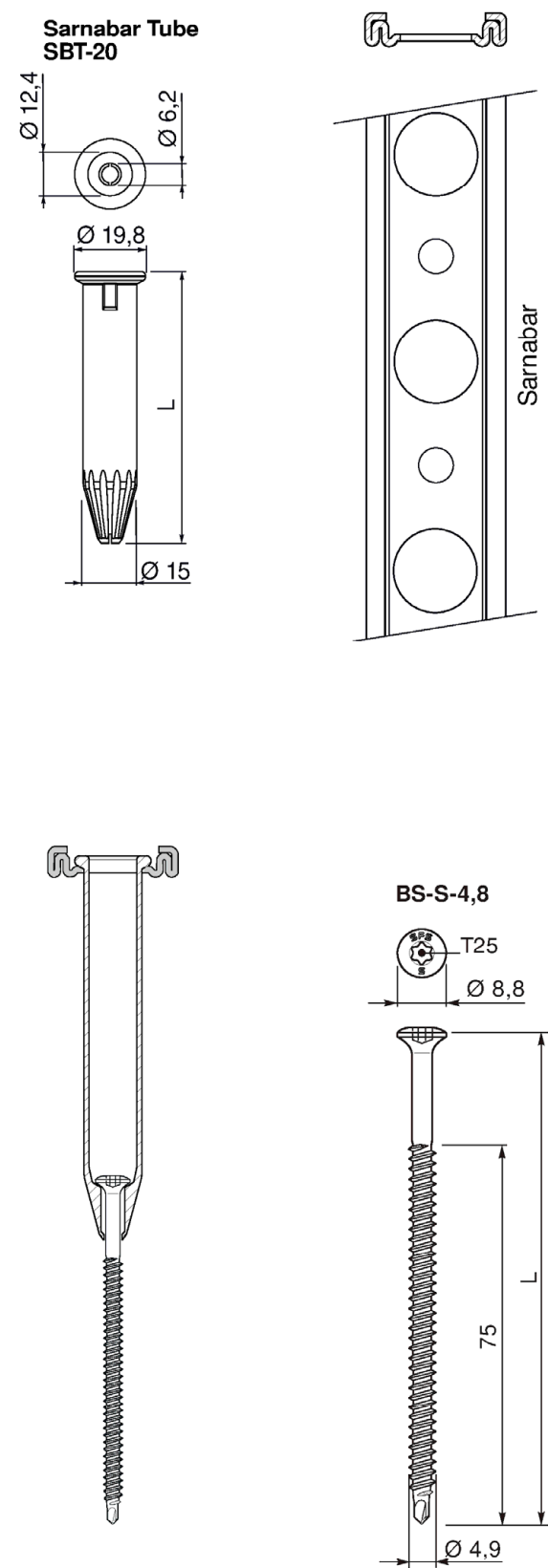
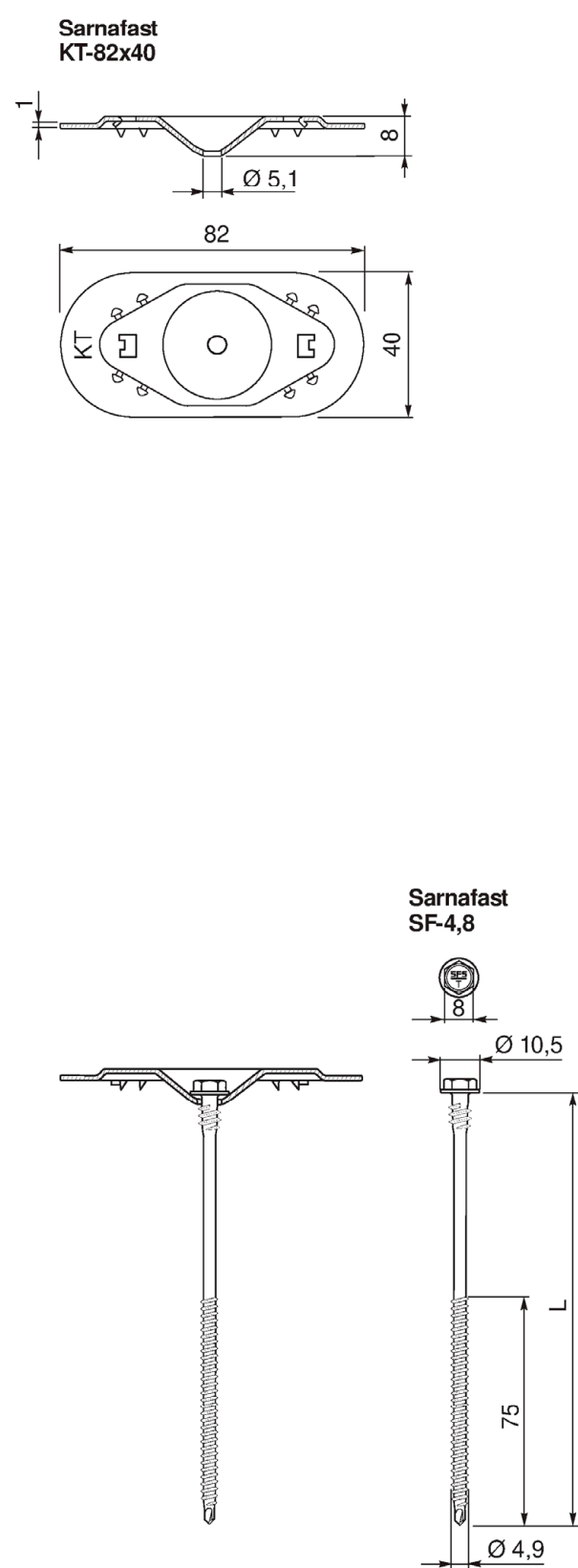
Combination 26A TI-T25-6,3 / R75		Combination 26B No longer in product range	
R75  TI-T25-6,3 			

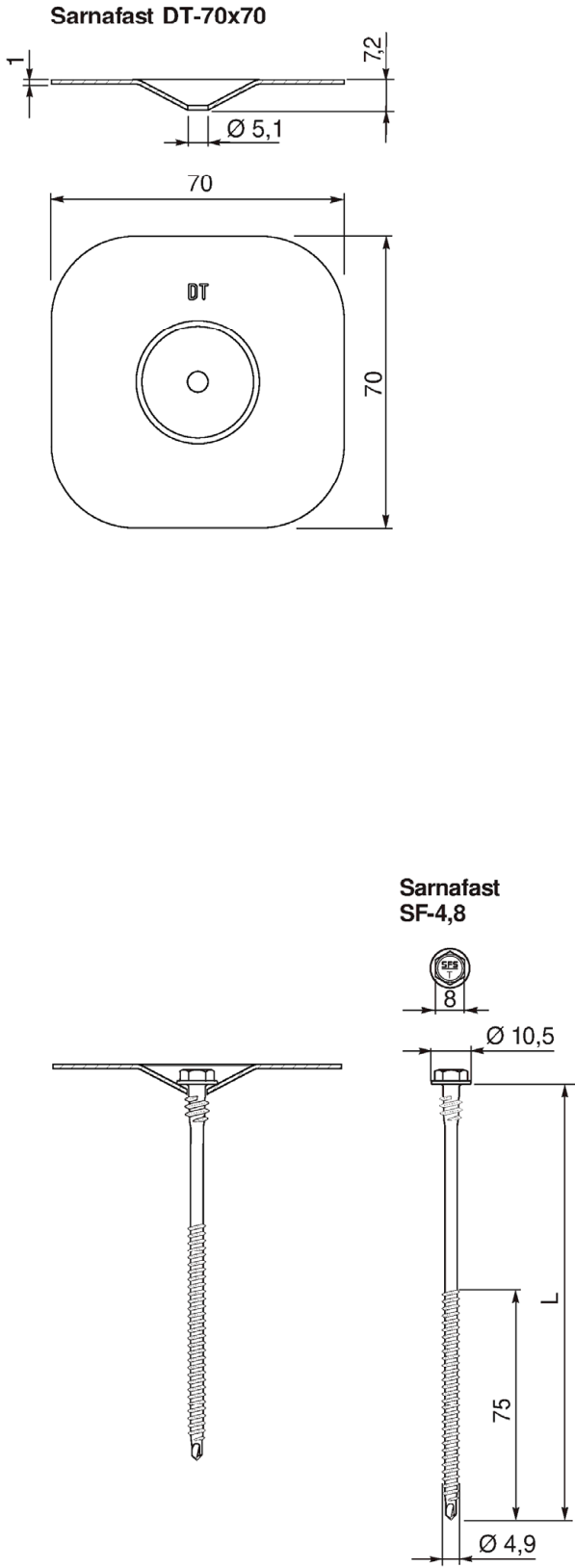
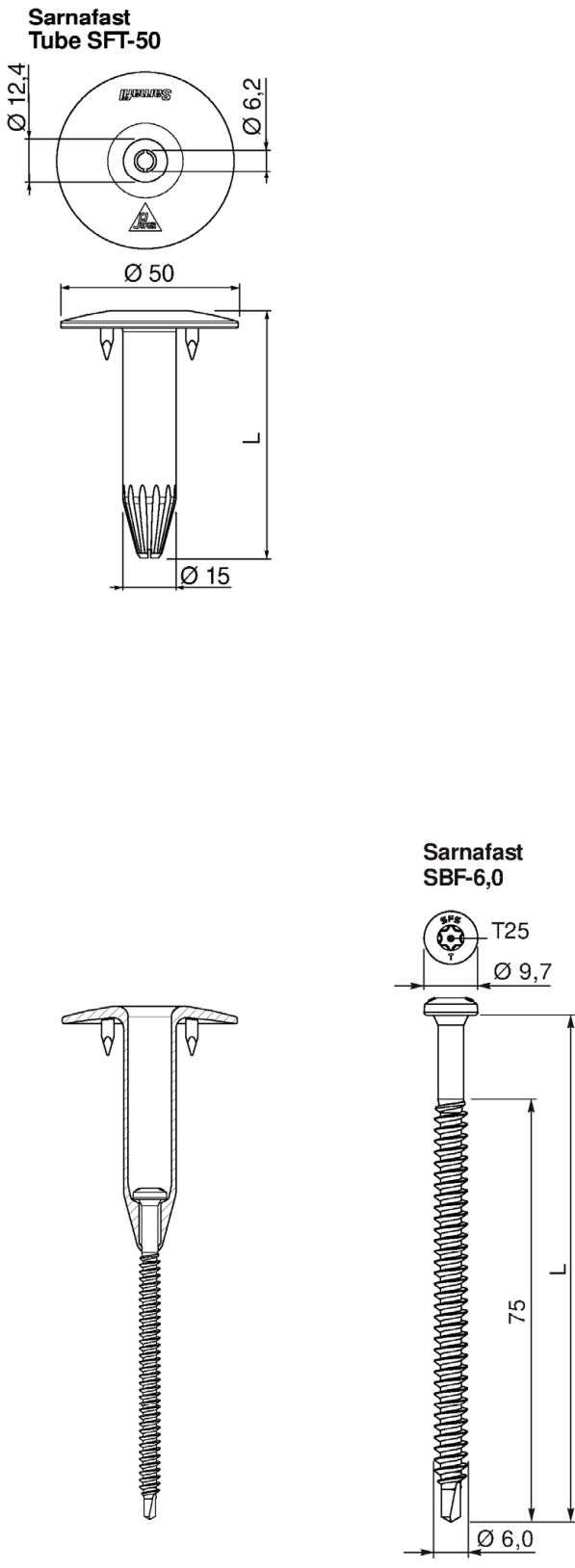
SFS Flat roof fasteners		Annex	26
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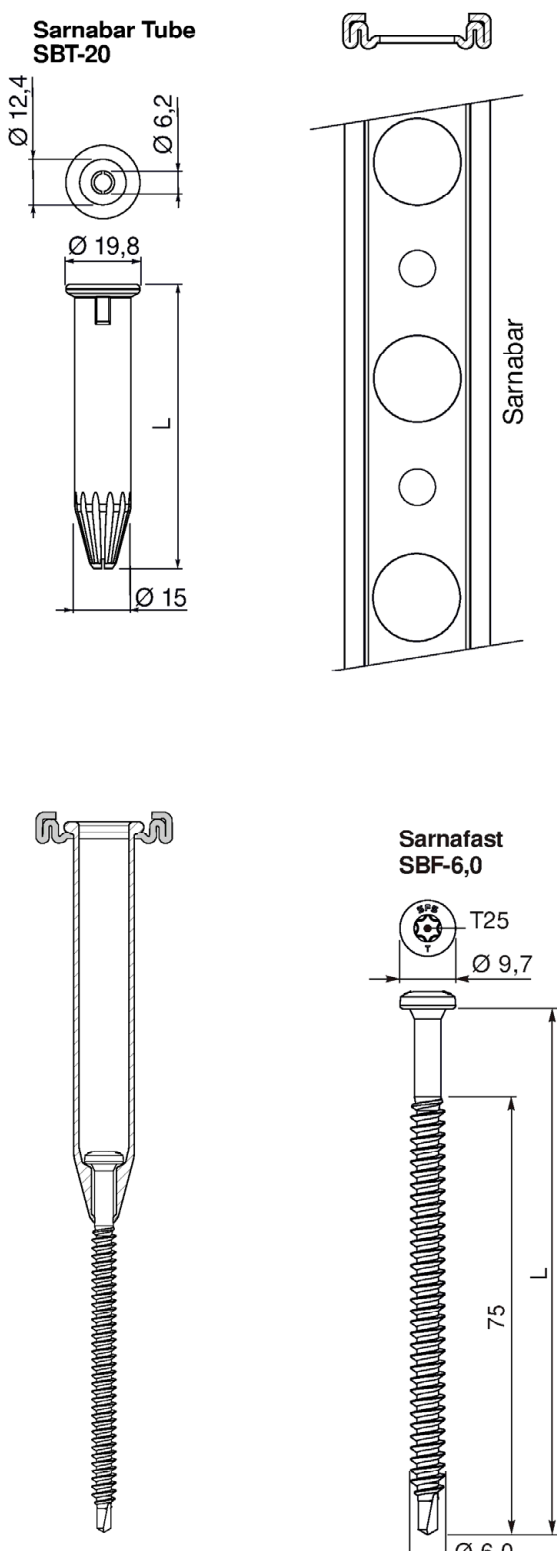
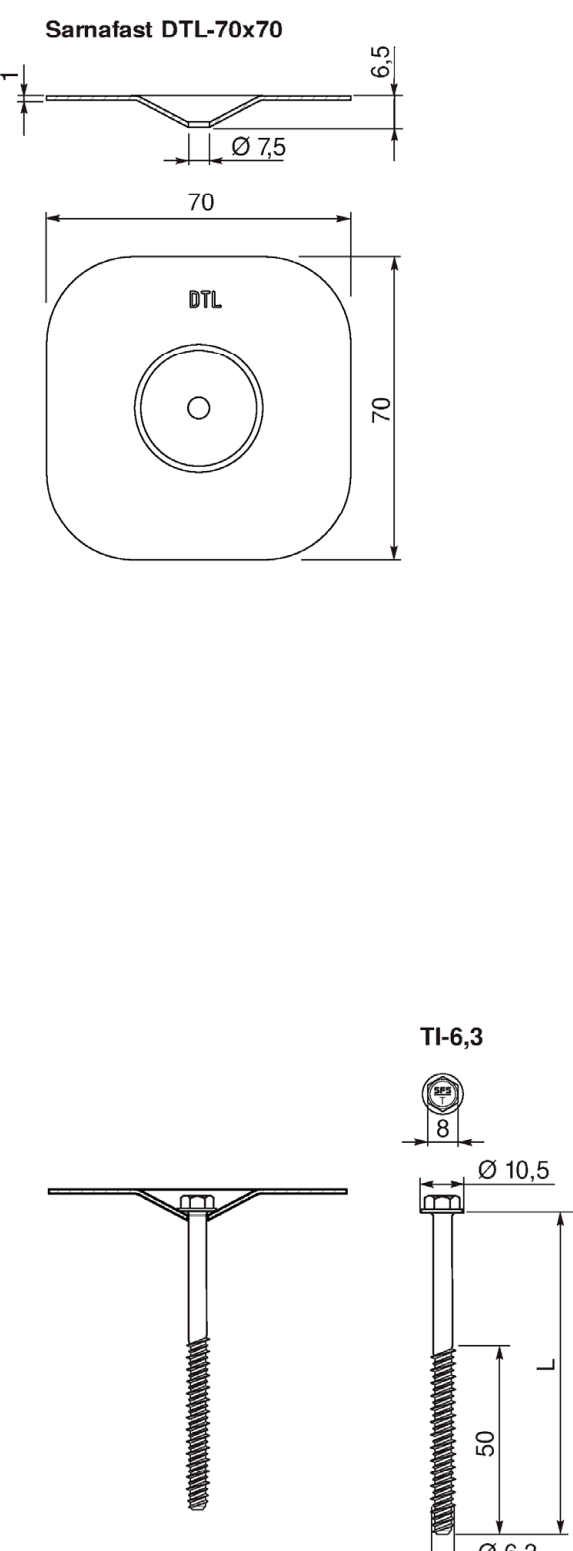
Combination 27A TI-T25-6,3 / R48		Combination 27B TI-T25-6,3 / R50	
R48 		R50 	
TI-T25-6,3 		TI-T25-6,3 	
SFS Flat roof fasteners			Annex 27

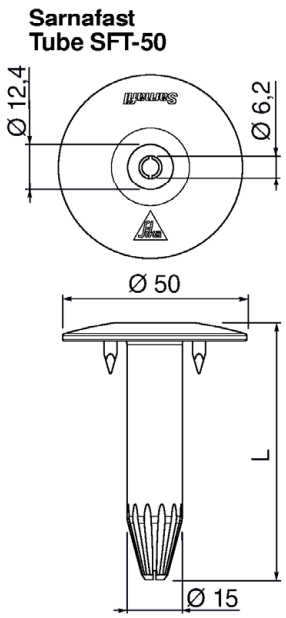
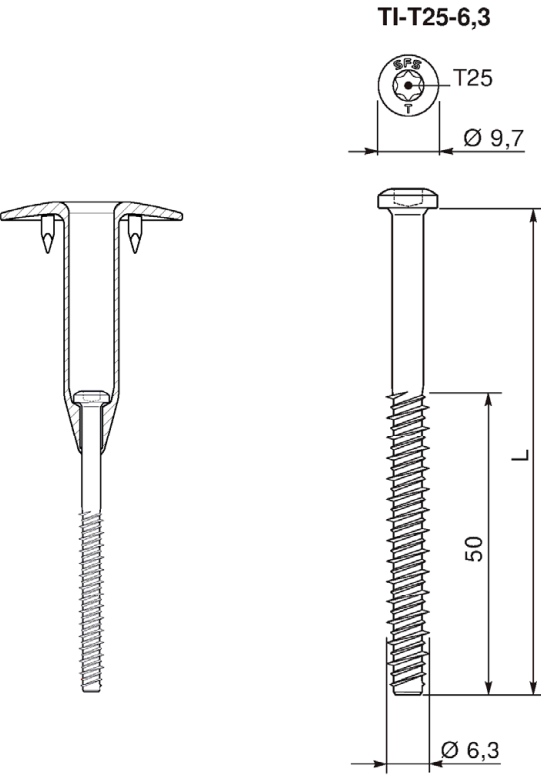
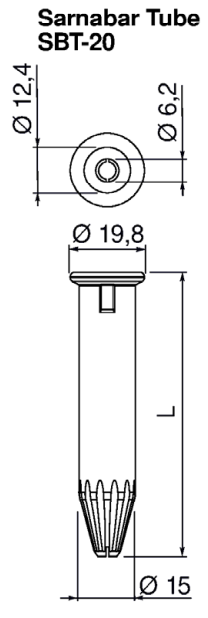
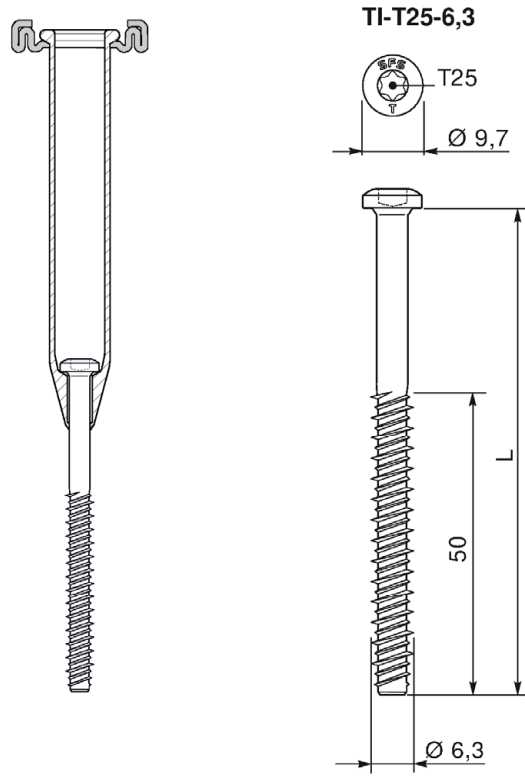
Combination 28A TIA-T25-6,3 / R50	Combination 28B BS-4,8 / Sarnafast Tube SFT-50
R50  TIA-T25-6,3 	Sarnafast Tube SFT-50  BS-4,8 
SFS Flat roof fasteners	Annex 28

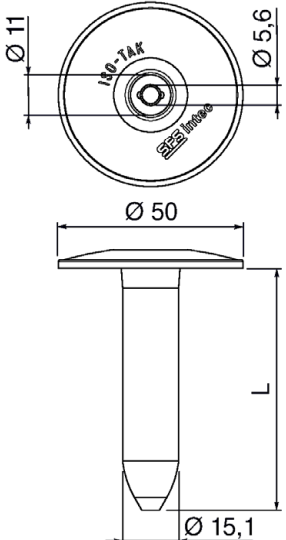
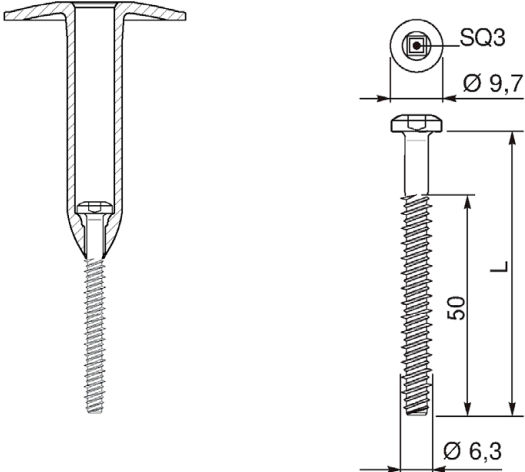
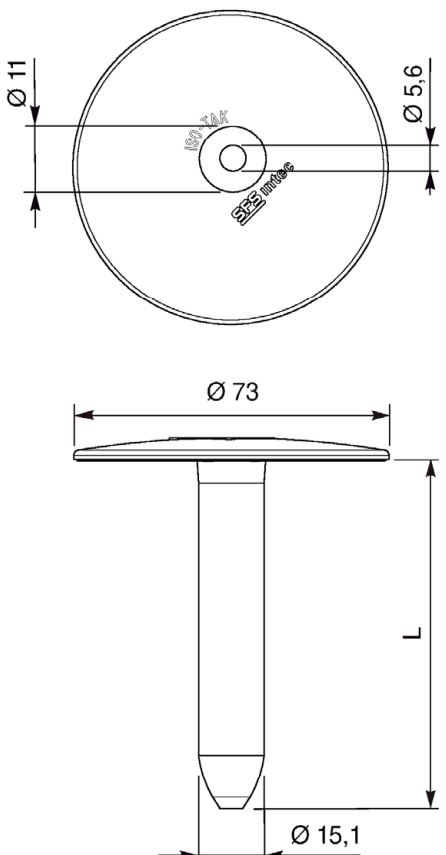
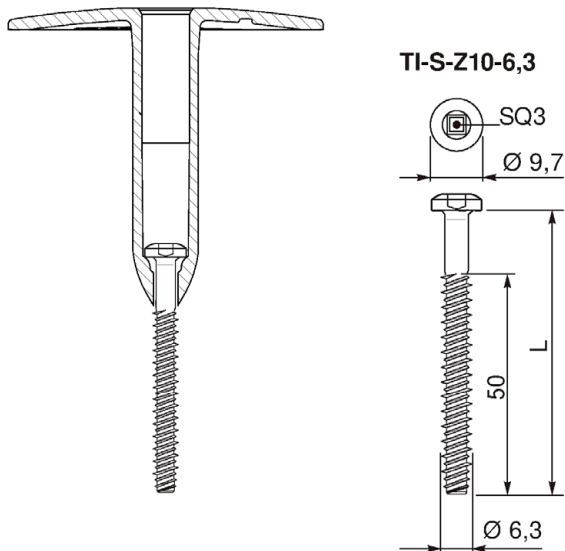
Combination 29A BS-4,8 / Sarnabar Tube SBT-20 / Sarnabar		Combination 29B BS-S-4,8 / Sarnafast Tube SFT-50	
			
SFS Flat roof fasteners		Annex 29	

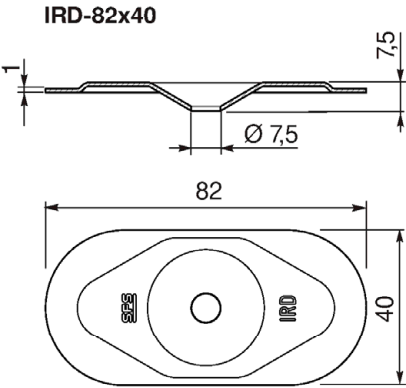
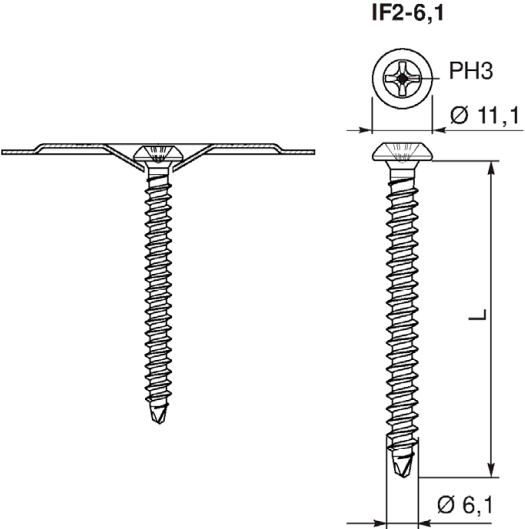
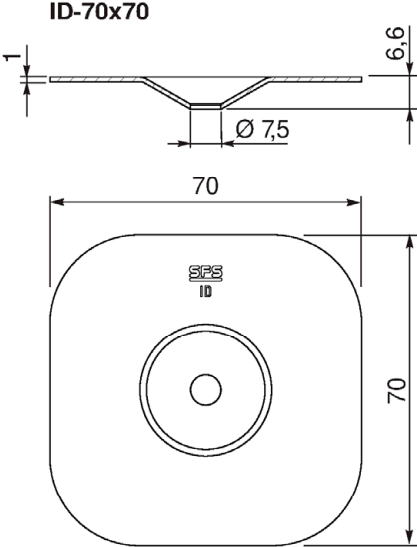
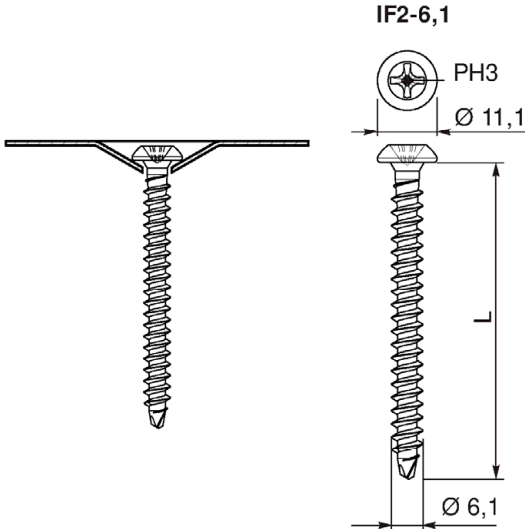
Combination 30A BS-S-4,8 / Sarnabar Tube SBT-20 / Sarnabar		Combination 30B Sarnafast SF-4,8 / Sarnafast KT-82x40	
			
SFS Flat roof fasteners		Annex 30	

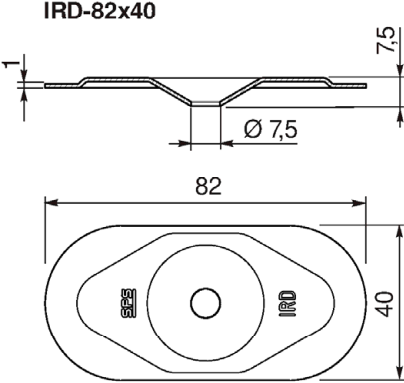
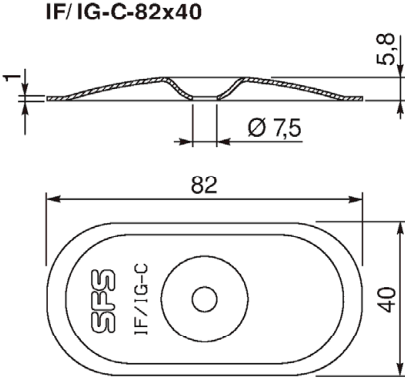
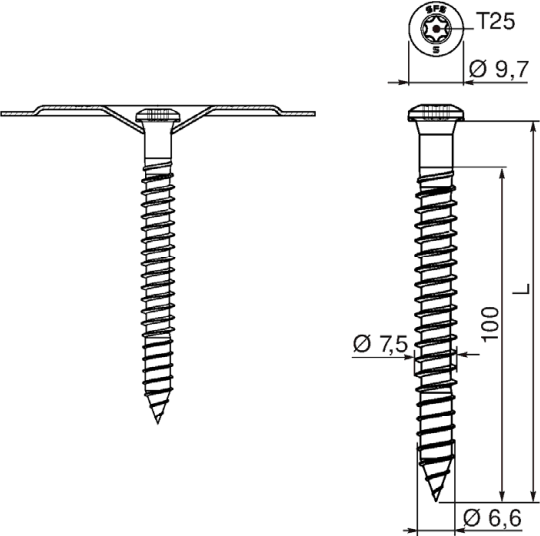
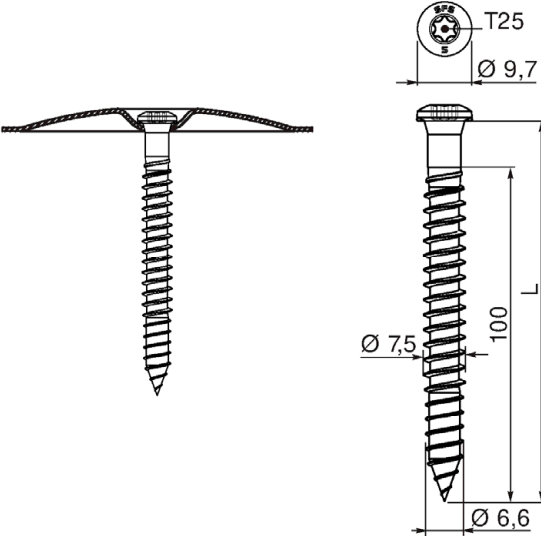
Combination 31A Sarnafast SF-4,8 / Sarnafast DT-70x70  The drawings show the Sarnafast DT-70x70 fastener from top and side views. The top view is a square with rounded corners, 70x70 mm, with a central circular hole. The side view shows a V-shaped profile with a height of 72 mm and a base diameter of 5.1 mm. The Sarnafast SF-4,8 fastener is shown from side and top views. The side view shows a threaded rod with a length of 75 mm and a total length of L. The top view shows a circular head with a diameter of 10.5 mm and a central hole of 8 mm.	Combination 31B Sarnafast SBF-6,0 / Sarnafast Tube SFT-50  The drawings show the Sarnafast Tube SFT-50 fastener from top and side views. The top view is a circular head with a diameter of 50 mm and a central hole of 12.4 mm. The side view shows a tube with a length of L and a base diameter of 15 mm. The Sarnafast SBF-6,0 fastener is shown from side and top views. The side view shows a threaded rod with a length of 75 mm and a total length of L. The top view shows a circular head with a diameter of 9.7 mm and a central hole of 6.0 mm.
SFS Flat roof fasteners	Annex 31

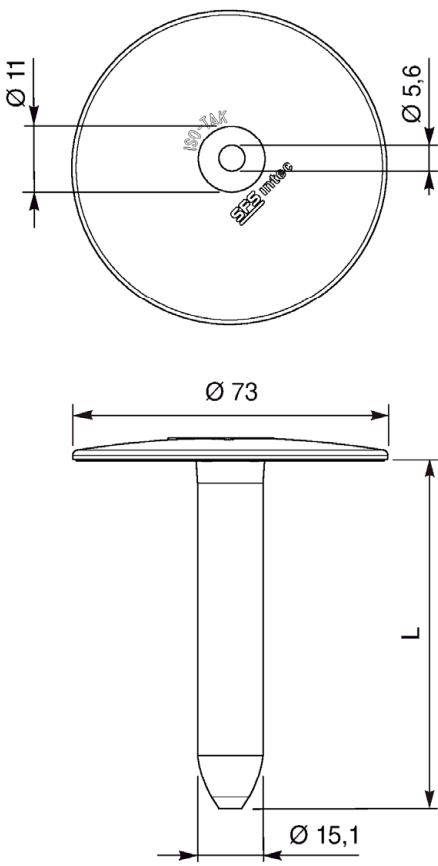
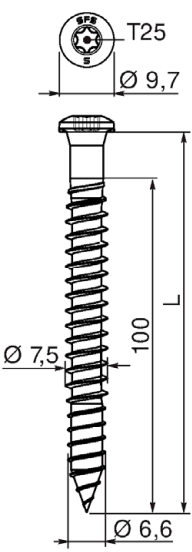
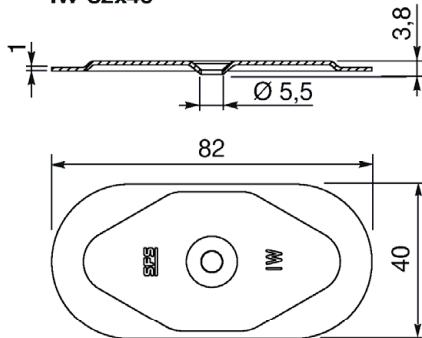
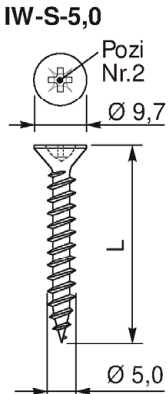
Combination 32A Sarnafast SBF-6,0 / Sarnabar Tube SBT-20 / Sarnabar  Sarnabar Tube SBT-20 Sarnafast SBF-6,0	Combination 32B TI-6,3 / Sarnafast DTL-70x70  Sarnafast DTL-70x70 TI-6,3
SFS Flat roof fasteners	Annex 32

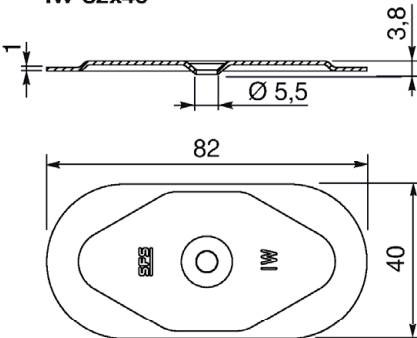
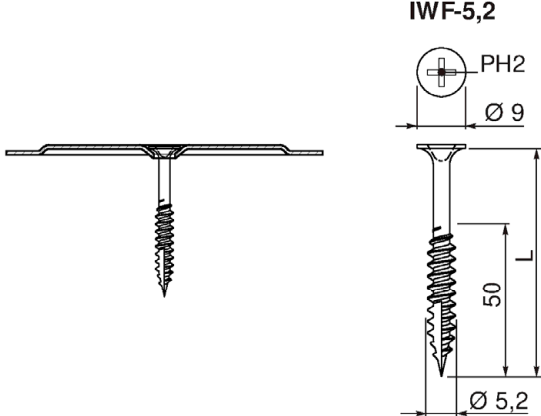
Combination 33A TI-T25-6,3 / Sarnafast Tube SFT-50		Combination 33B TI-T25-6,3 / Sarnabar Tube SBT-20 / Sarnabar	
Sarnafast Tube SFT-50  TI-T25-6,3 		Sarnabar Tube SBT-20  TI-T25-6,3 	
SFS Flat roof fasteners		Annex 33	

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

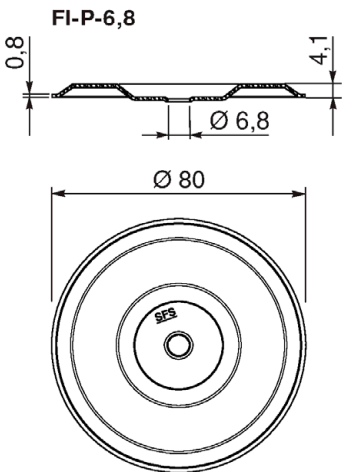
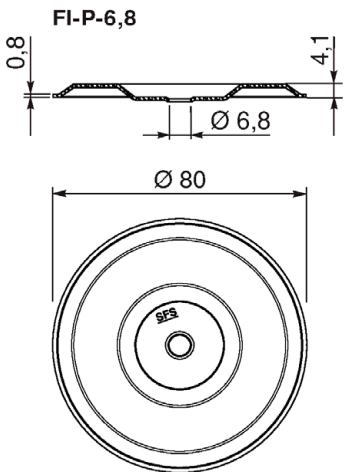
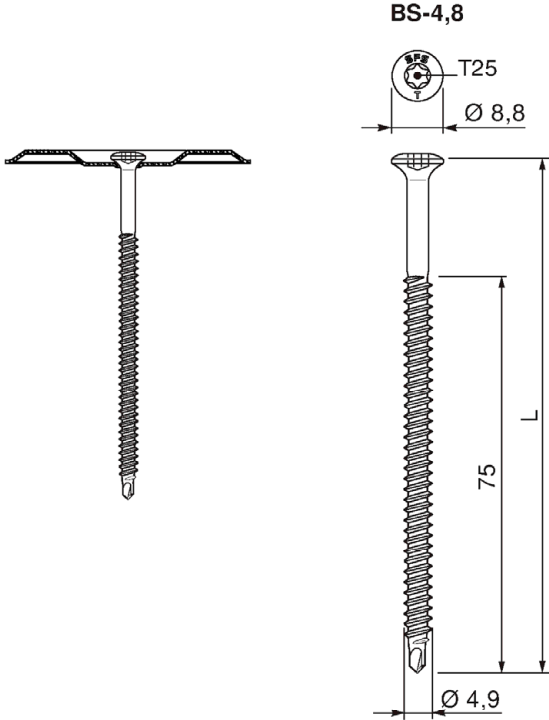
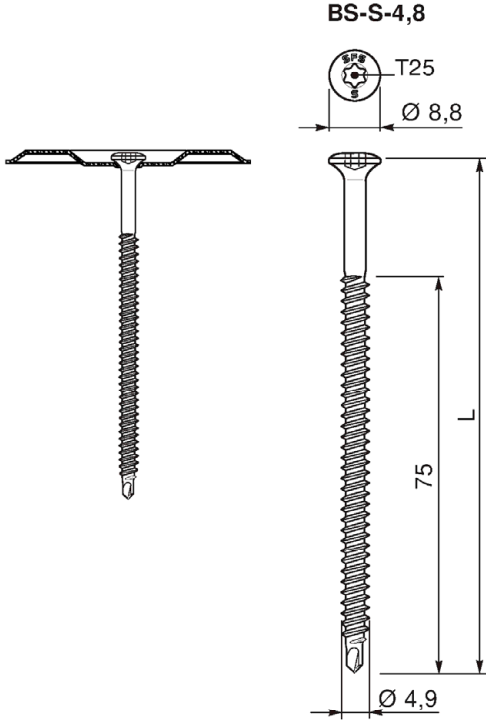
Combination 35A IF2-6,1 / IRD-82x40	Combination 35B IF2-6,1 / ID-70x70
 IRD-82x40 Technical drawing showing the head profile and top view of the IRD-82x40 fastener. The head profile shows a width of 82 and a height of 7.5. The top view shows an oval shape with a central hole of diameter 7.5. The head is marked with 'SFS' and 'IRD'.  IF2-6,1 Technical drawing showing the IF2-6,1 screw. The head is marked with 'PH3' and has a diameter of 11.1. The screw length is indicated by 'L'. The thread diameter is 6.1.	 ID-70x70 Technical drawing showing the head profile and top view of the ID-70x70 fastener. The head profile shows a width of 70 and a height of 6.6. The top view shows a square shape with a central hole of diameter 7.5. The head is marked with 'SFS' and 'ID'.  IF2-6,1 Technical drawing showing the IF2-6,1 screw. The head is marked with 'PH3' and has a diameter of 11.1. The screw length is indicated by 'L'. The thread diameter is 6.1.
SFS Flat roof fasteners	Annex 35

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

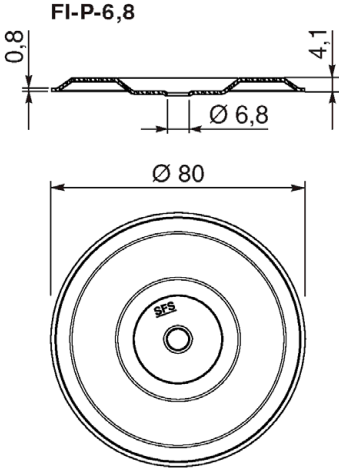
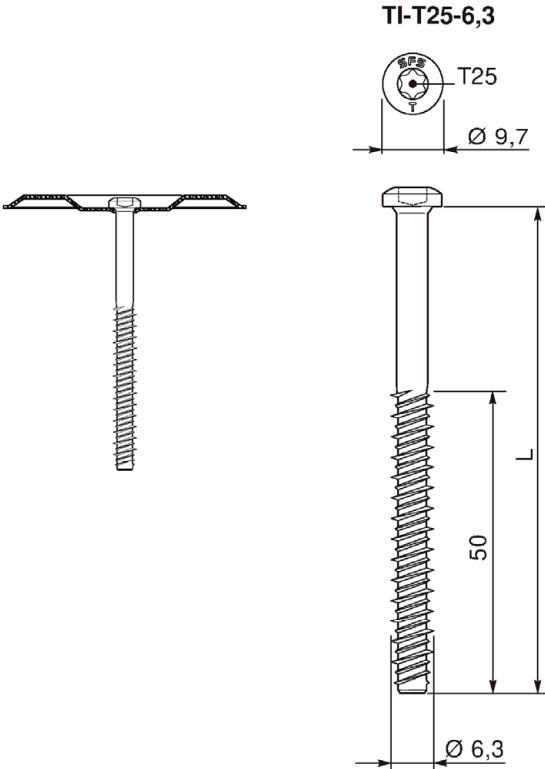
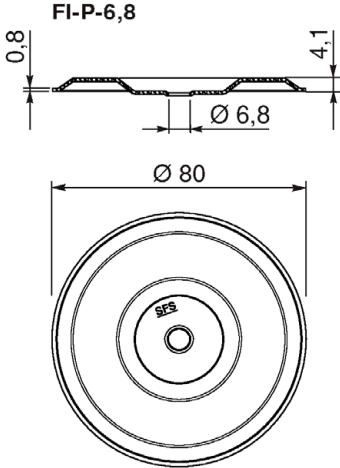
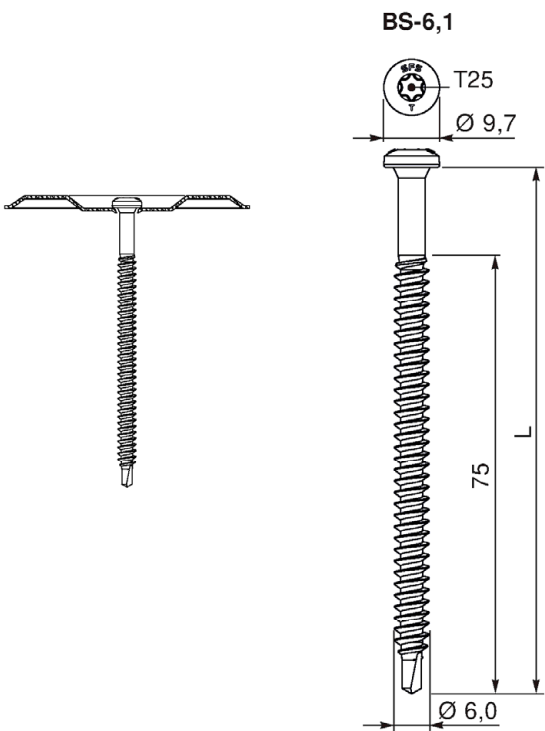
Combination 37A FB-S-T25-7,5 / R75 R75  FB-S-T25-7,5  SFS Flat roof fasteners	Combination 37B IW-S-5,0 / IW-82x40 IW-82x40  IW-S-5,0  Annex 37
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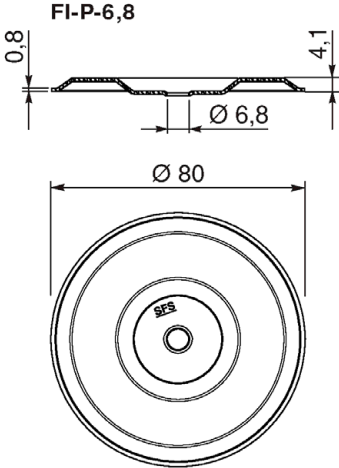
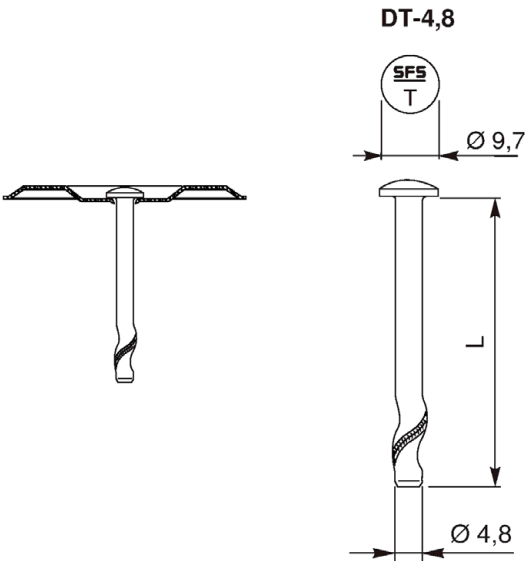
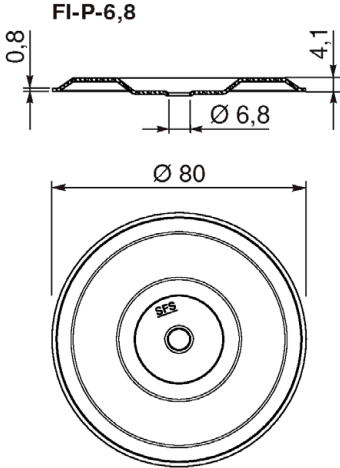
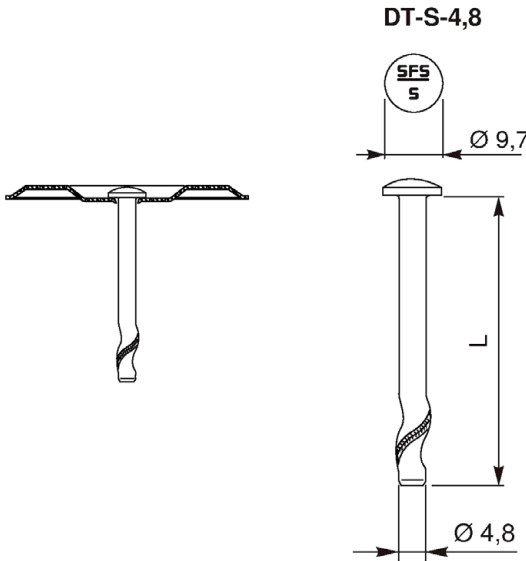
Combination 38A No longer in product range	Combination 38B IWF-5,2 / IW-82x40
	IW-82x40  IWF-5,2  SFS Flat roof fasteners
	Annex 38

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

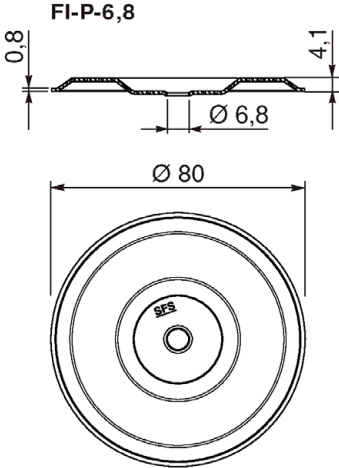
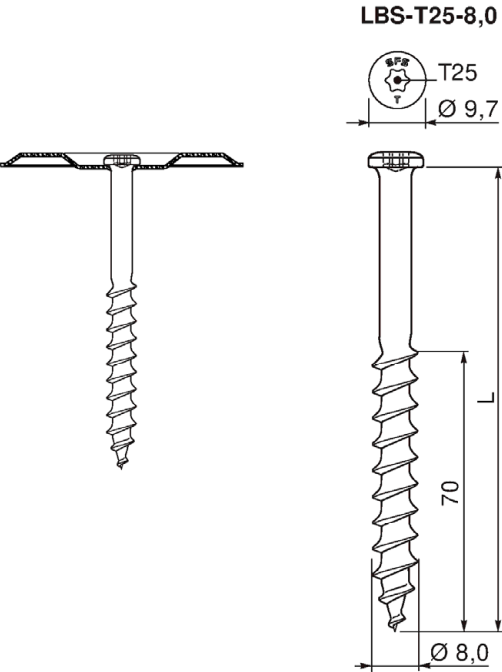
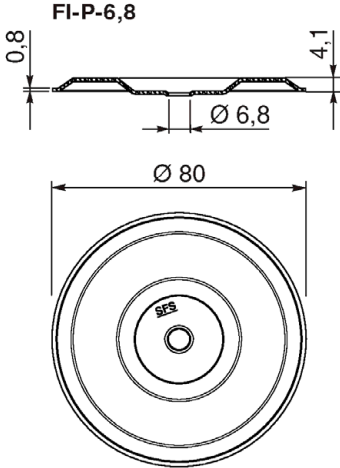
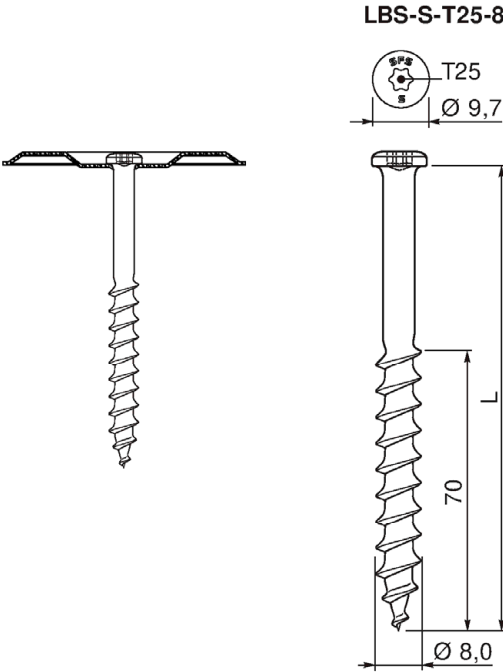
Electronic copy of the ETA by DIBt: ETA-08/0262

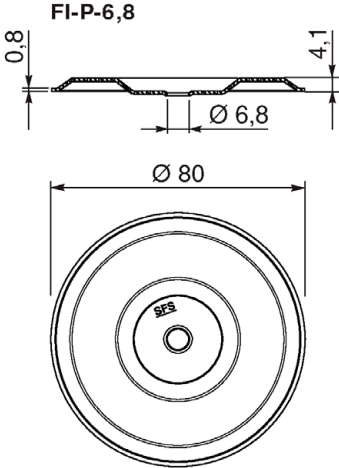
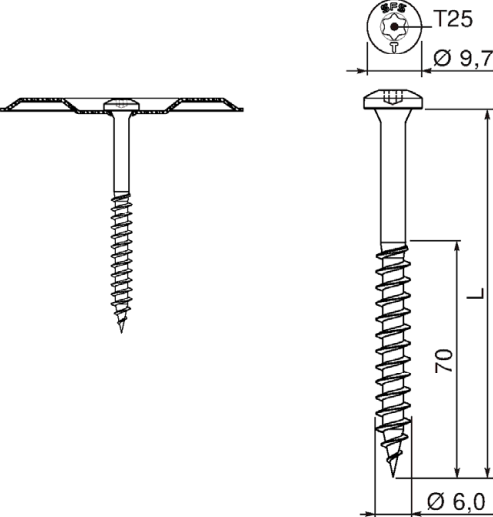
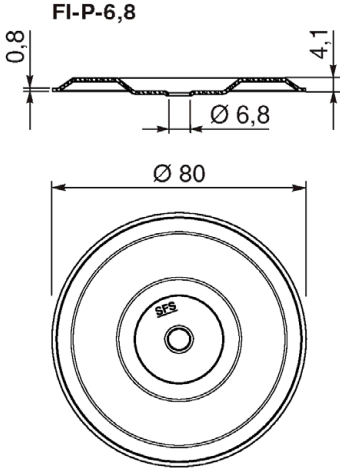
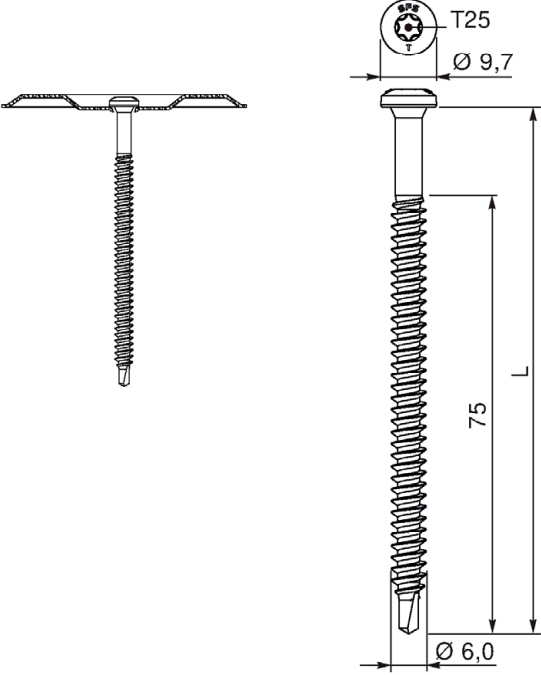
Combination 40A TI-T25-6,3 / FI-P-6,8	Combination 40B BS-6,1 / FI-P-6,8
FI-P-6,8  TI-T25-6,3 	FI-P-6,8  BS-6,1 
SFS Flat roof fasteners	Annex 40

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

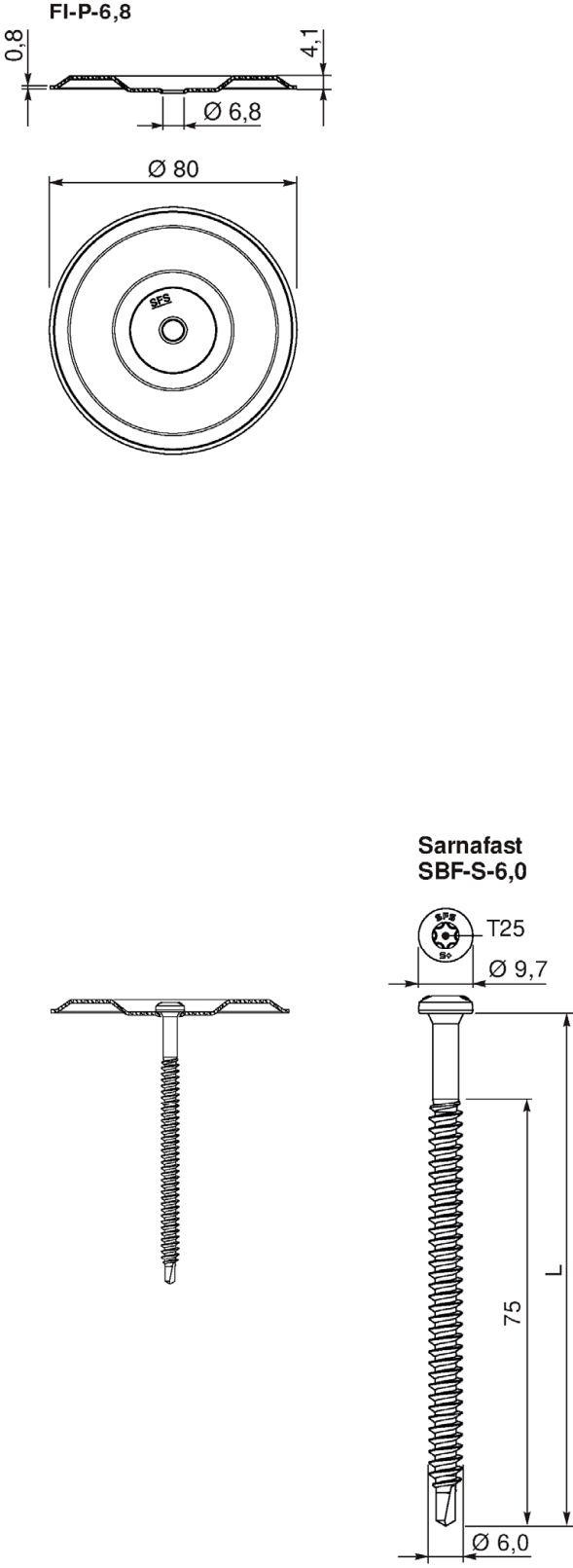
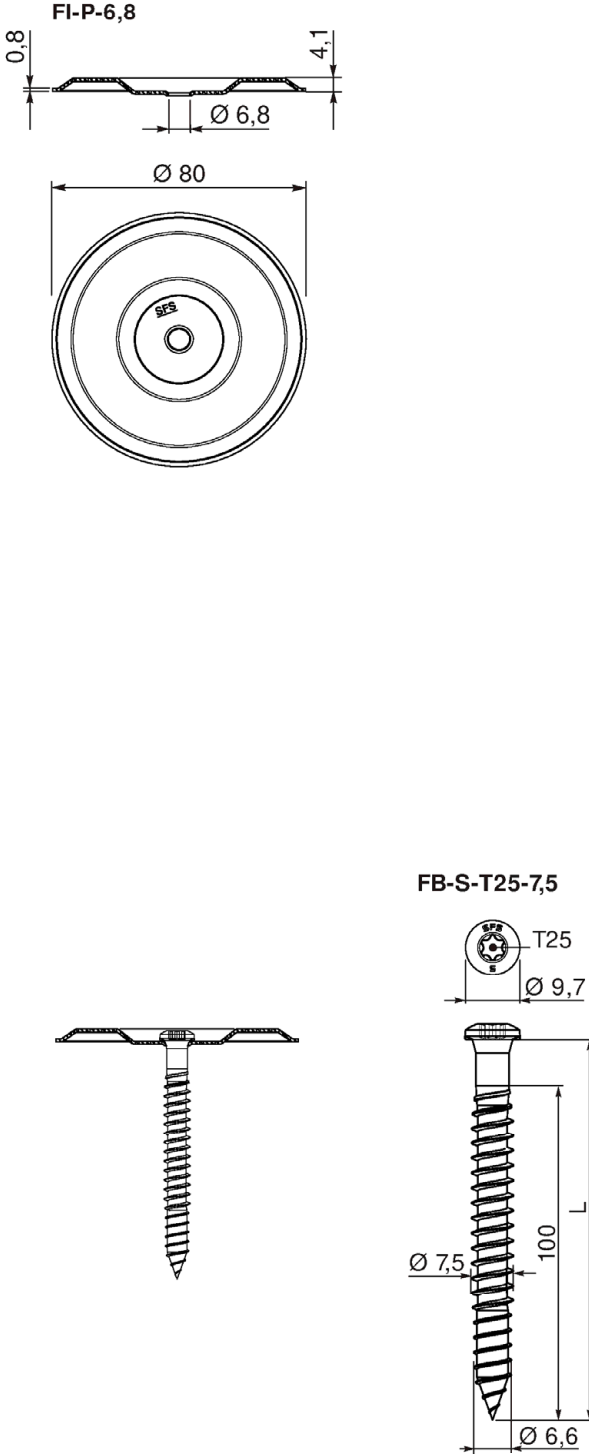
Electronic copy of the ETA by DIBt: ETA-08/0262

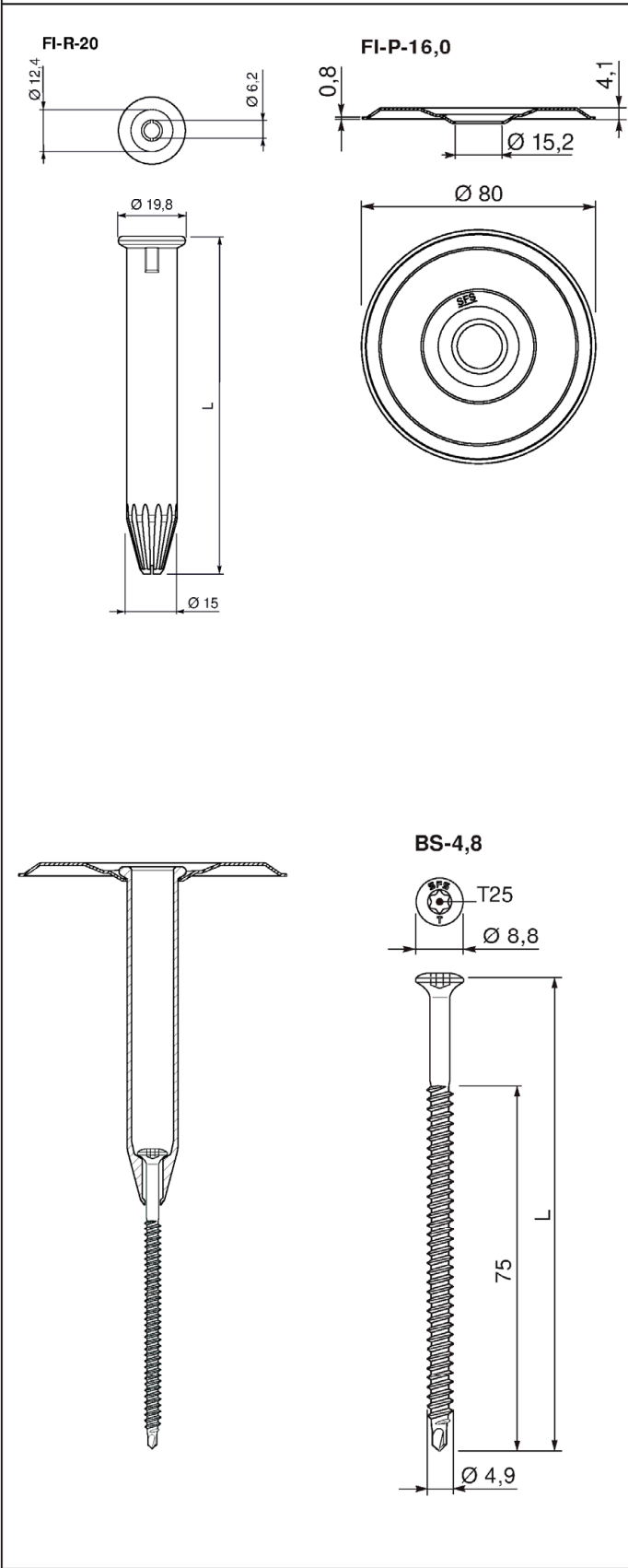
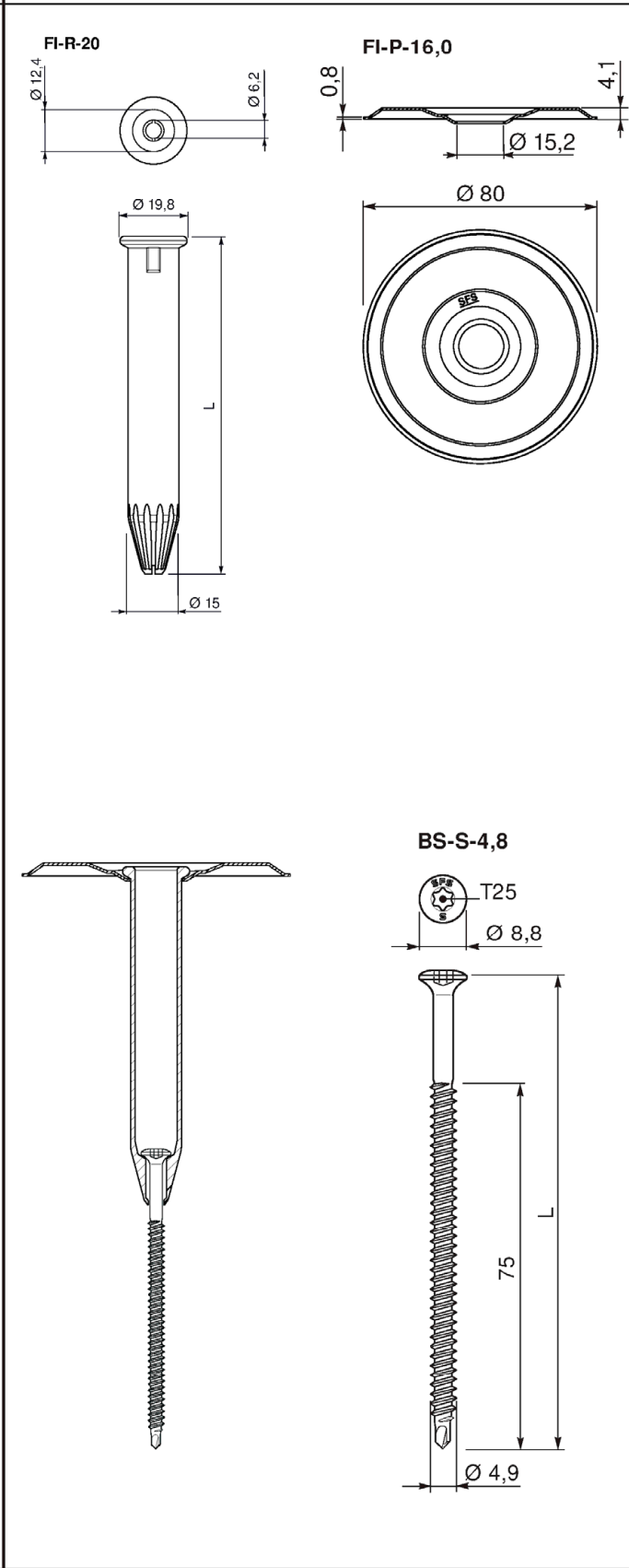
Combination 42A DT-6,3 / FI-P-6,8	Combination 42B DT-S-6,3 / FI-P-6,8
 Technical drawing of the FI-P-6,8 fastener head and DT-6,3 fastener shaft. The head is shown in cross-section and top view. The cross-section shows a hexagonal shape with a central hole of diameter $\varnothing 6,8$ and a total width of $\varnothing 80$. The top view shows a circular head with a central hole of diameter $\varnothing 6,8$ and a total diameter of $\varnothing 80$. The shaft is shown in cross-section and side view. The cross-section shows a hexagonal shape with a central hole of diameter $\varnothing 6,0$ and a total width of $\varnothing 11$. The side view shows a shaft with a length L and a diameter of $\varnothing 6,0$. The fastener is labeled SFS T.	 Technical drawing of the FI-P-6,8 fastener head and DT-S-6,3 fastener shaft. The head is shown in cross-section and top view. The cross-section shows a hexagonal shape with a central hole of diameter $\varnothing 6,8$ and a total width of $\varnothing 80$. The top view shows a circular head with a central hole of diameter $\varnothing 6,8$ and a total diameter of $\varnothing 80$. The shaft is shown in cross-section and side view. The cross-section shows a hexagonal shape with a central hole of diameter $\varnothing 6,0$ and a total width of $\varnothing 11$. The side view shows a shaft with a length L and a diameter of $\varnothing 6,0$. The fastener is labeled SFS S.
SFS Flat roof fasteners	Annex 42

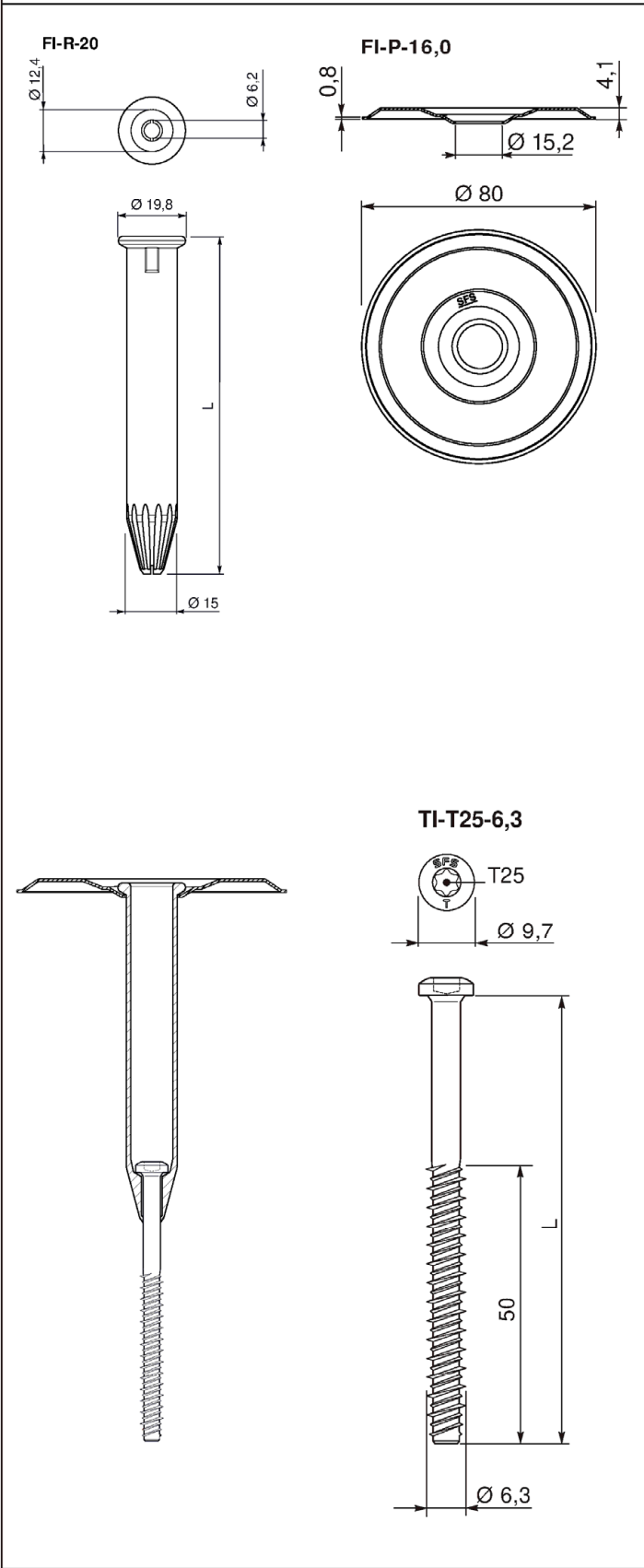
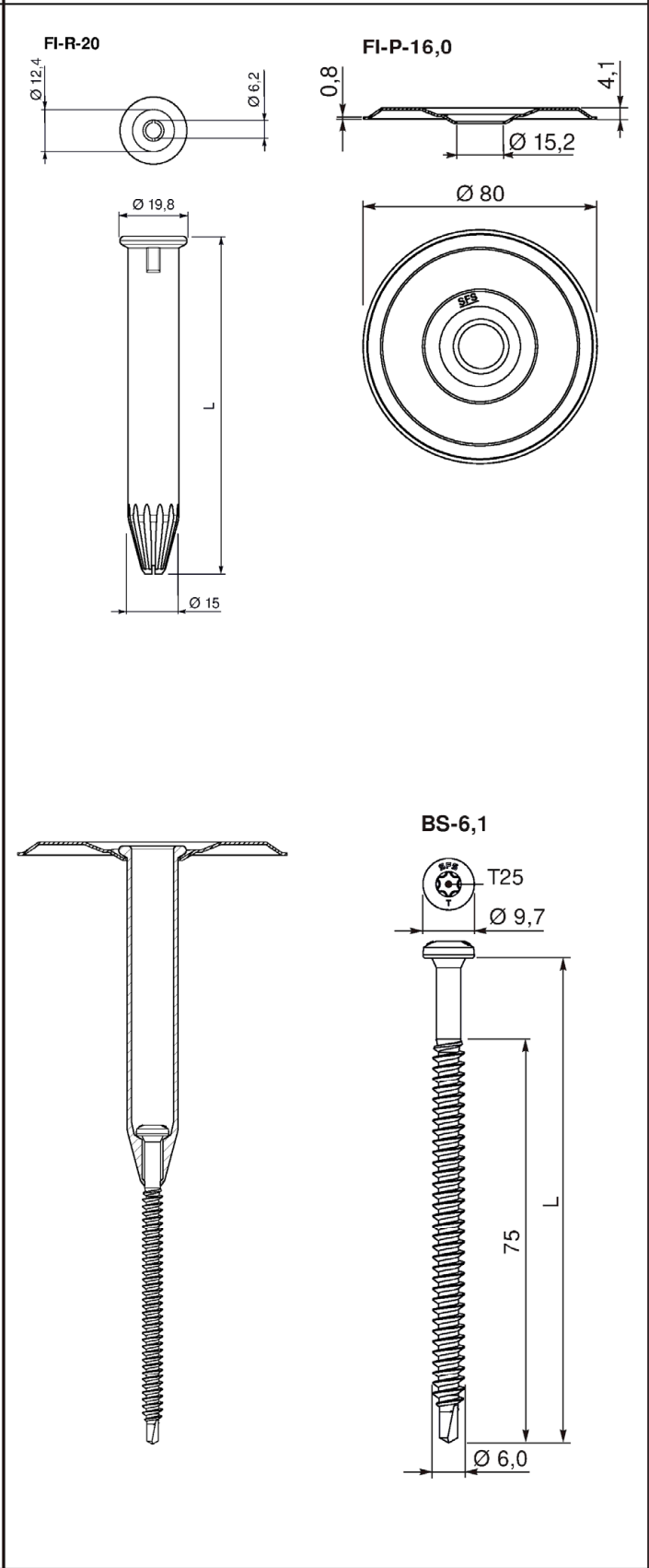
Combination 43A LBS-T25-8,0 / FI-P-6,8	Combination 43B LBS-S-T25-8,0 / FI-P-6,8
FI-P-6,8  LBS-T25-8,0 	FI-P-6,8  LBS-S-T25-8,0 
SFS Flat roof fasteners	Annex 43

Combination 44A TS-T25-6,0 / FI-P-6,8	Combination 44B Sarnafast SBF-6,0 / FI-P-6,8
FI-P-6,8  TS-T25-6,0 	FI-P-6,8  Sarnafast SBF-6,0 
SFS Flat roof fasteners	Annex 44

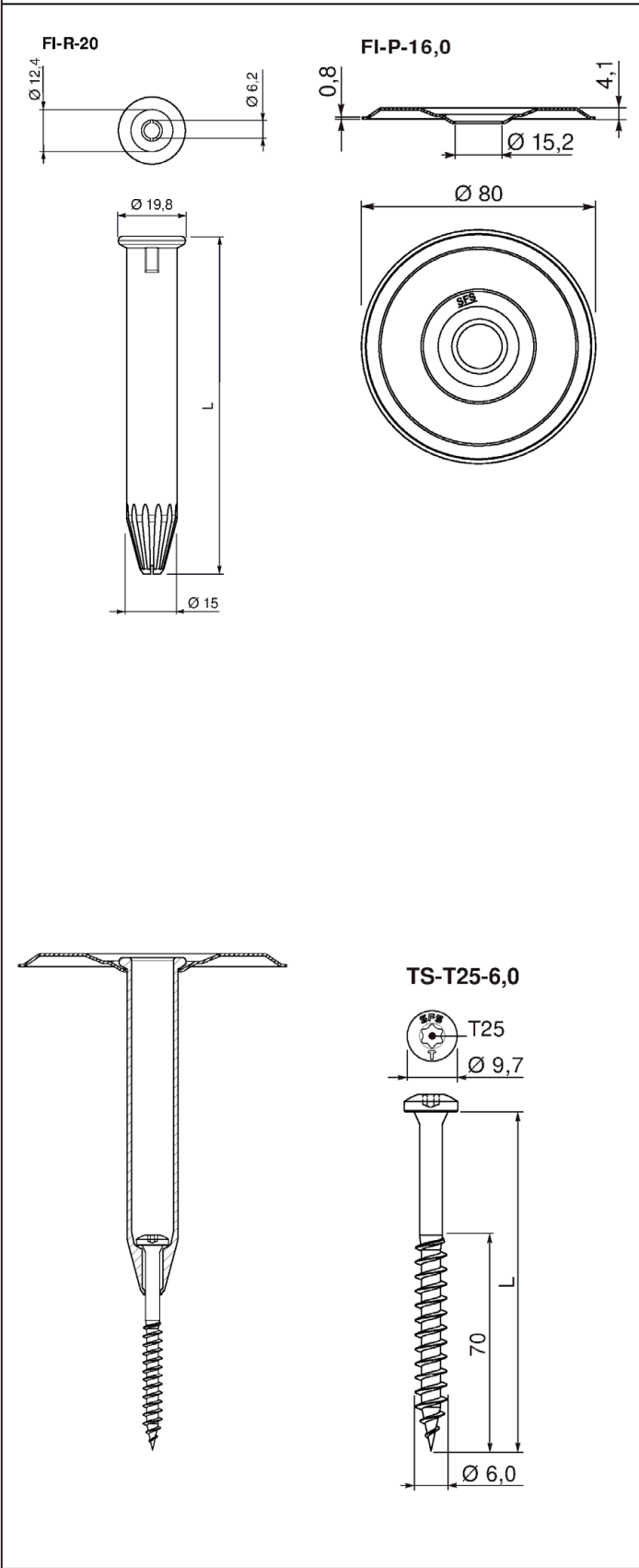
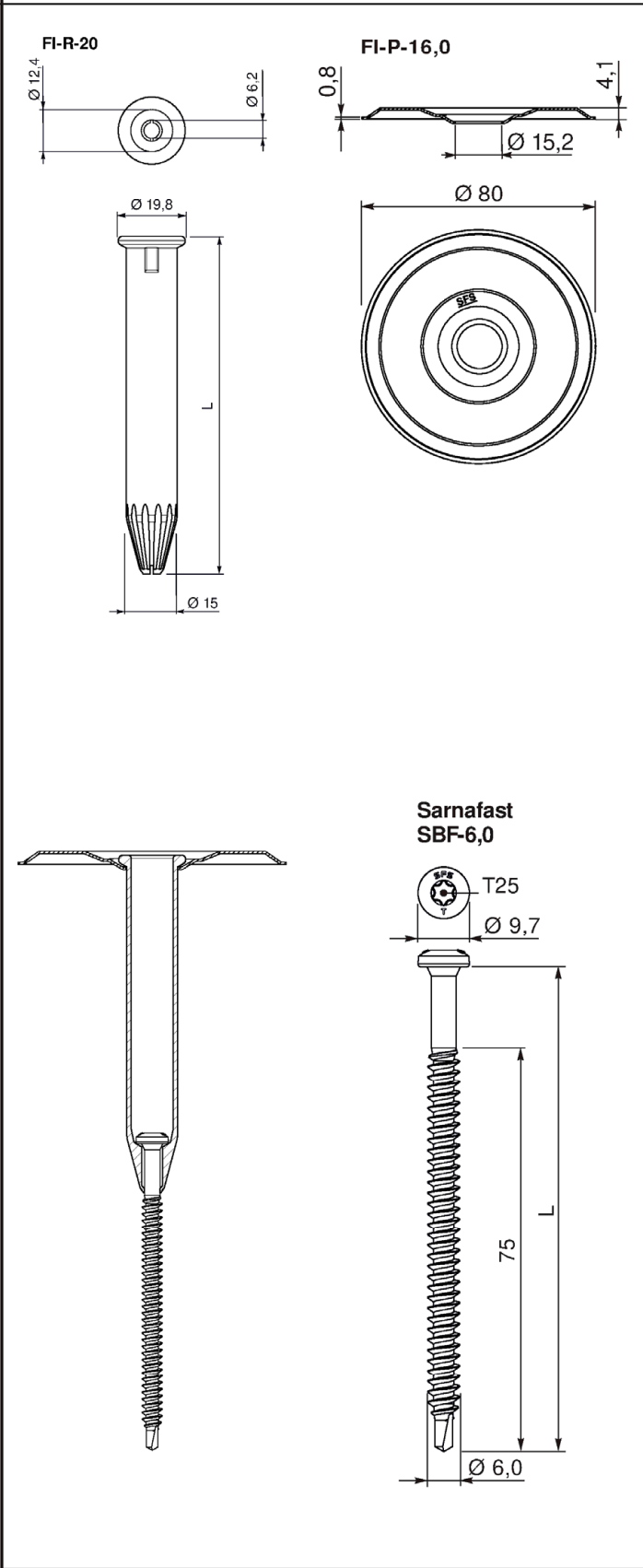
Electronic copy of the ETA by DIBt: ETA-08/0262

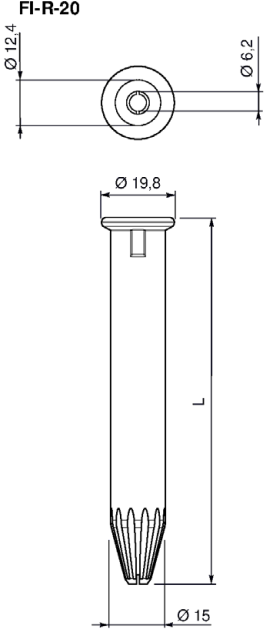
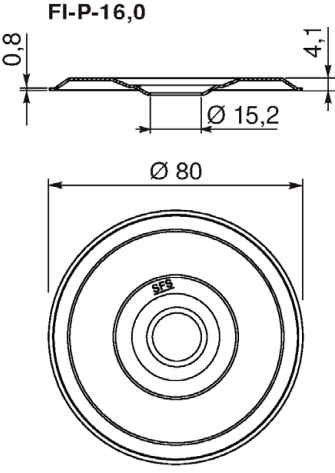
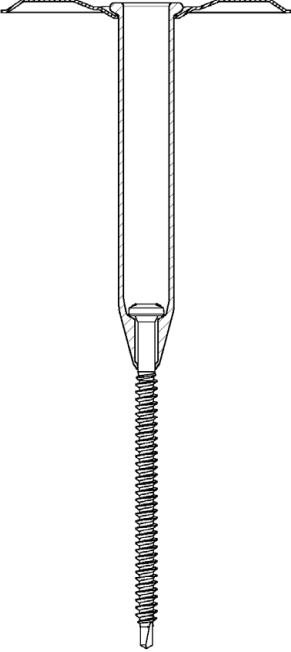
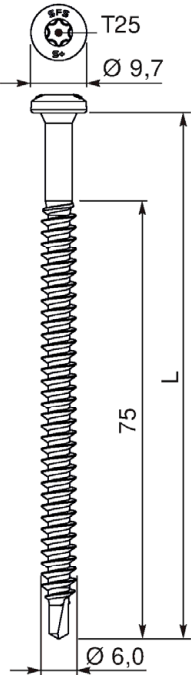
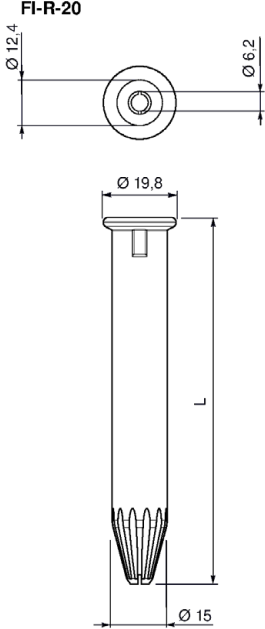
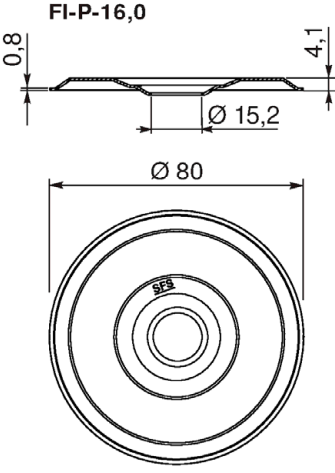
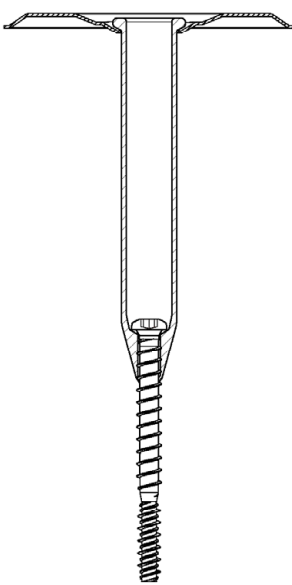
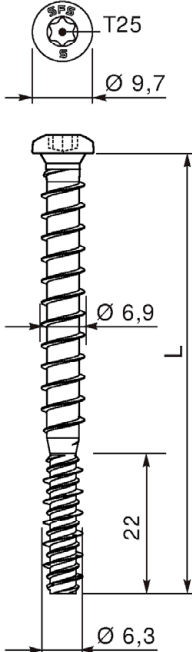
Combination 45A Sarnafast SBF-S-6,0 / FI-P-6,8	Combination 45B FB-S-T25-7,5 / FI-P-6,8
 FI-P-6,8 0,8 4,1 Ø 6,8 Ø 80 SFS Sarnafast SBF-S-6,0 T25 Ø 9,7 75 L Ø 6,0	 FI-P-6,8 0,8 4,1 Ø 6,8 Ø 80 SFS FB-S-T25-7,5 T25 Ø 9,7 100 L Ø 7,5 Ø 6,6
SFS Flat roof fasteners	Annex 45

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	

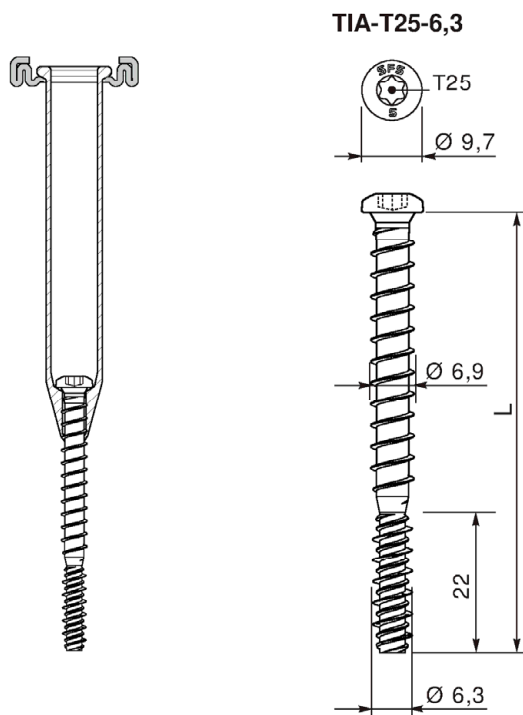
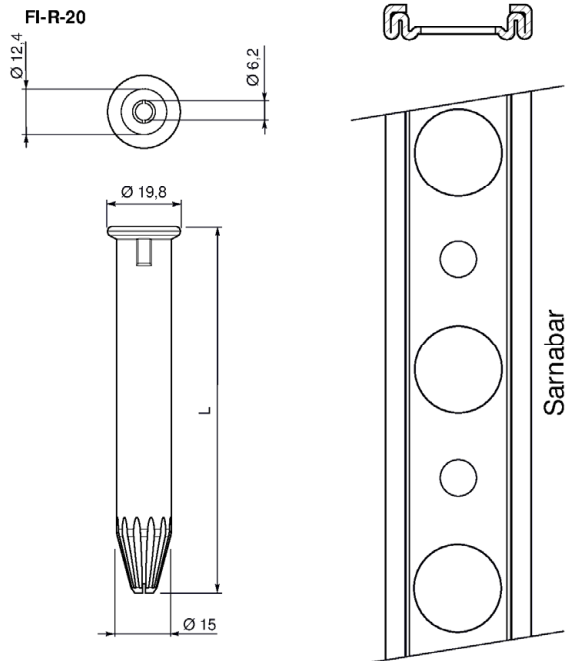
Combination 47A TI-T25-6,3 / FI-P-16,0 / FI-R-20 	Combination 47B BS-6,1 / FI-P-16,0 / FI-R-20 
SFS Flat roof fasteners	Annex 47

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

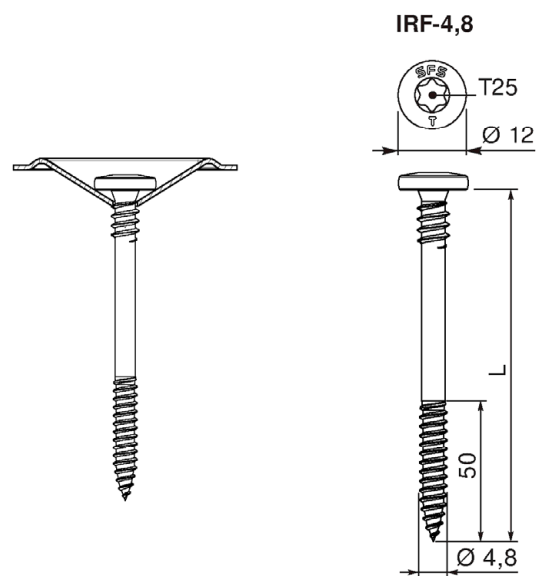
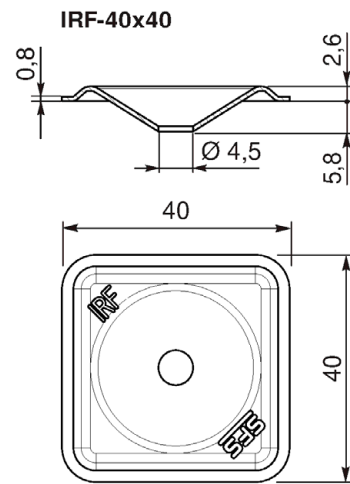
Combination 49A TS-T25-6,0 / FI-P-16,0 / FI-R-20		Combination 49B Sarnafast SBF-6,0 / FI-P-16,0 / FI-R-20	
			
SFS Flat roof fasteners		Annex 49	

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

Combination 51A
TIA-T25-6,3 / FI-R-20 / Sarnabar

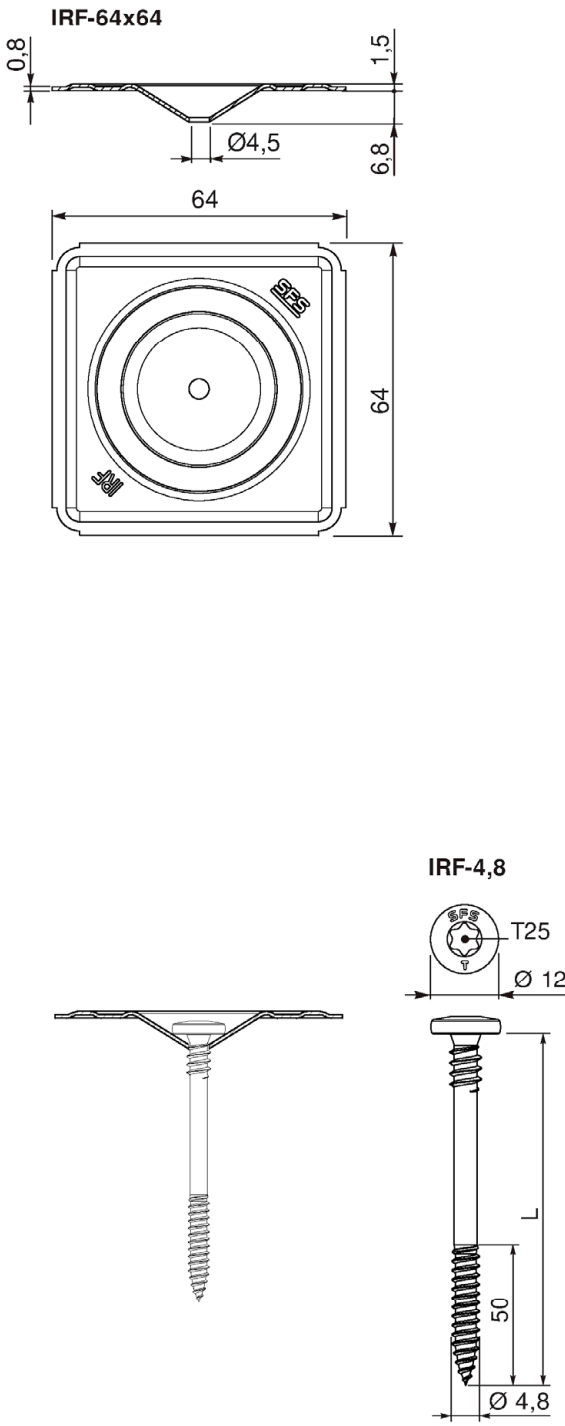
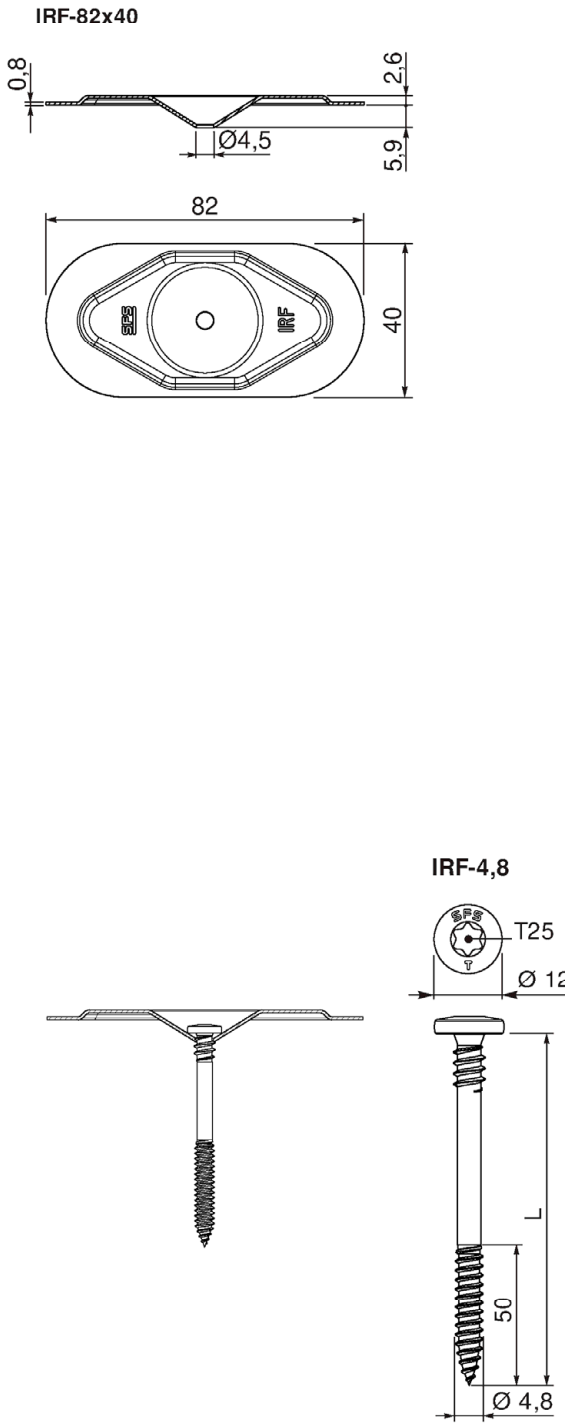


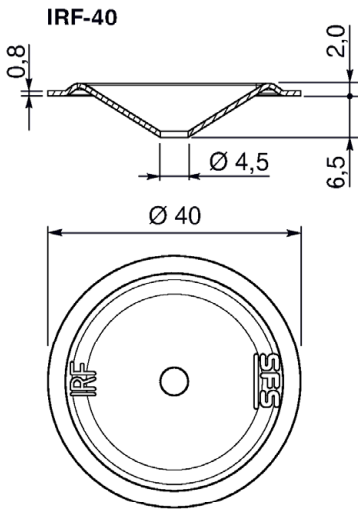
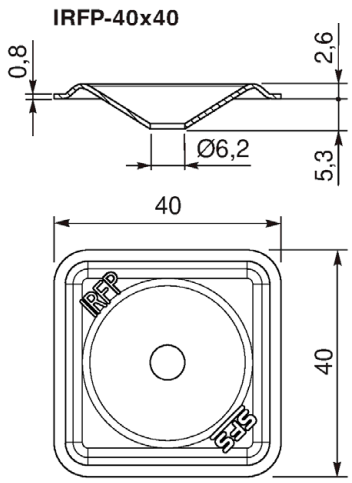
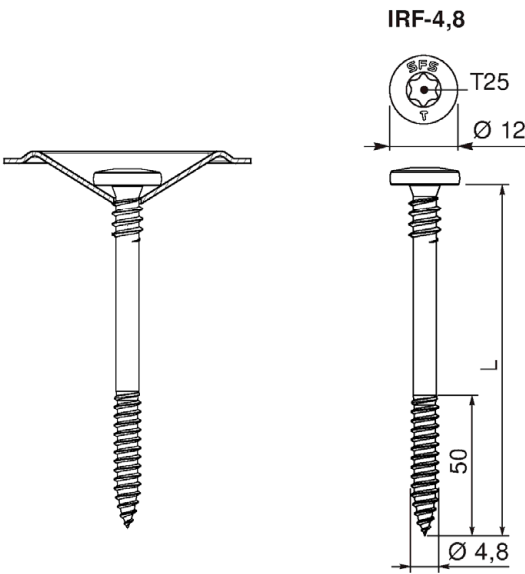
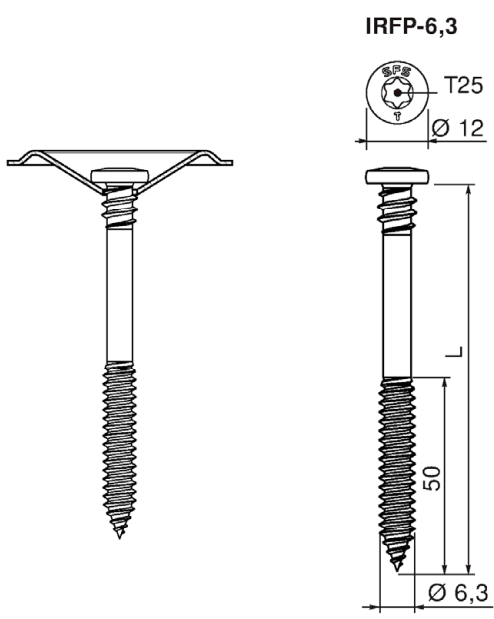
Combination 51B
IRF-4,8 / IRF-40x40

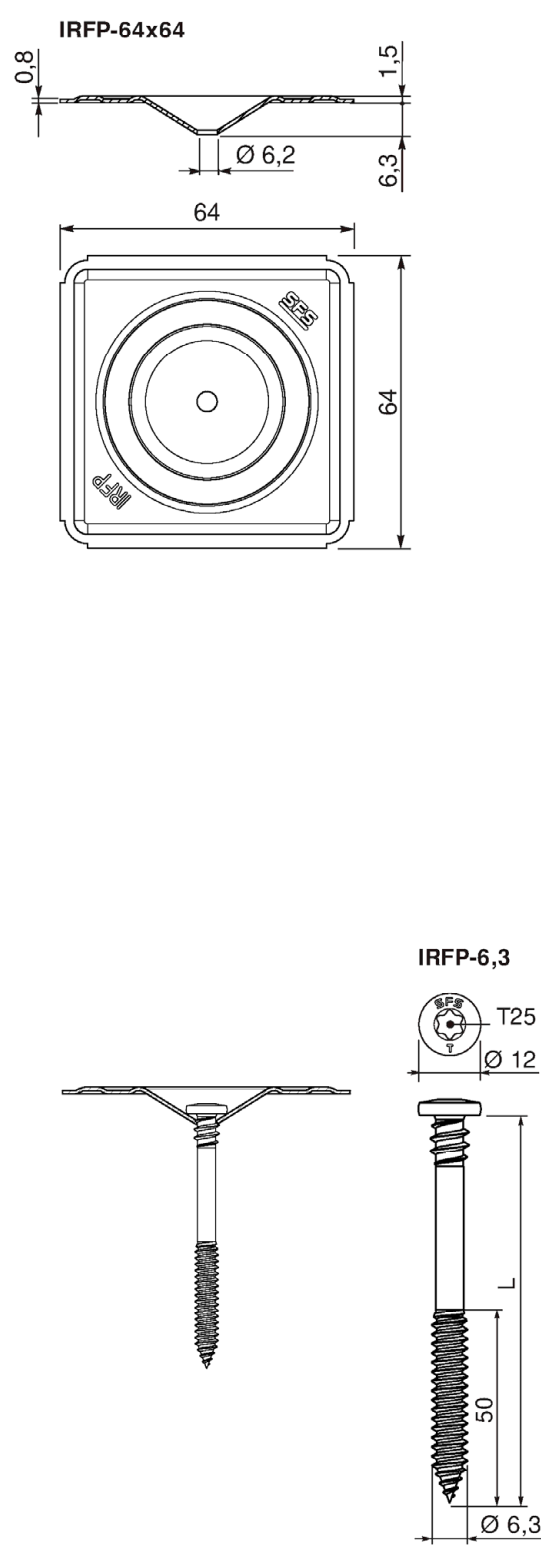


SFS Flat roof fasteners

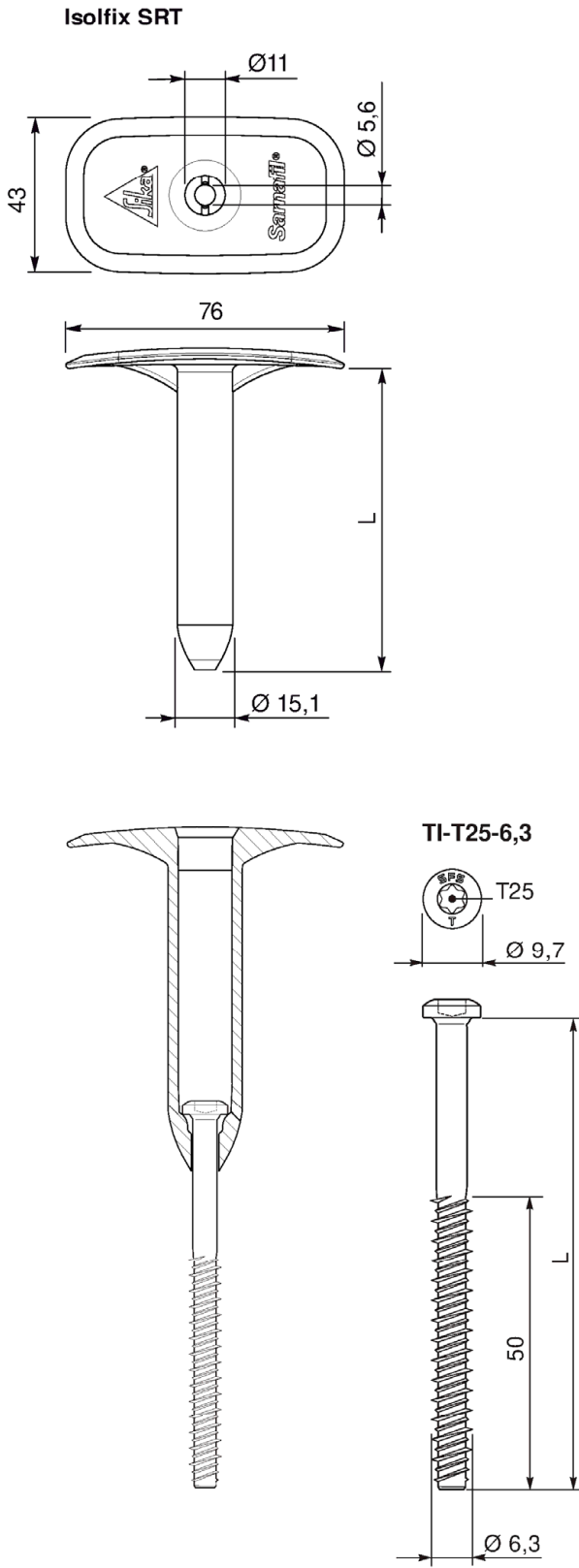
Annex 51

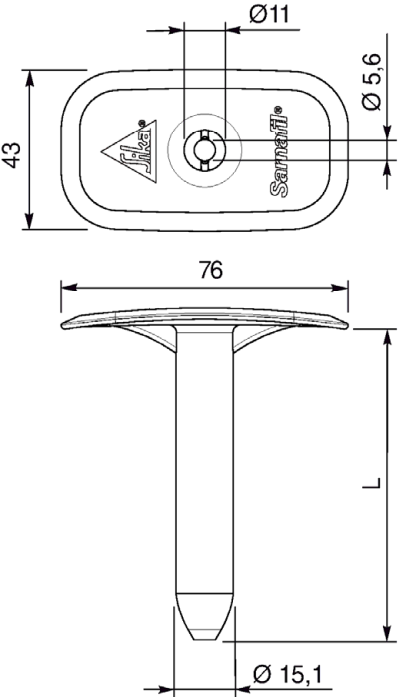
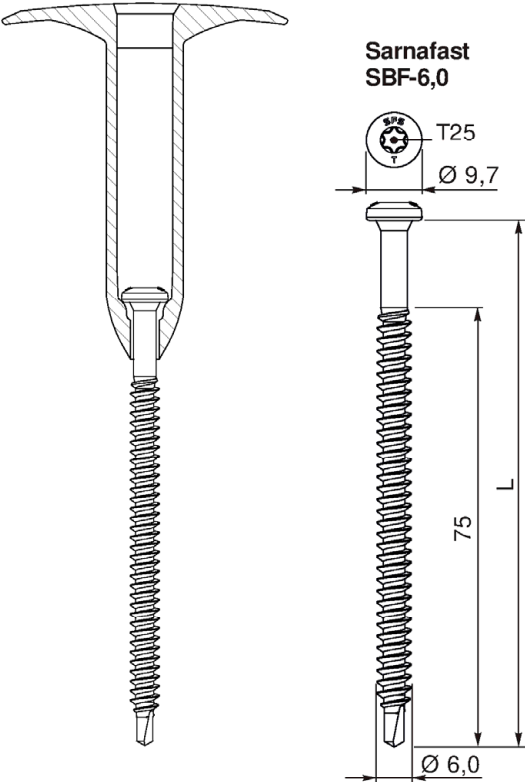
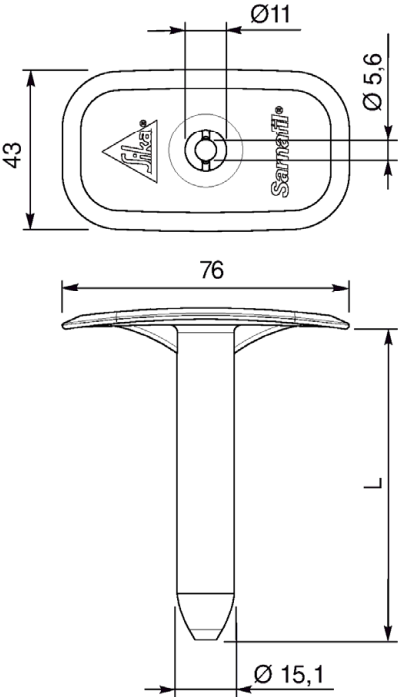
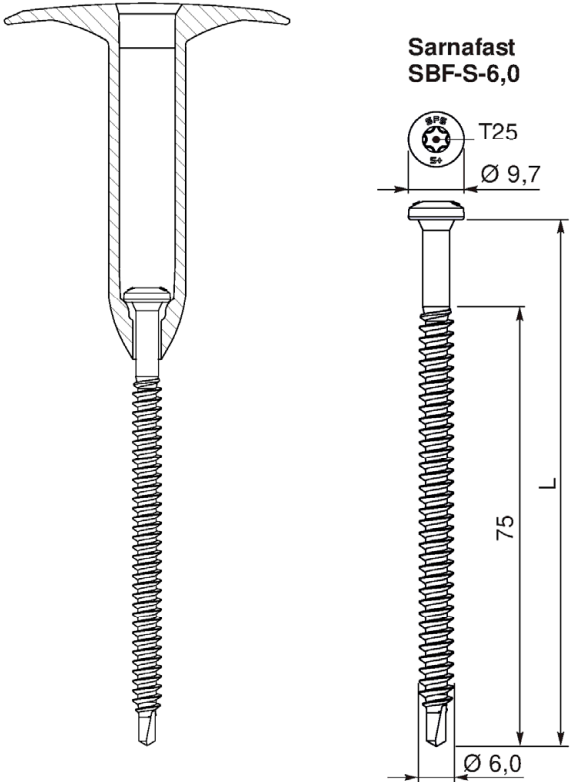
Combination 52A IRF-4,8 / IRF-64x64  IRF-64x64 IRF-4,8 T25 Ø 12 L 50 Ø 4,8	Combination 52B IRF-4,8 / IRF-82x40  IRF-82x40 IRF-4,8 T25 Ø 12 L 50 Ø 4,8
SFS Flat roof fasteners	Annex 52

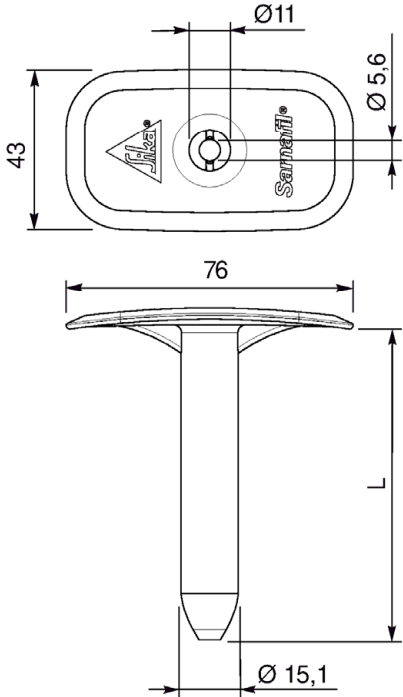
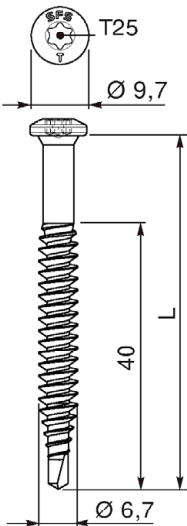
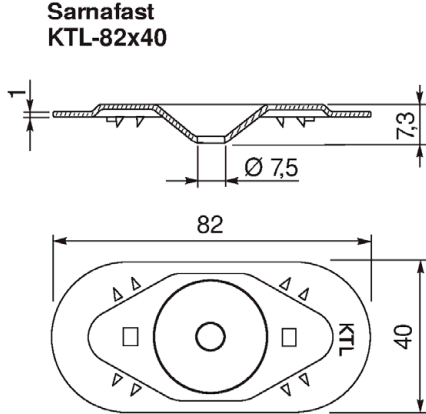
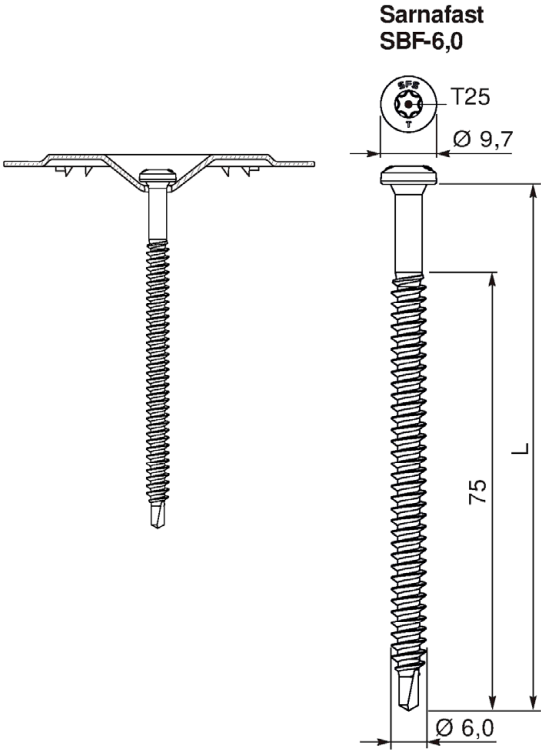
Combination 53A IRF-4,8 / IRF-40		Combination 53B IRFP-6,3 / IRFP-40x40	
			
			
SFS Flat roof fasteners		Annex 53	

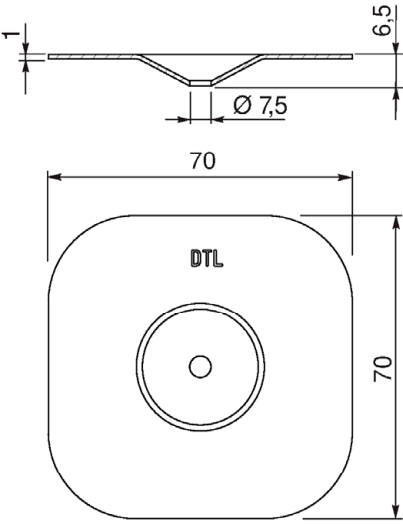
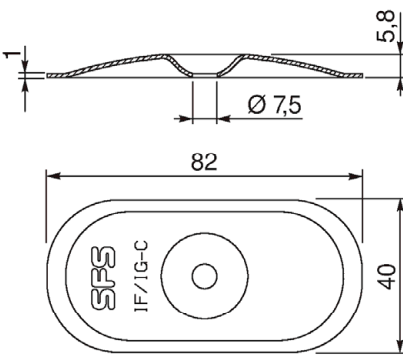
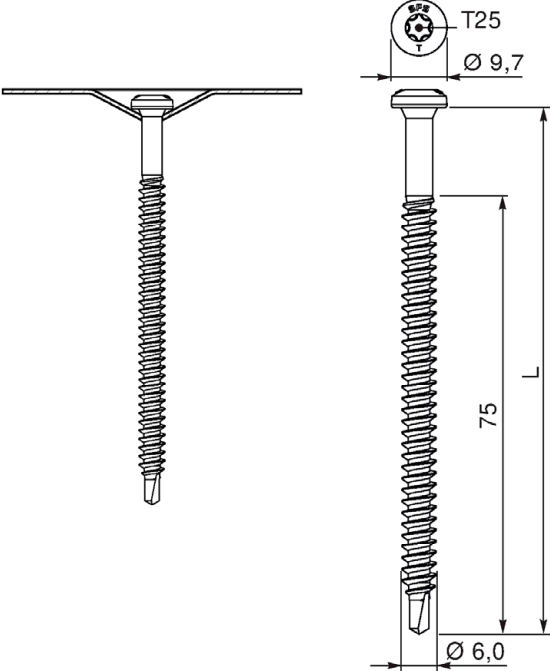
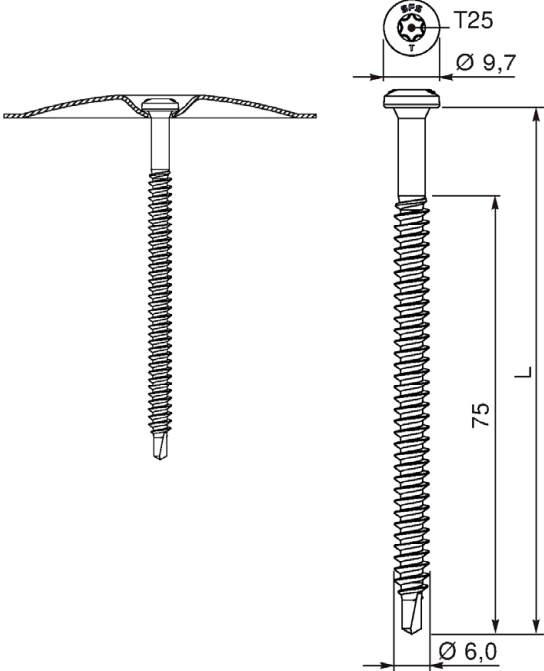
Combination 54A IRFP-6,3 / IRFP-64x64  The drawings for Combination 54A show the IRFP-64x64 fastener with a cross-section (heights: 0.8, 1.5, 6.3; width: 6.2) and a top view (square, 64x64). The IRFP-6,3 fastener is shown in cross-section (head: T25, Ø 12; shank: Ø 6.3, length: 50, total length: L) and in a side view.	Combination 54B IRFP-6,3 / IRFP-82x40  The drawings for Combination 54B show the IRFP-82x40 fastener with a cross-section (heights: 0.8, 2.6, 5.3; width: 6.2) and a top view (oval, 82x40). The IRFP-6,3 fastener is shown in cross-section (head: T25, Ø 12; shank: Ø 6.3, length: 50, total length: L) and in a side view.
SFS Flat roof fasteners	Annex 54

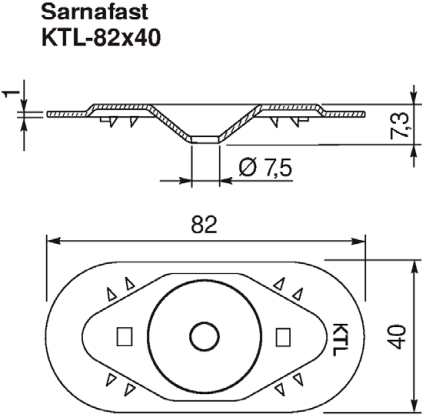
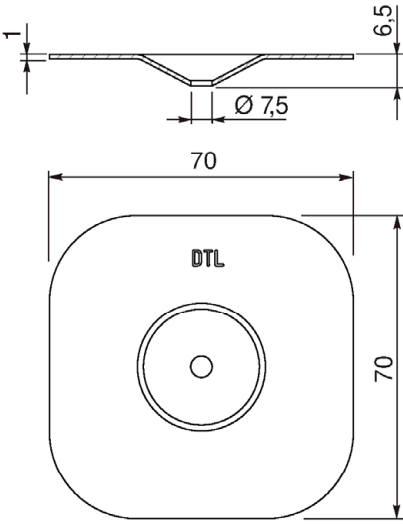
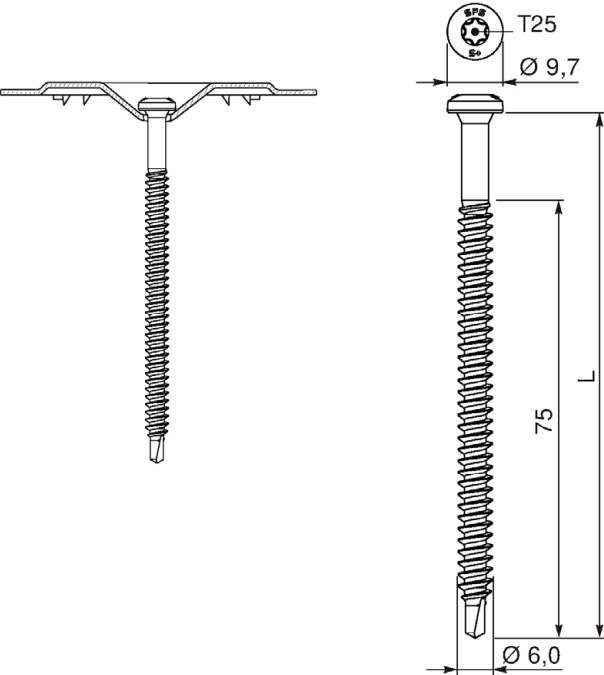
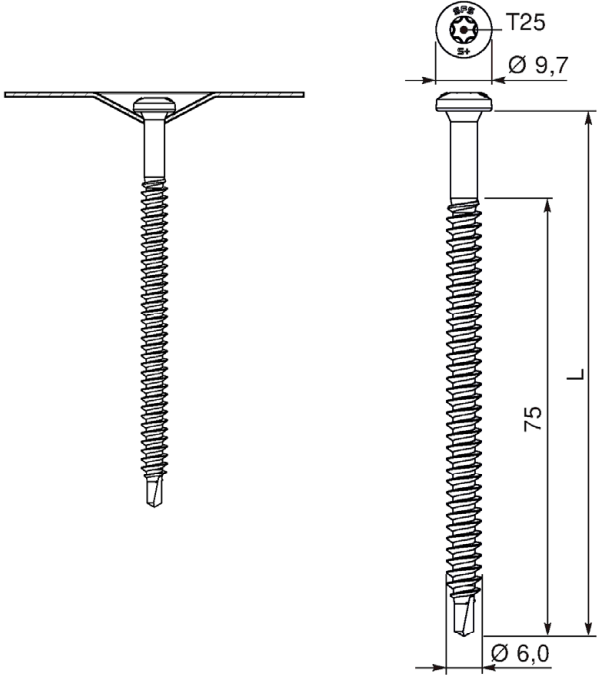
Electronic copy of the ETA by DIBt: ETA-08/0262

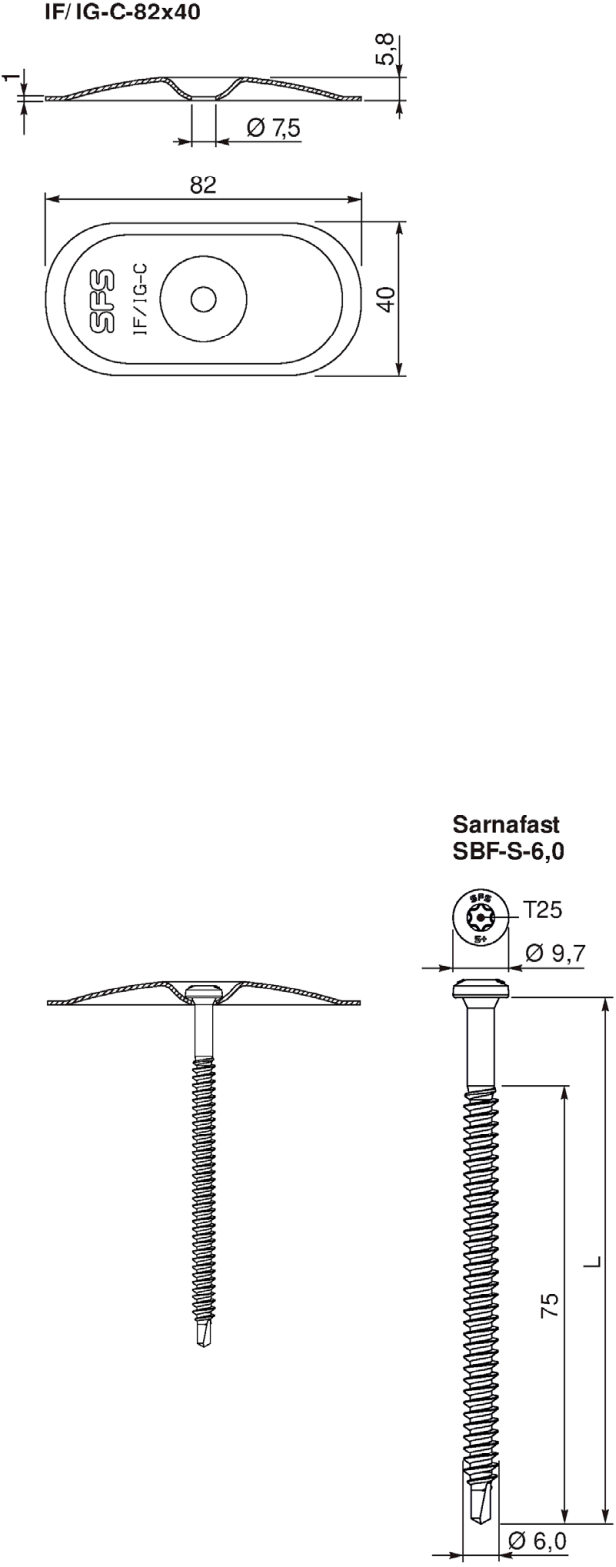
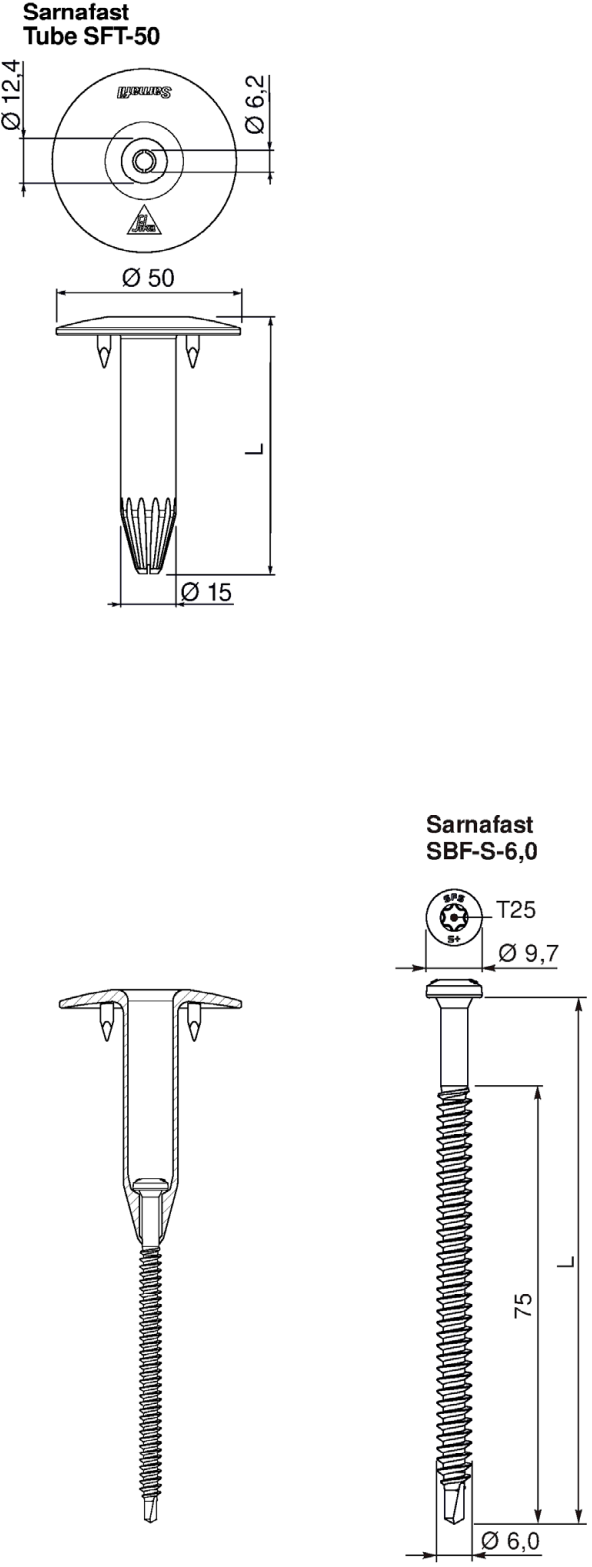
Combination 55A IRFP-6,3 / IRFP-40  IRFP-40 IRFP-6,3	Combination 55B TI-T25-6,3 / Isolfix SRT  Isolfix SRT TI-T25-6,3
SFS Flat roof fasteners	Annex 55

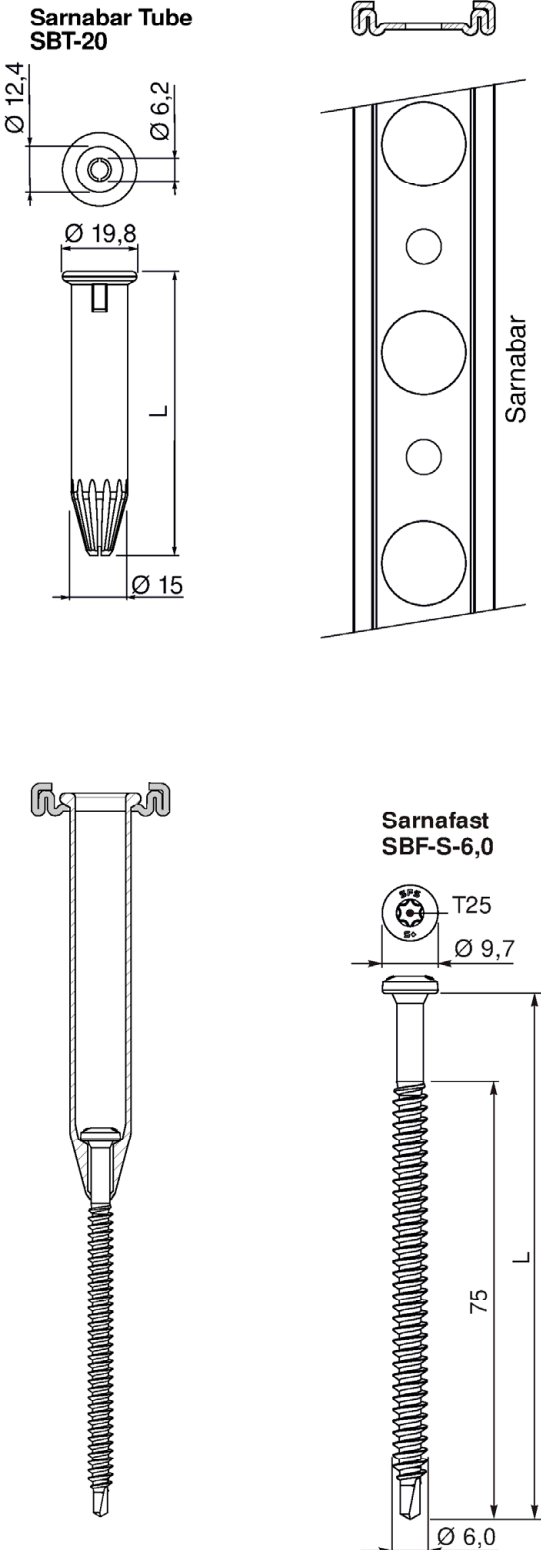
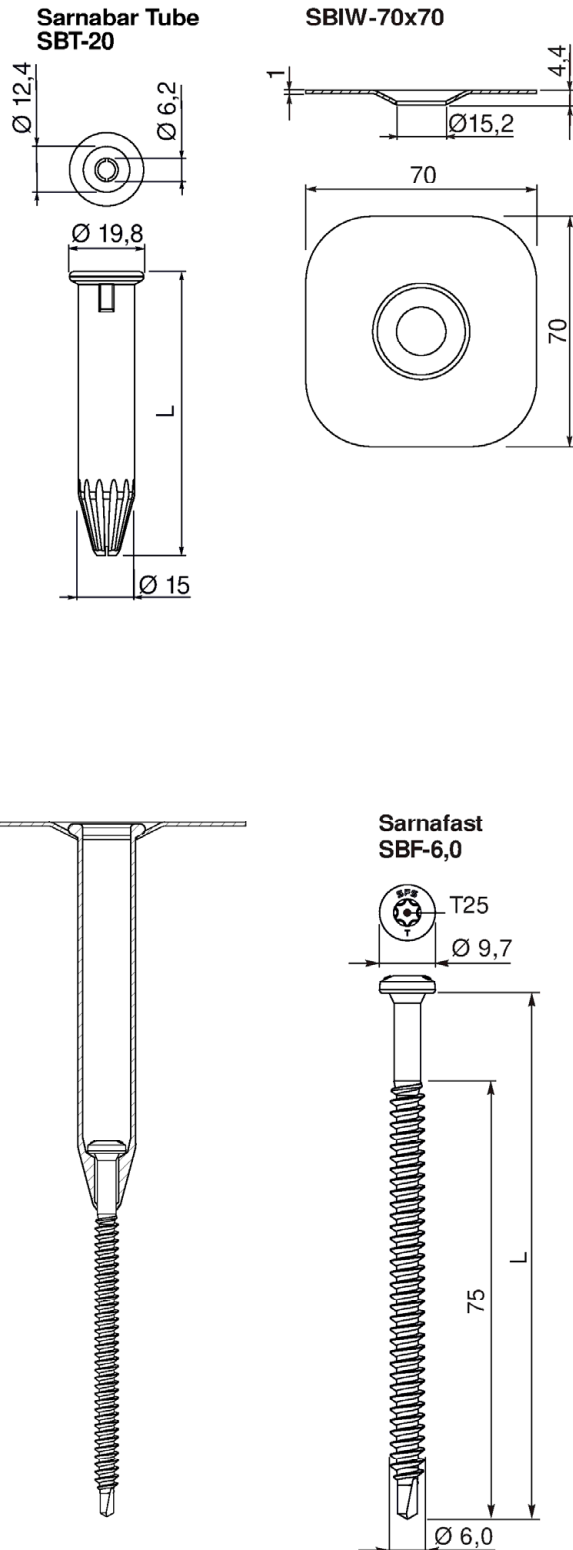
Combination 56A Sarnafast SBF-6,0 / Isolfix SRT		Combination 56B Sarnafast SBF-S-6,0 / Isolfix SRT	
Isolfix SRT  Sarnafast SBF-6,0 		Isolfix SRT  Sarnafast SBF-S-6,0 	
SFS Flat roof fasteners		Annex	56

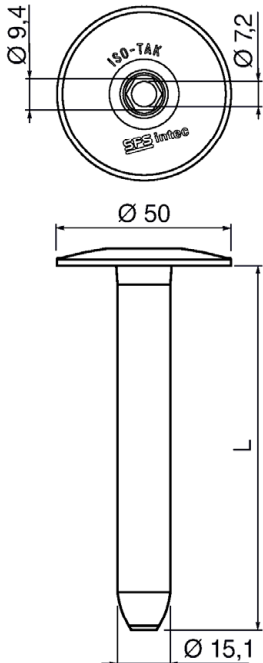
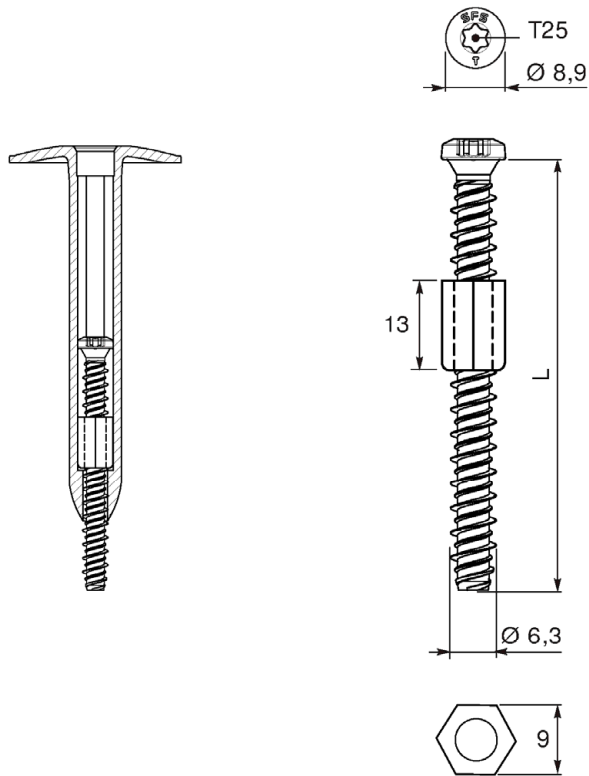
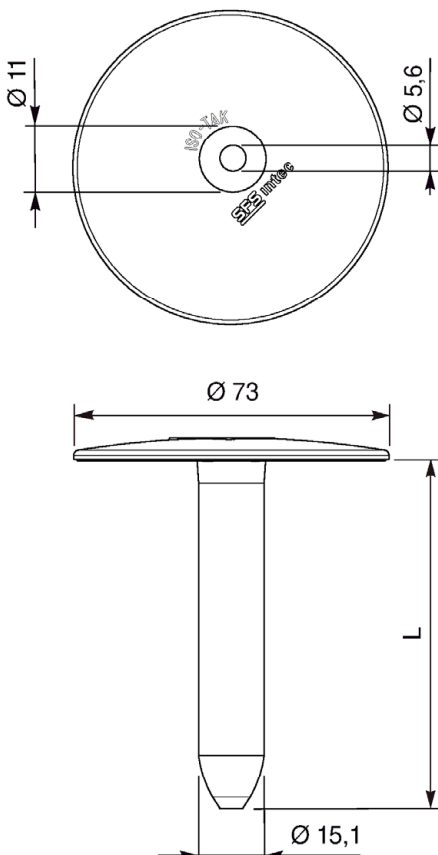
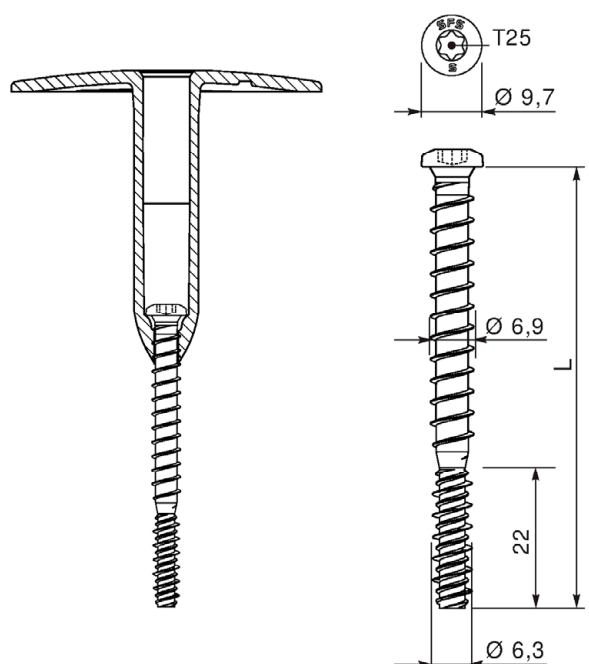
Combination 57A BS-6,7 / Isolfix SRT Isolfix SRT  BS-6,7 	Combination 57B Sarnafast SBF-6,0 / Sarnafast KTL-82x40 Sarnafast KTL-82x40  Sarnafast SBF-6,0 
SFS Flat roof fasteners	Annex 57

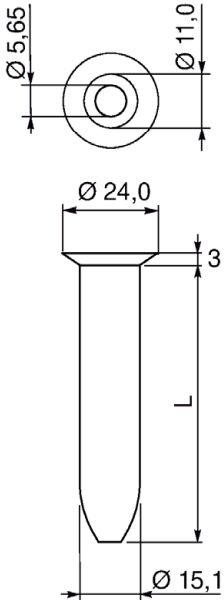
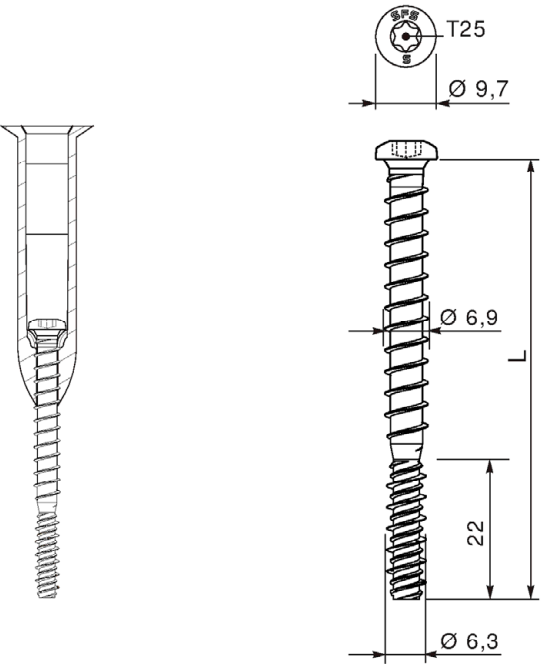
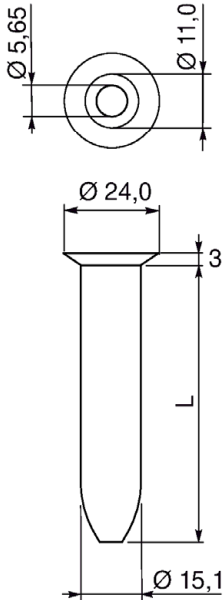
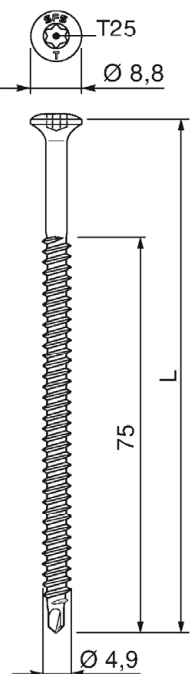
Combination 58A Sarnafast SBF-6,0 / Sarnafast DTL-70x70		Combination 58B Sarnafast SBF-6,0 / IF/IG-C-82x40	
Sarnafast DTL-70x70 		IF/IG-C-82x40 	
Sarnafast SBF-6,0 		Sarnafast SBF-6,0 	
SFS Flat roof fasteners		Annex 58	

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

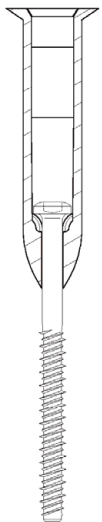
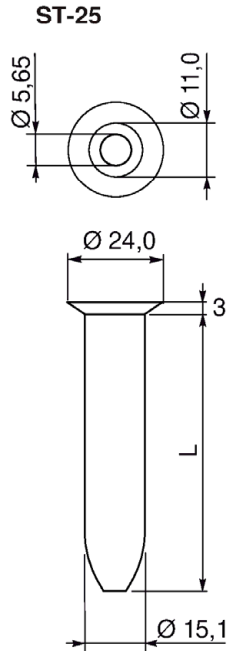
Combination 60A Sarnafast SBF-S-6,0 / IF/IG-C-82x40  The IF/IG-C-82x40 fastener is shown in two views: a side view with a height of 5,8 mm and a central hole of Ø 7,5 mm, and a top view with an overall width of 82 mm and a height of 40 mm. The Sarnafast SBF-S-6,0 fastener is shown in two views: a side view with a height of 75 mm and a central hole of Ø 6,0 mm, and a top view with a width of 9,7 mm and a height of 6,0 mm. The fastener is labeled 'SFS' and 'IF/IG-C'.	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 mm and a central hole of Ø 6,0 mm, and a top view with a width of 12,4 mm and a height of 6,2 mm. The fastener is labeled 'Sarnafast' and 'Tube SFT-50'. The Sarnafast SBF-S-6,0 fastener is shown in two views: a side view with a height of 75 mm and a central hole of Ø 6,0 mm, and a top view with a width of 9,7 mm and a height of 6,0 mm. The fastener is labeled 'SFS' and 'SBF-S-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 
SFS Flat roof fasteners	Annex 61

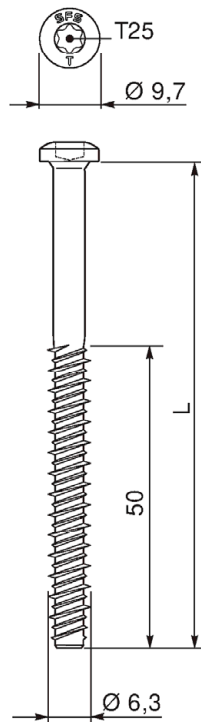
Combination 62A TIF-N-6,3 / RH50 RH50  TIF-N-6,3  SFS Flat roof fasteners	Combination 62B TIA-T25-6,3 / R75 R75  TIA-T25-6,3  Annex 62
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Combination 63A TIA-T25-6,3 / ST-25	Combination 63B BS-4,8 / ST-25
ST-25  TIA-T25-6,3 	ST-25  BS-4,8 
SFS Flat roof fasteners	Annex 63

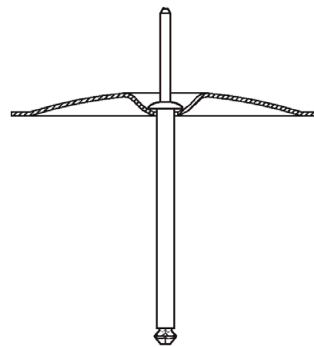
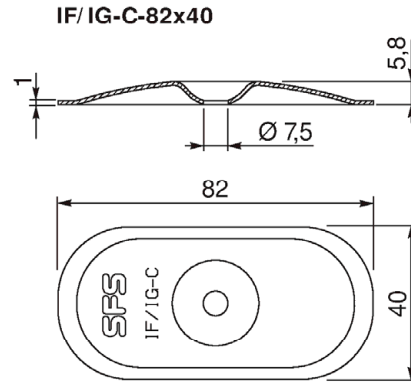
Combination 64A
TI-T25-6,3 / ST-25



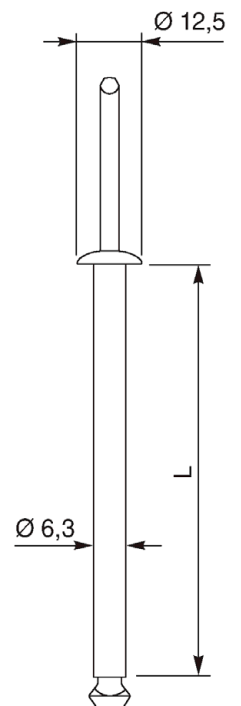
TI-T25-6,3



Combination 64B
TPR-L-6,3 / IF/IG-C-82x40

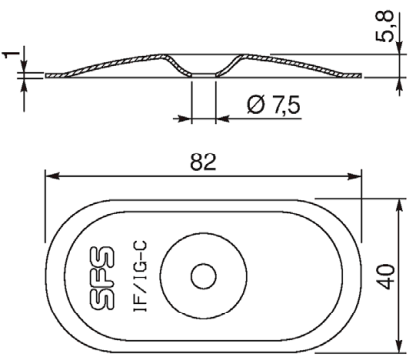
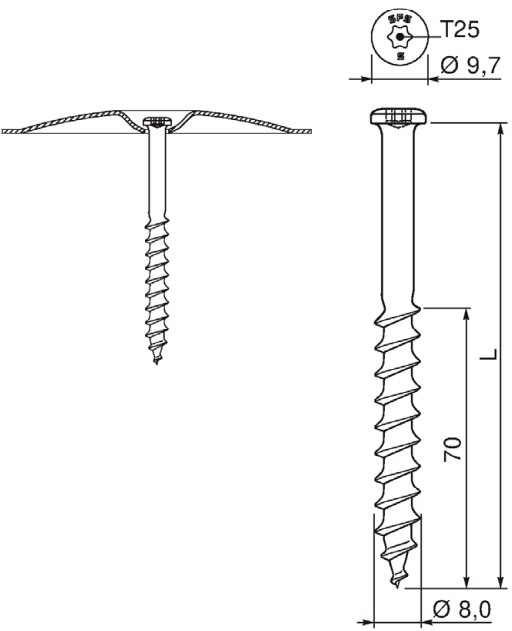
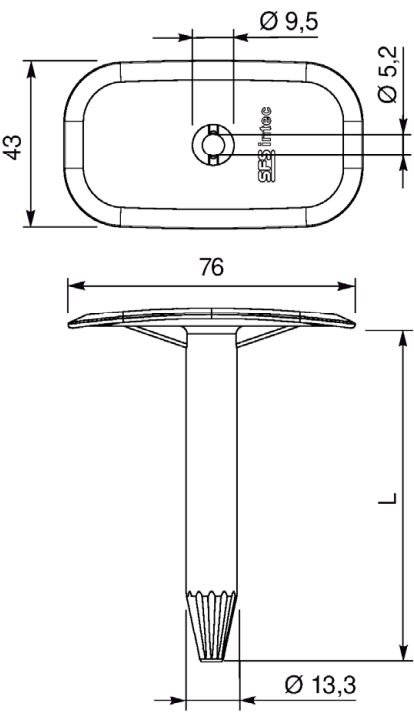
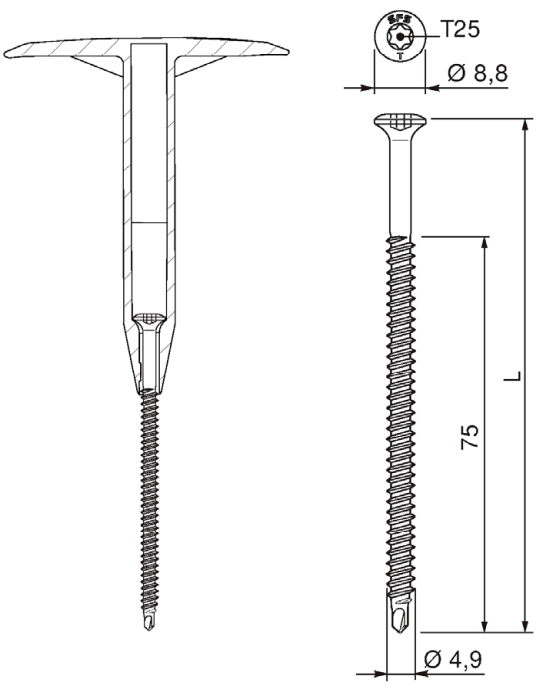


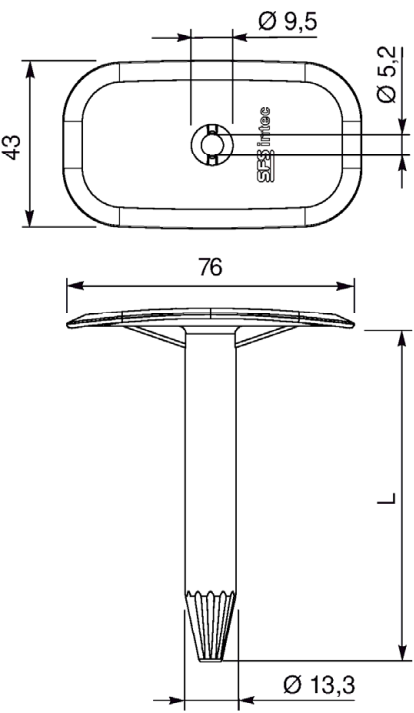
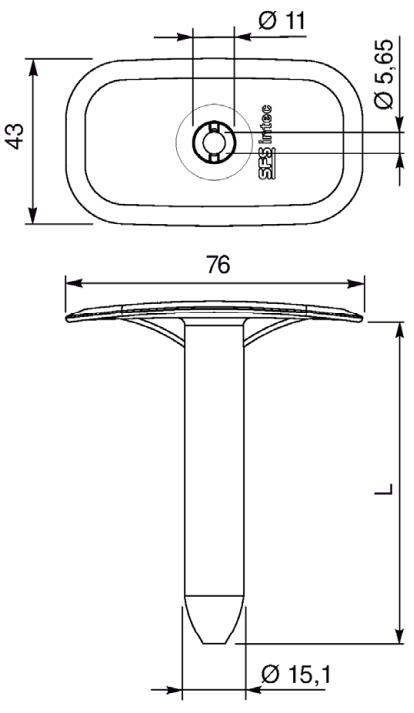
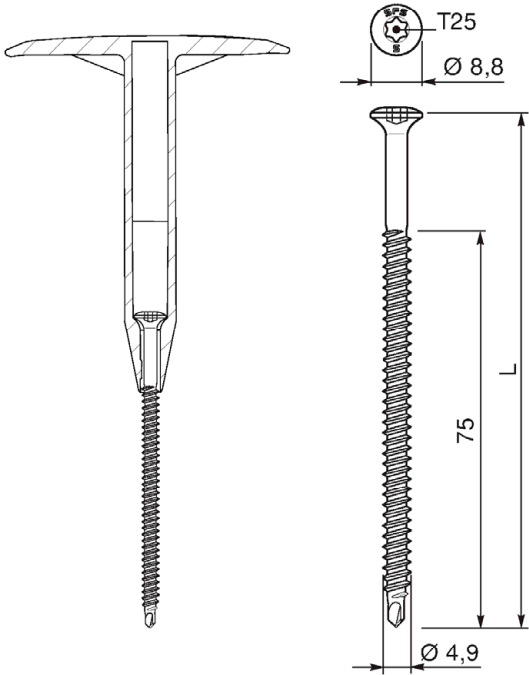
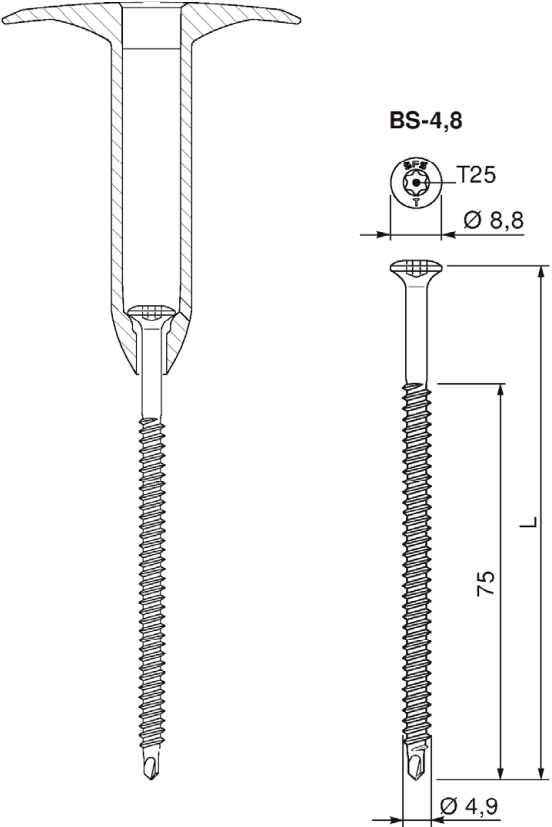
TPR-L-6,3

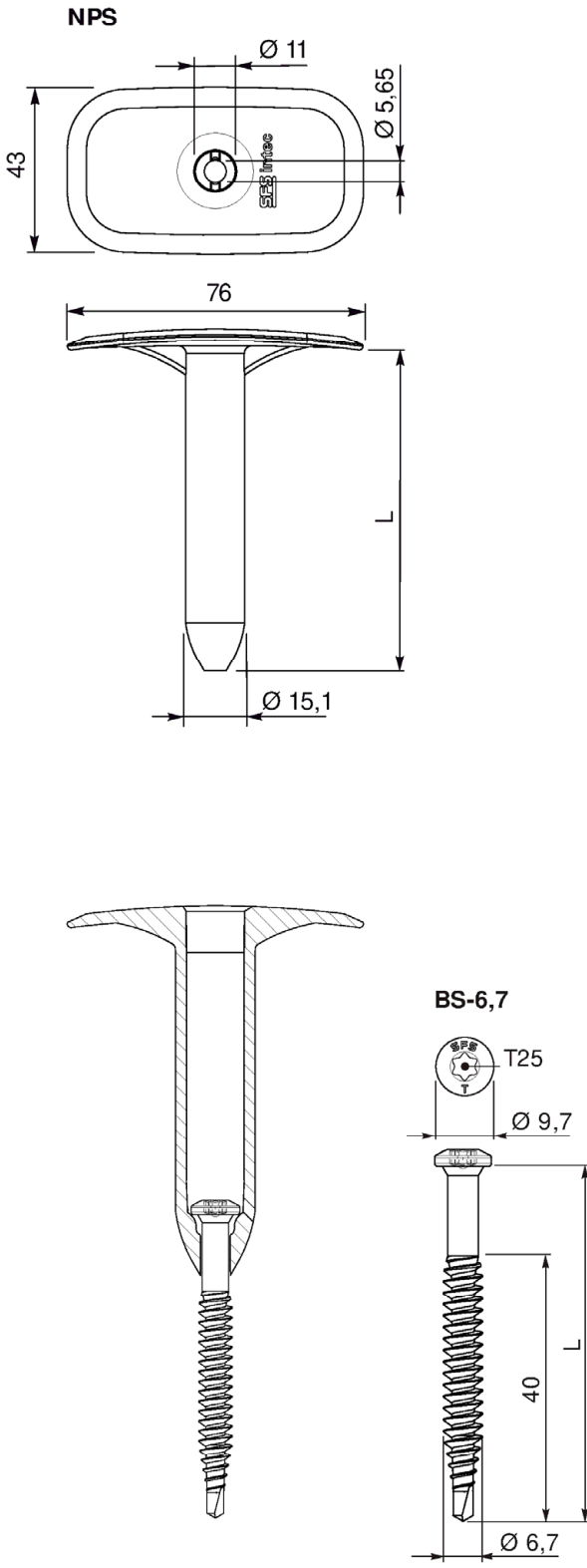
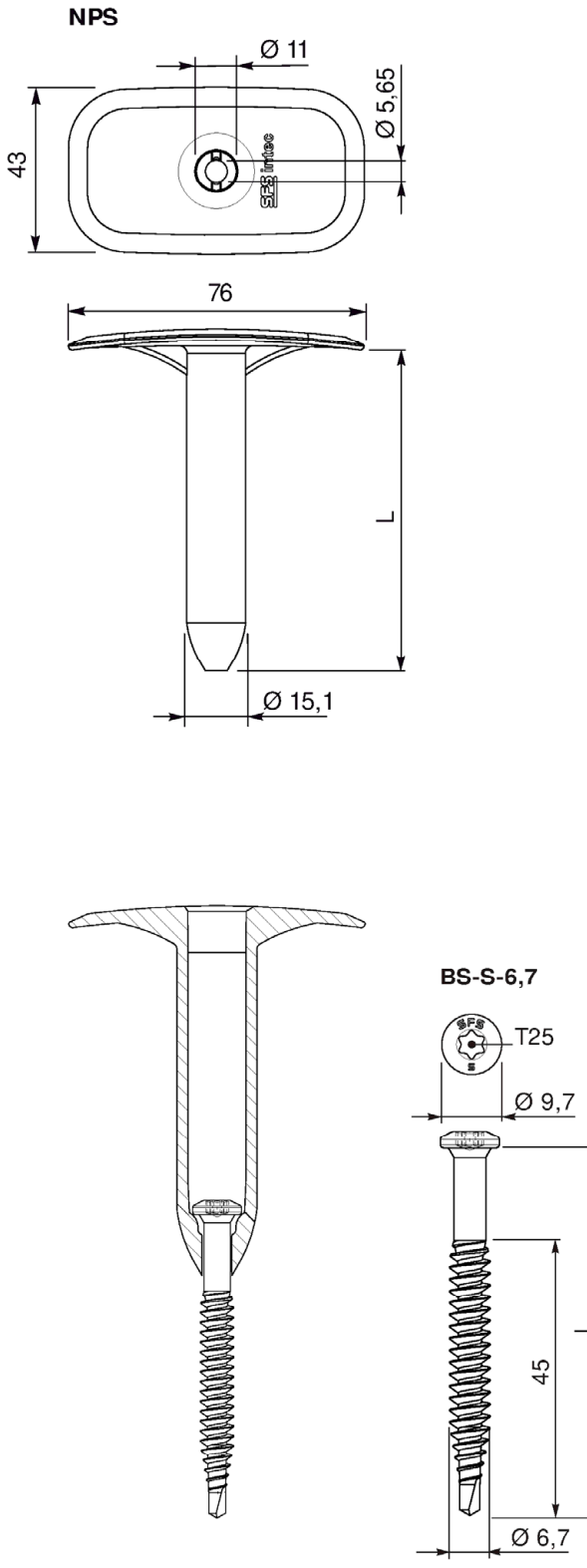


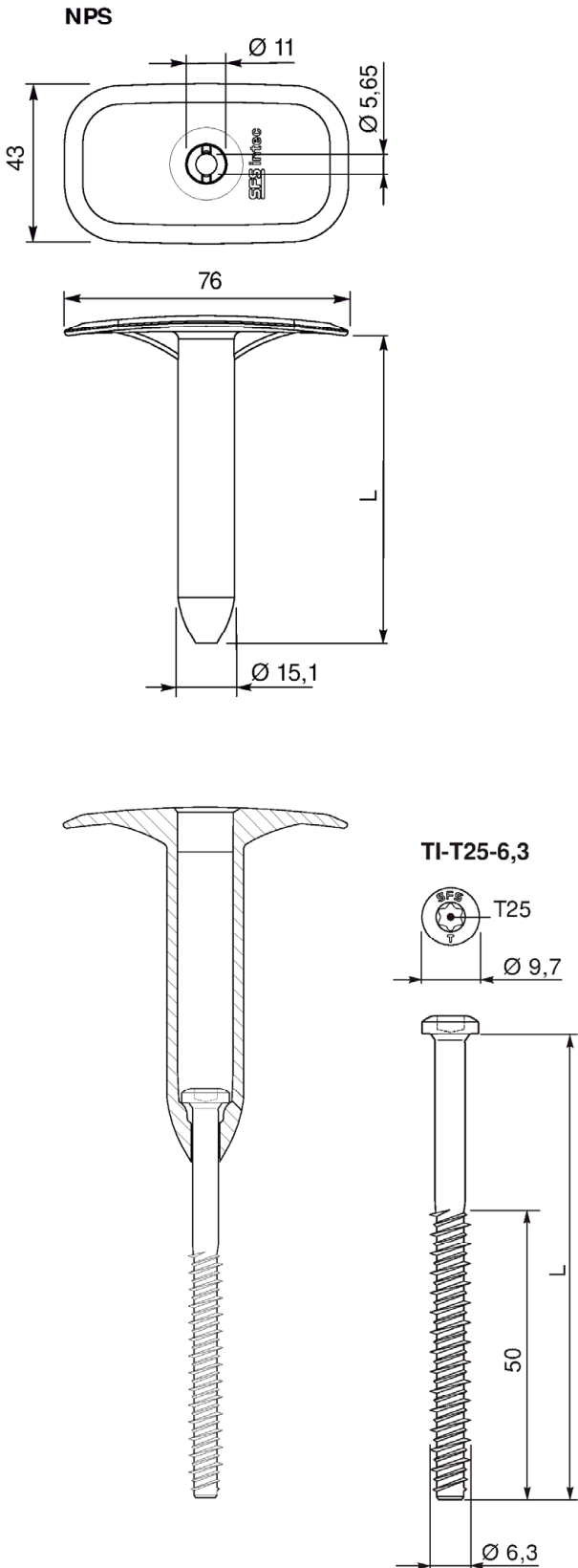
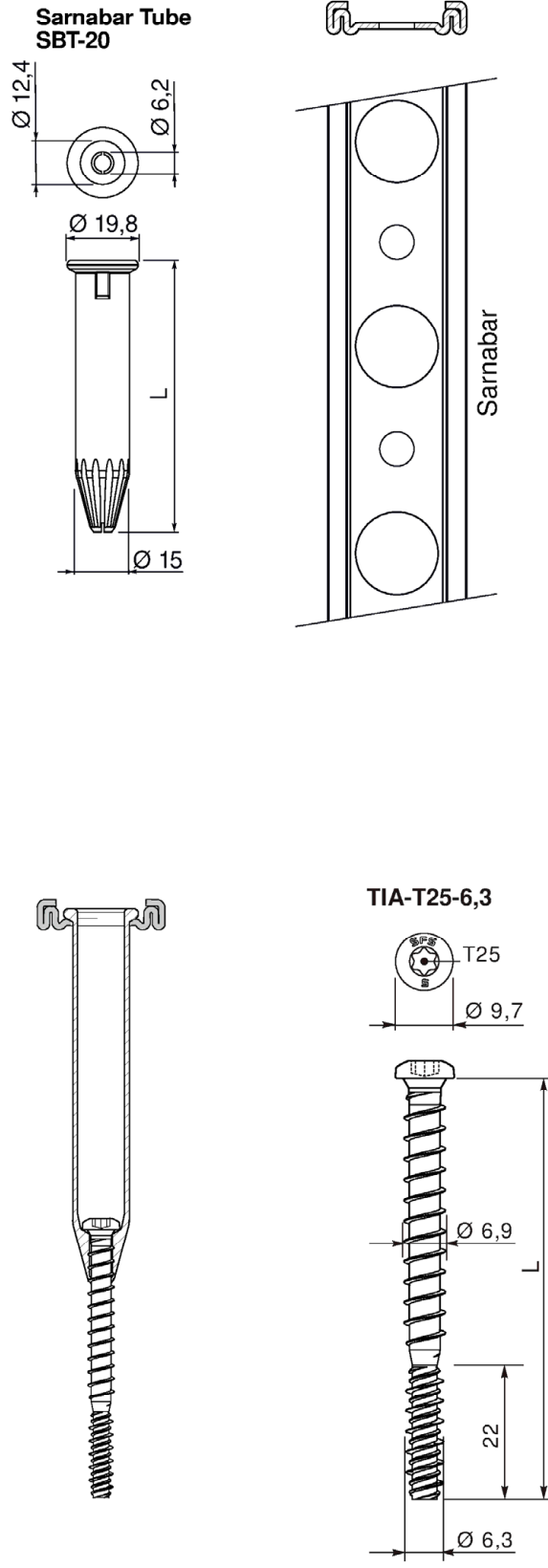
SFS Flat roof fasteners

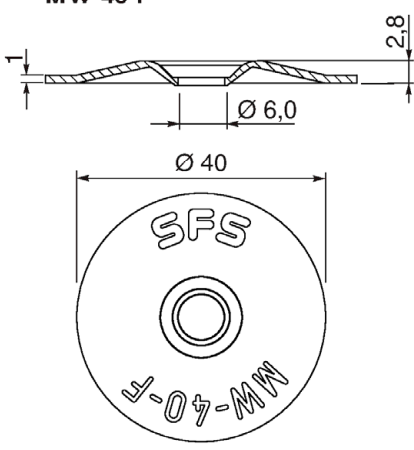
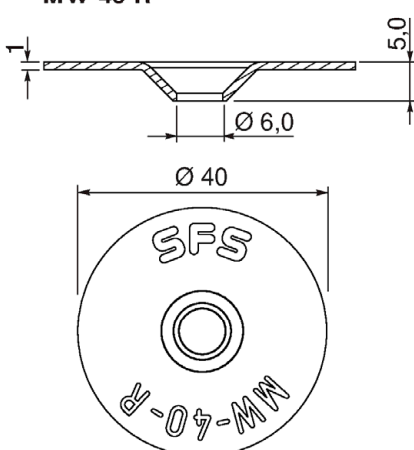
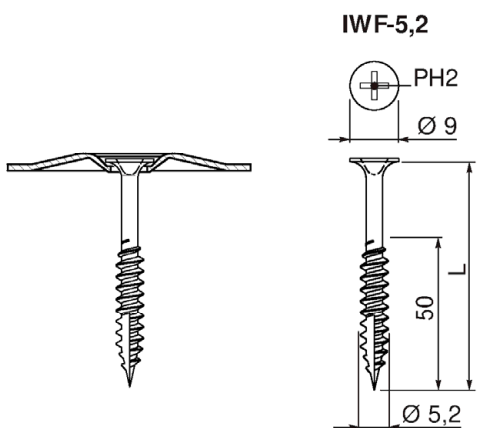
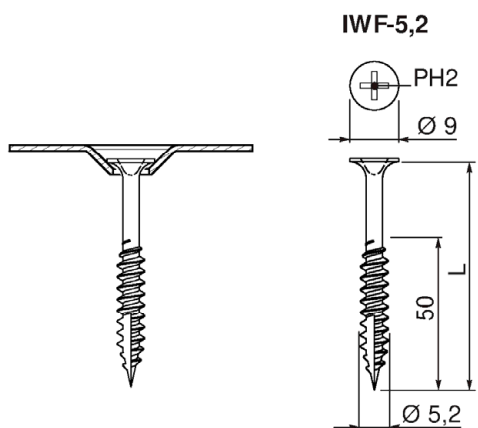
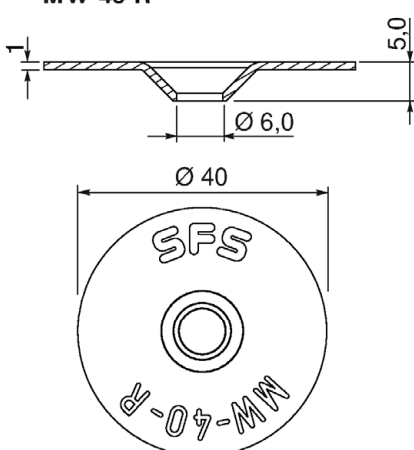
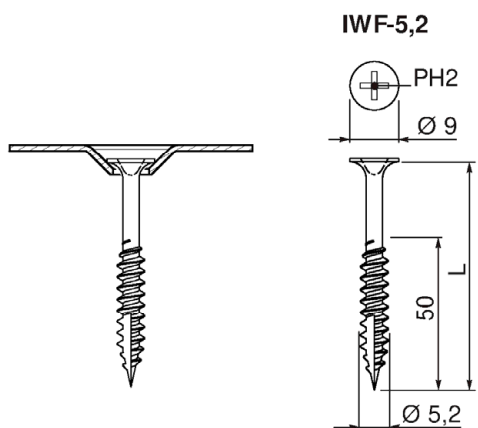
Annex 64

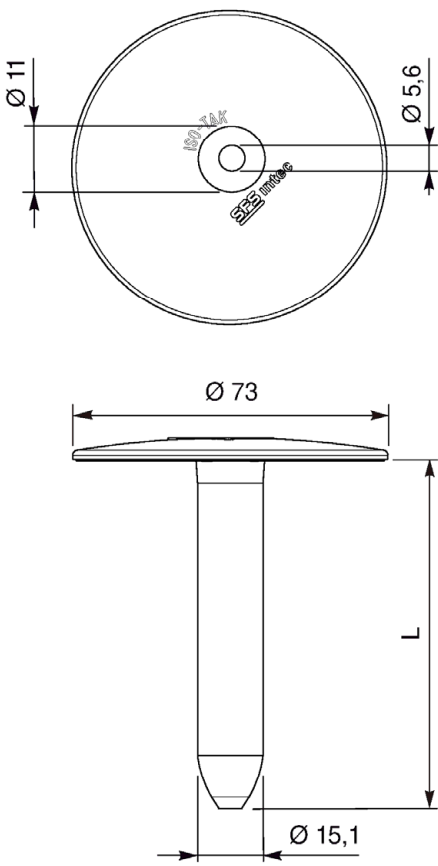
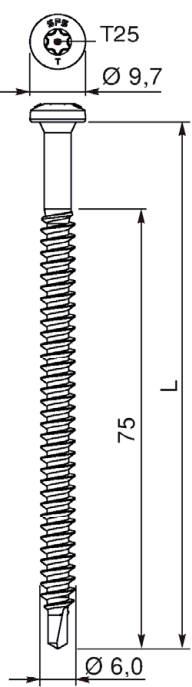
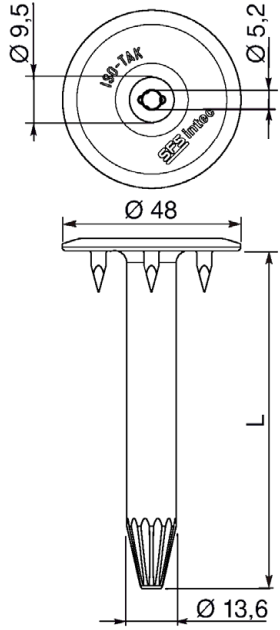
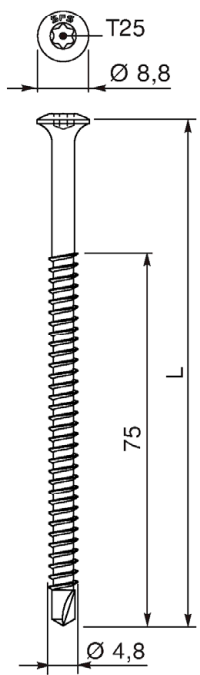
Combination 65A LBS-S-T25-8,0 / IF/IG-C-82x40	Combination 65B BS-4,8 / NPP
IF/IG-C-82x40  LBS-S-T25-8,0 	NPP  BS-4,8 
SFS Flat roof fasteners	Annex 65

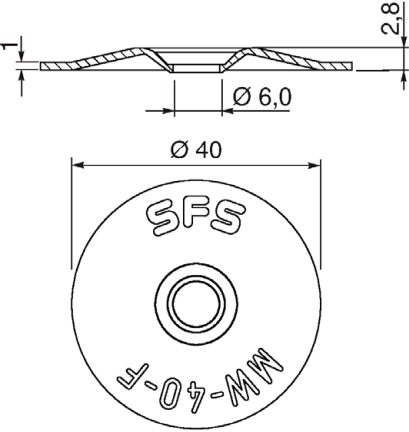
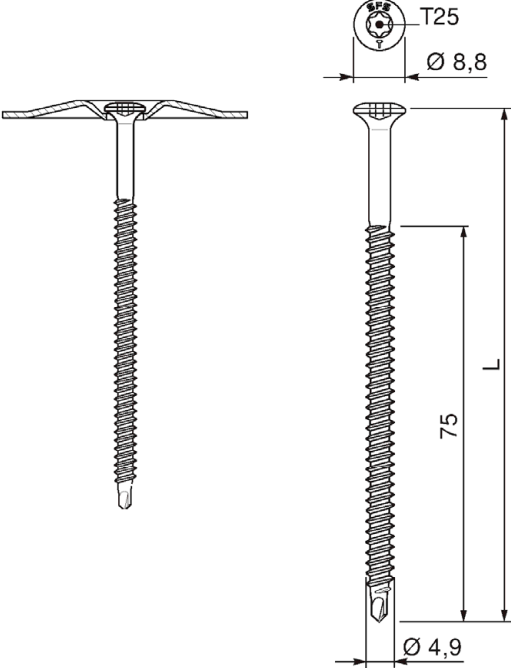
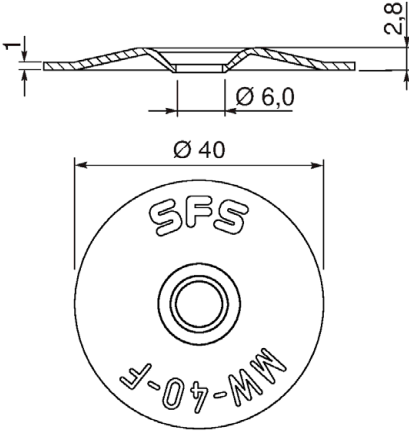
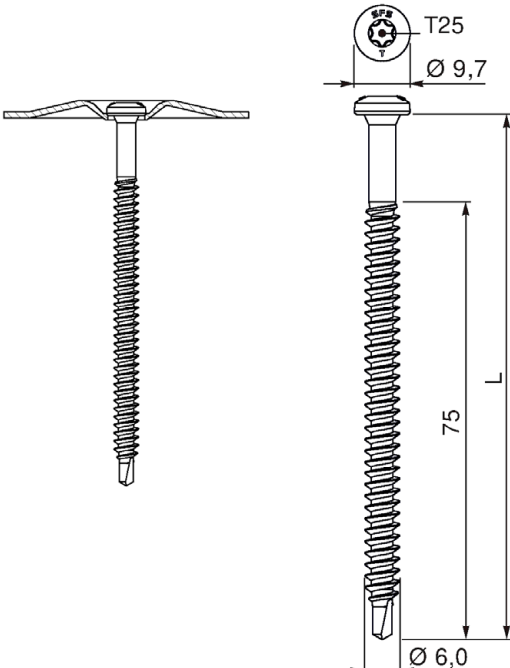
Combination 66A BS-S-4,8 / NPP		Combination 66B BS-4,8 / NPS	
NPP  NPS  BS-S-4,8  BS-4,8 			
SFS Flat roof fasteners			Annex 66

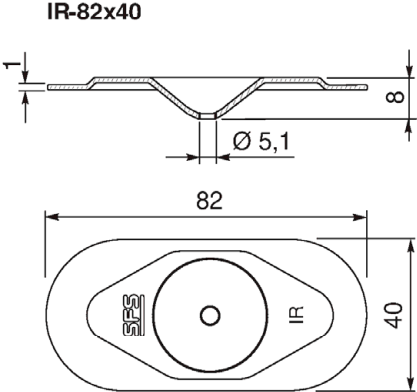
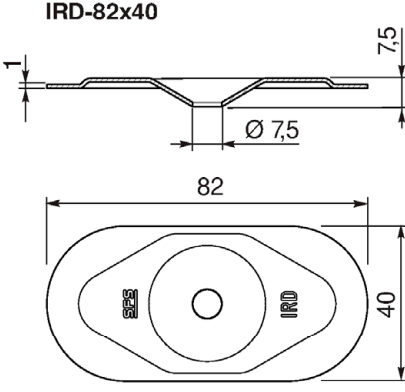
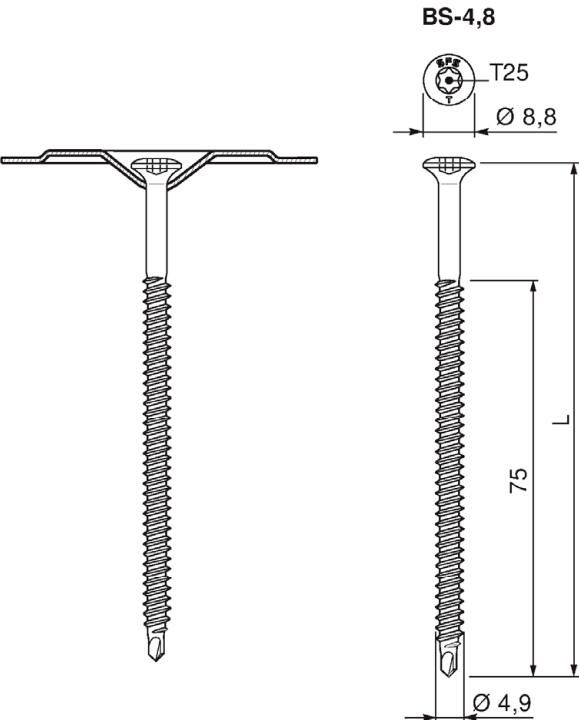
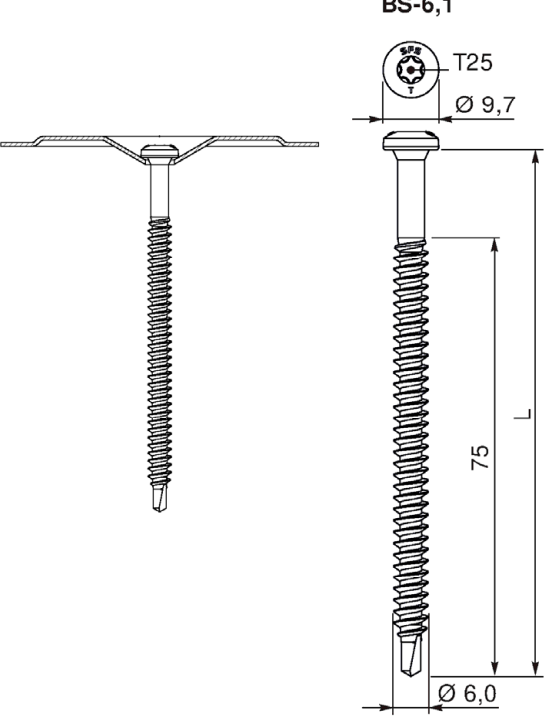
Combination 67A BS-6,7 / NPS  The drawing shows the NPS (Nail Plate) and BS-6,7 (Base Plate) components. The NPS is a rectangular plate with rounded corners, 43 mm high, 76 mm wide, and 5.65 mm thick. It has a central hole with a diameter of 11 mm. The BS-6,7 is a base plate with a central hole of 9.7 mm diameter and a threaded section with a diameter of 6.7 mm. The total length of the BS-6,7 is 40 mm. The NPS is shown with a central hole of 11 mm diameter and a central hole of 15.1 mm diameter. The BS-6,7 is shown with a central hole of 9.7 mm diameter and a threaded section with a diameter of 6.7 mm. The total length of the BS-6,7 is 40 mm.	Combination 67B BS-S-6,7 / NPS  The drawing shows the NPS (Nail Plate) and BS-S-6,7 (Base Plate) components. The NPS is a rectangular plate with rounded corners, 43 mm high, 76 mm wide, and 5.65 mm thick. It has a central hole with a diameter of 11 mm. The BS-S-6,7 is a base plate with a central hole of 9.7 mm diameter and a threaded section with a diameter of 6.7 mm. The total length of the BS-S-6,7 is 45 mm. The NPS is shown with a central hole of 11 mm diameter and a central hole of 15.1 mm diameter. The BS-S-6,7 is shown with a central hole of 9.7 mm diameter and a threaded section with a diameter of 6.7 mm. The total length of the BS-S-6,7 is 45 mm.
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

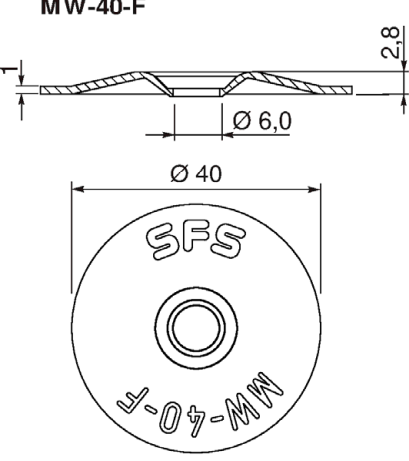
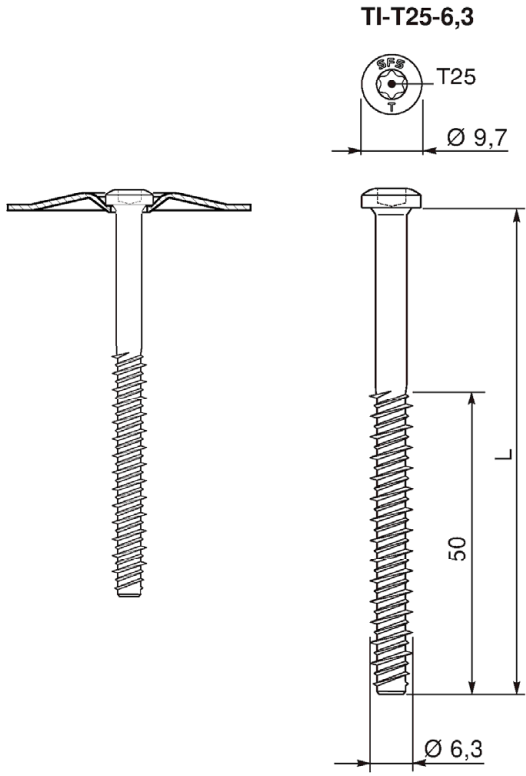
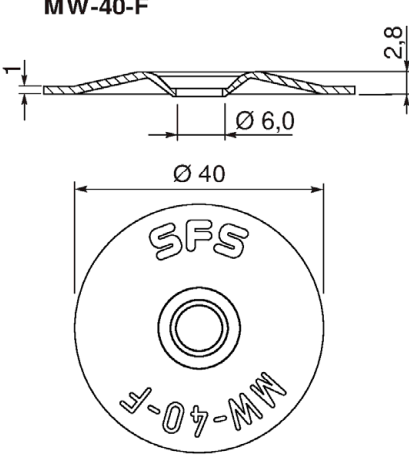
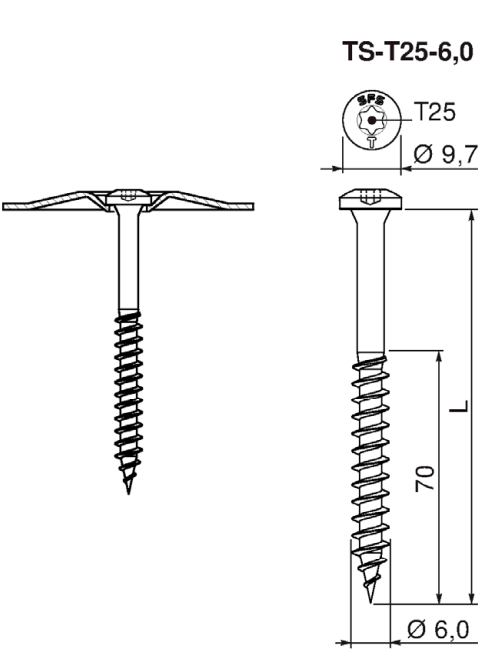
Combination 69A IWF-5,2 / MW-40-F	Combination 69B IWF-5,2 / MW-40-R
MW-40-F  MW-40-R  IWF-5,2  IWF-5,2 	MW-40-R  IWF-5,2 
SFS Flat roof fasteners	Annex 69

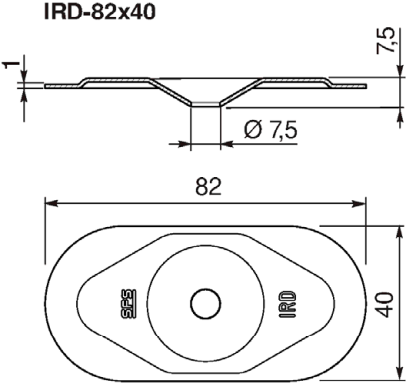
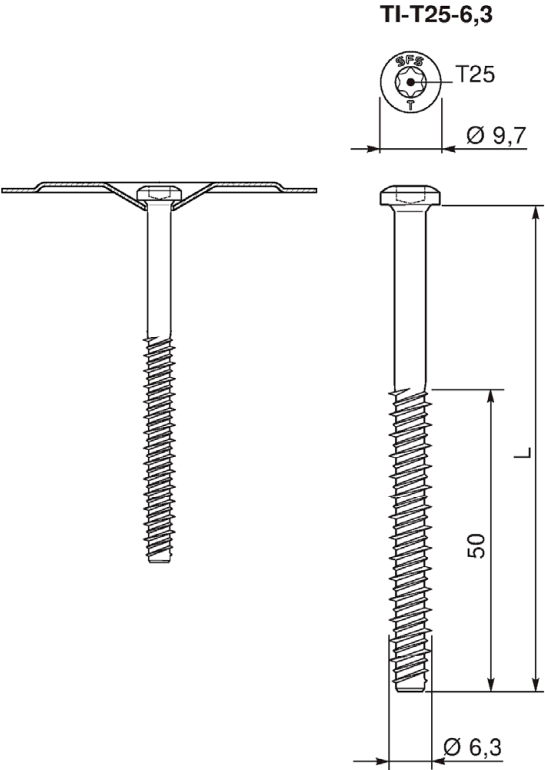
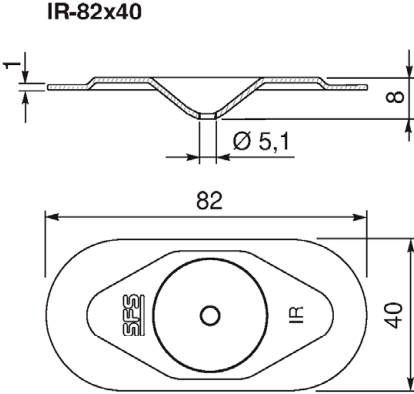
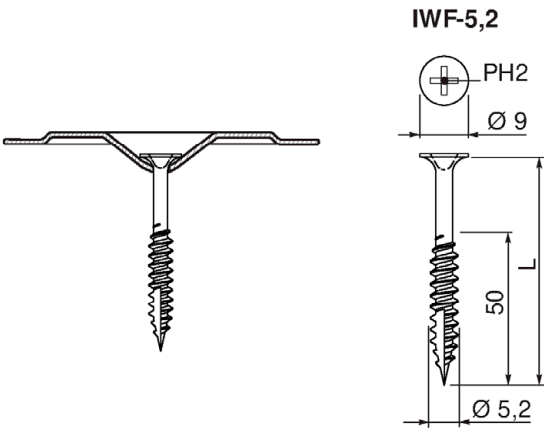
Combination 70A Sarnafast SBF-6,0 / R75	Combination 70B BS3-4,8 / RP48
R75  Sarnafast SBF-6,0 	RP48  BS3-4,8 
SFS Flat roof fasteners	Annex 70

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

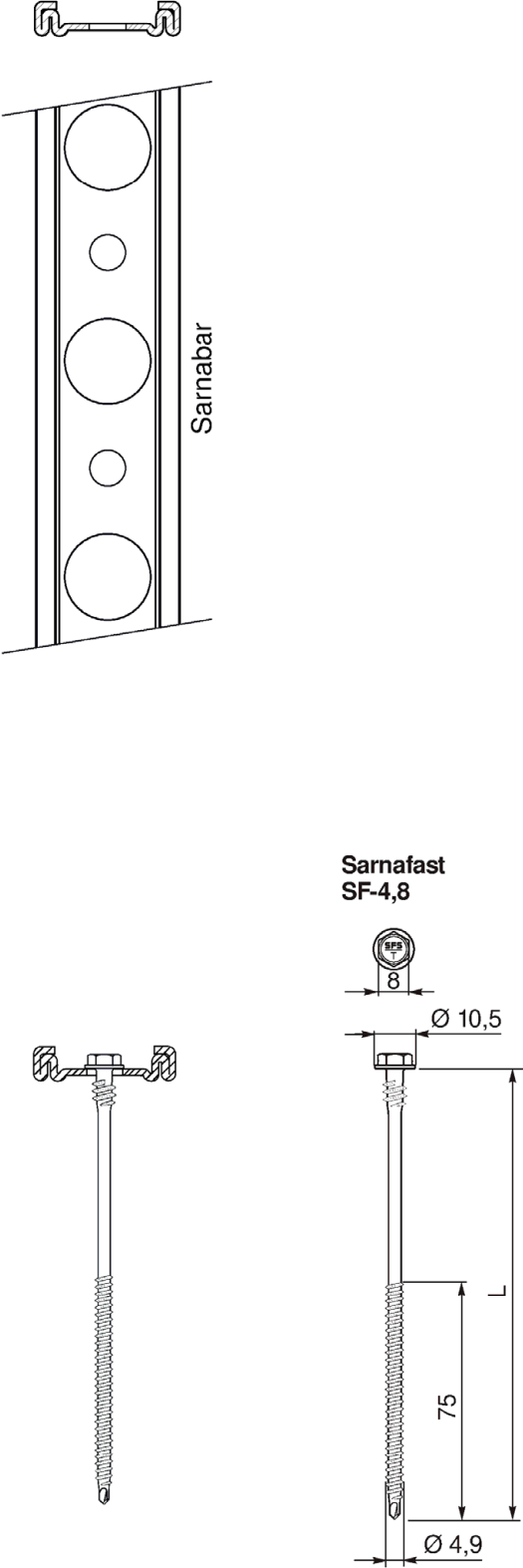
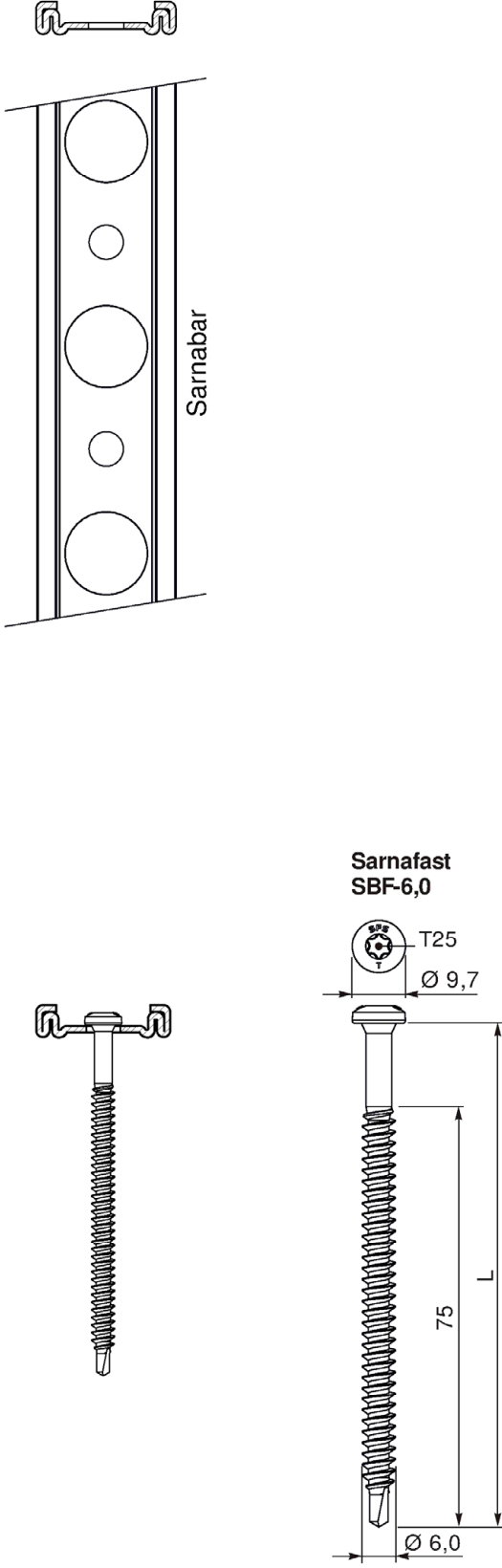
Combination 72A BS-4,8 / IR-82x40		Combination 72B BS-6,1 / IRD-82x40	
IR-82x40 		IRD-82x40 	
BS-4,8 		BS-6,1 	
SFS Flat roof fasteners			Annex 72

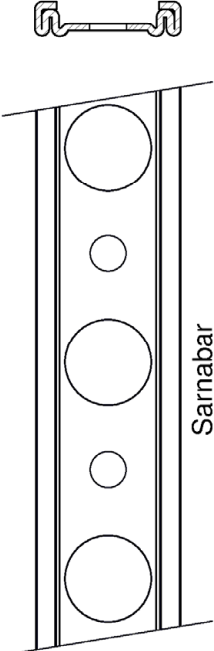
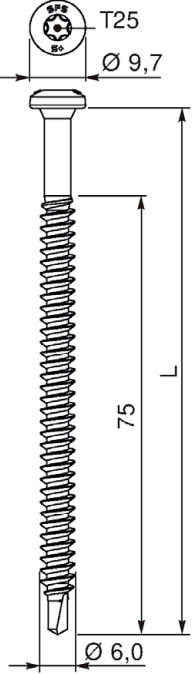
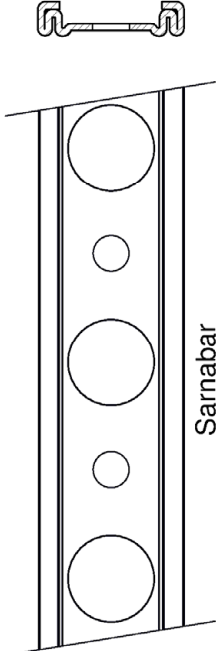
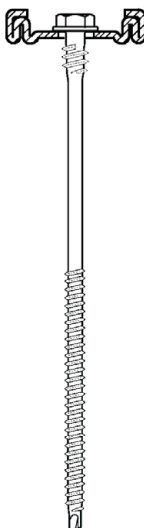
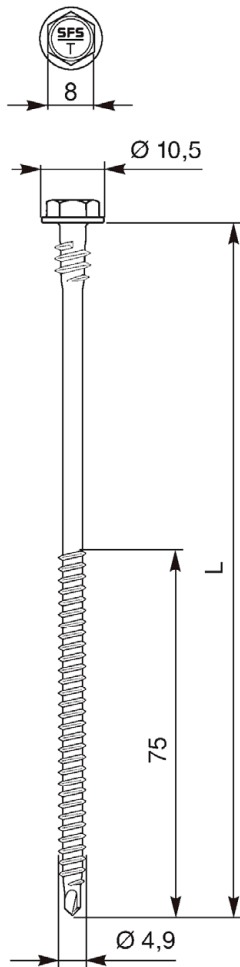
Electronic copy of the ETA by DIBt: ETA-08/0262

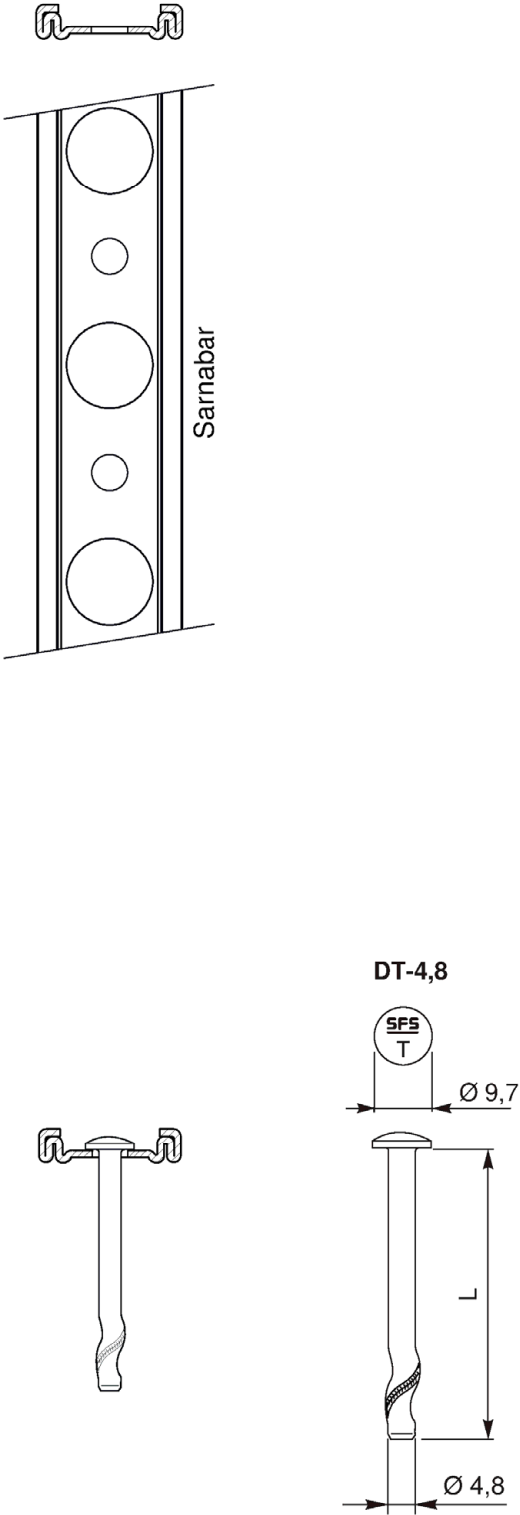
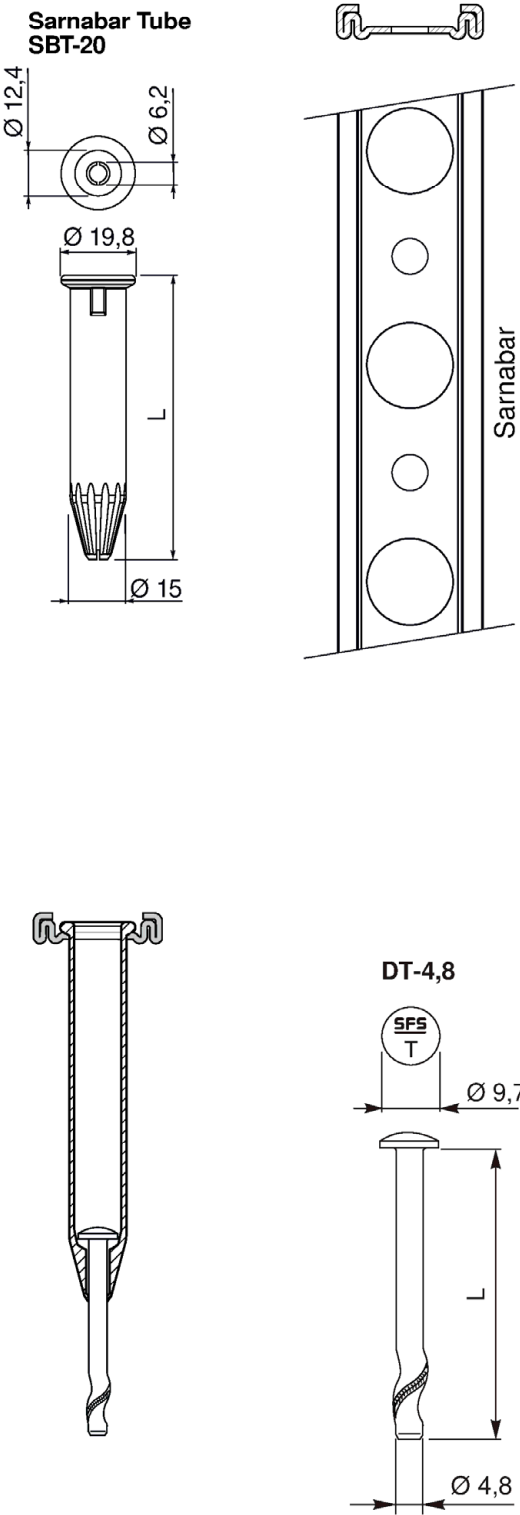
Combination 73A TI-T25-6,3 / MW-40-F	Combination 73B TS-T25-6,0 / MW-40-F
MW-40-F  TI-T25-6,3 	MW-40-F  TS-T25-6,0 
SFS Flat roof fasteners	Annex 73

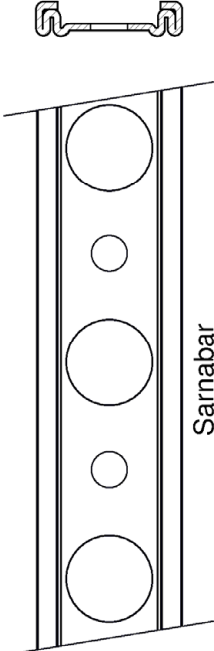
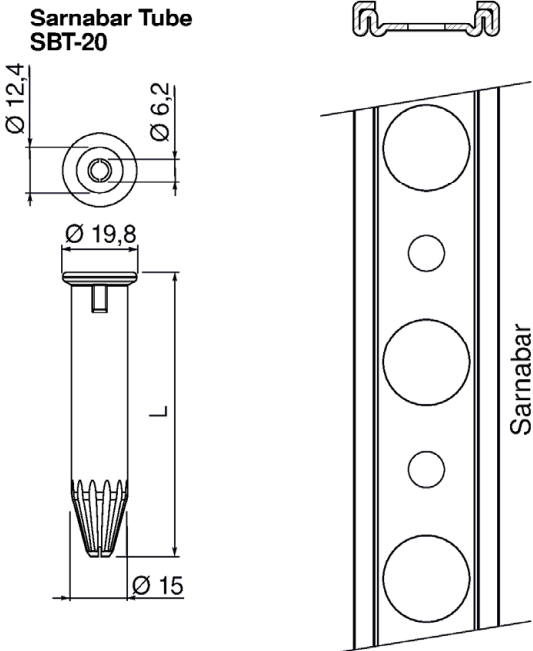
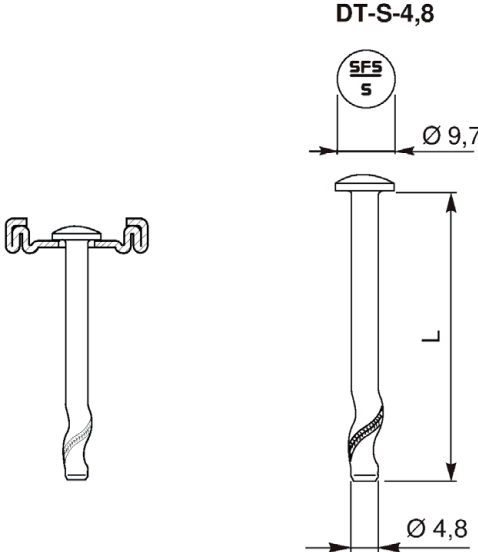
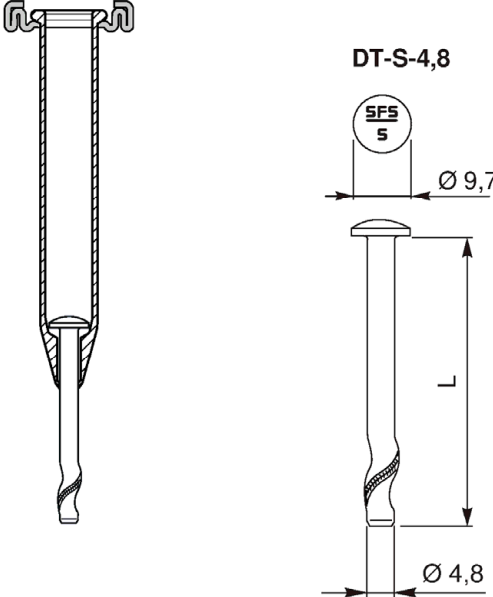
Combination 74A TI-T25-6,3 / IRD-82x40	Combination 74B IWF-5,2 / IR-82x40
IRD-82x40  TI-T25-6,3  SFS Flat roof fasteners	IR-82x40  IWF-5,2  Annex 74

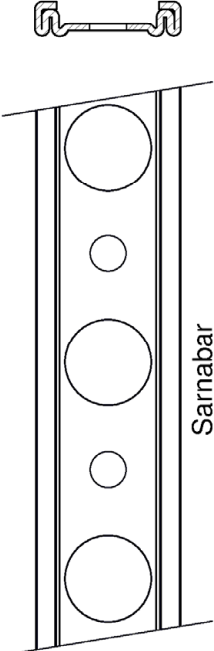
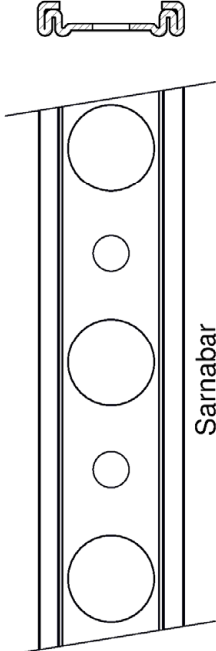
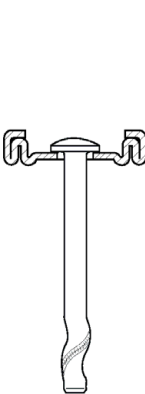
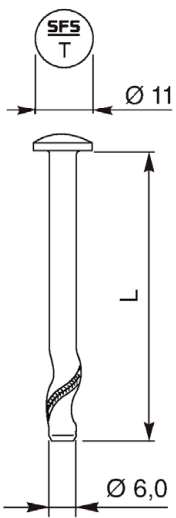
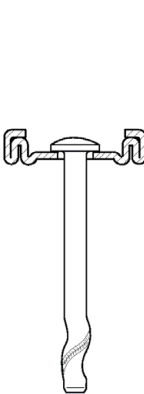
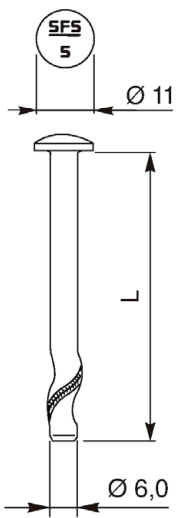
Electronic copy of the ETA by DIBt: ETA-08/0262

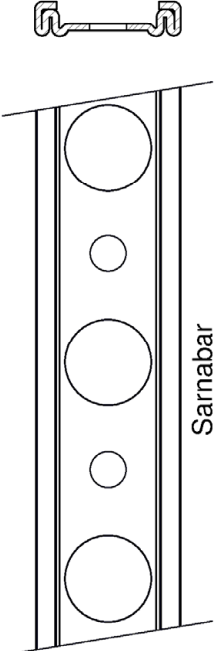
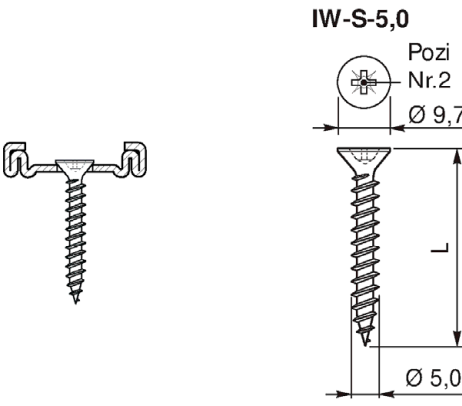
Combination 75A Sarnafast SF-4,8 / Sarnabar	Combination 75B Sarnafast SBF-6,0 / Sarnabar
 The left panel shows a side view of the Sarnabar profile at the top. Below it, a side view of the Sarnafast SF-4,8 fastener is shown. The fastener has a hexagonal head with a diameter of 10,5 mm and a threaded shank with a diameter of 4,9 mm. The length of the threaded part is 75 mm, and the total length is L. A detail view of the head shows a diameter of 8 mm.	 The right panel shows a side view of the Sarnabar profile at the top. Below it, a side view of the Sarnafast SBF-6,0 fastener is shown. The fastener has a hexagonal head with a diameter of 9,7 mm and a threaded shank with a diameter of 6,0 mm. The length of the threaded part is 75 mm, and the total length is L. A detail view of the head shows a T25 torque specification.
SFS Flat roof fasteners	Annex 75

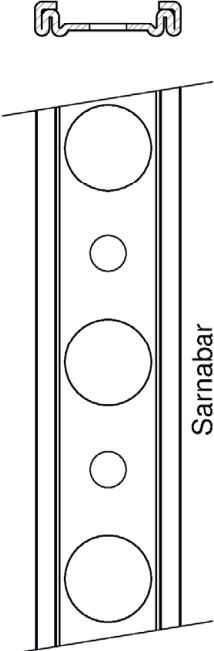
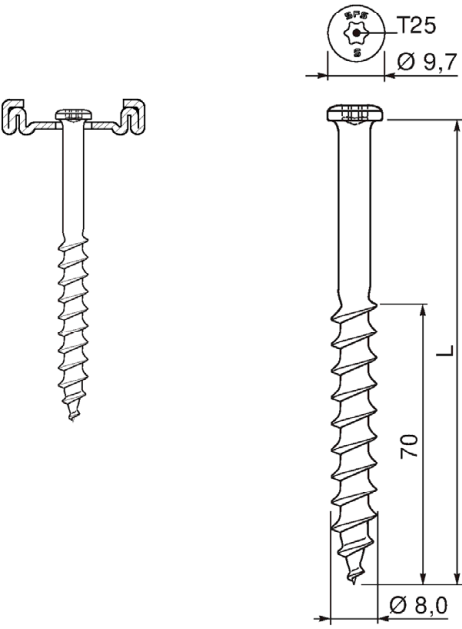
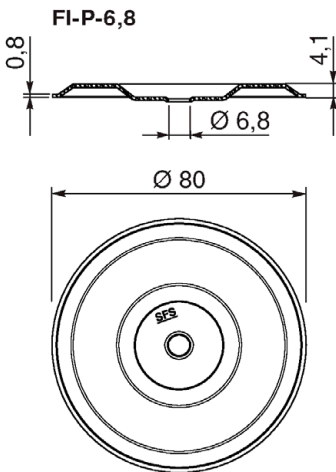
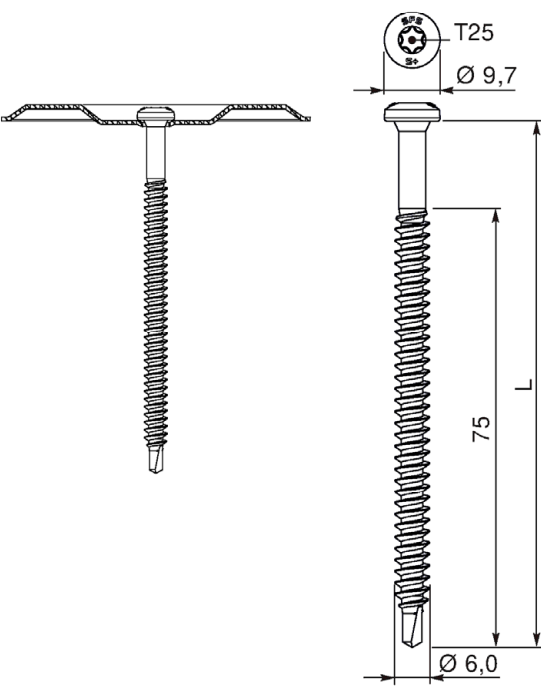
Combination 76A Sarnafast SBF-S-6,0 / Sarnabar	Combination 76B IR2-4,8 / Sarnabar
  Sarnafast SBF-S-6,0 	  IR2-4,8 
SFS Flat roof fasteners	Annex 76

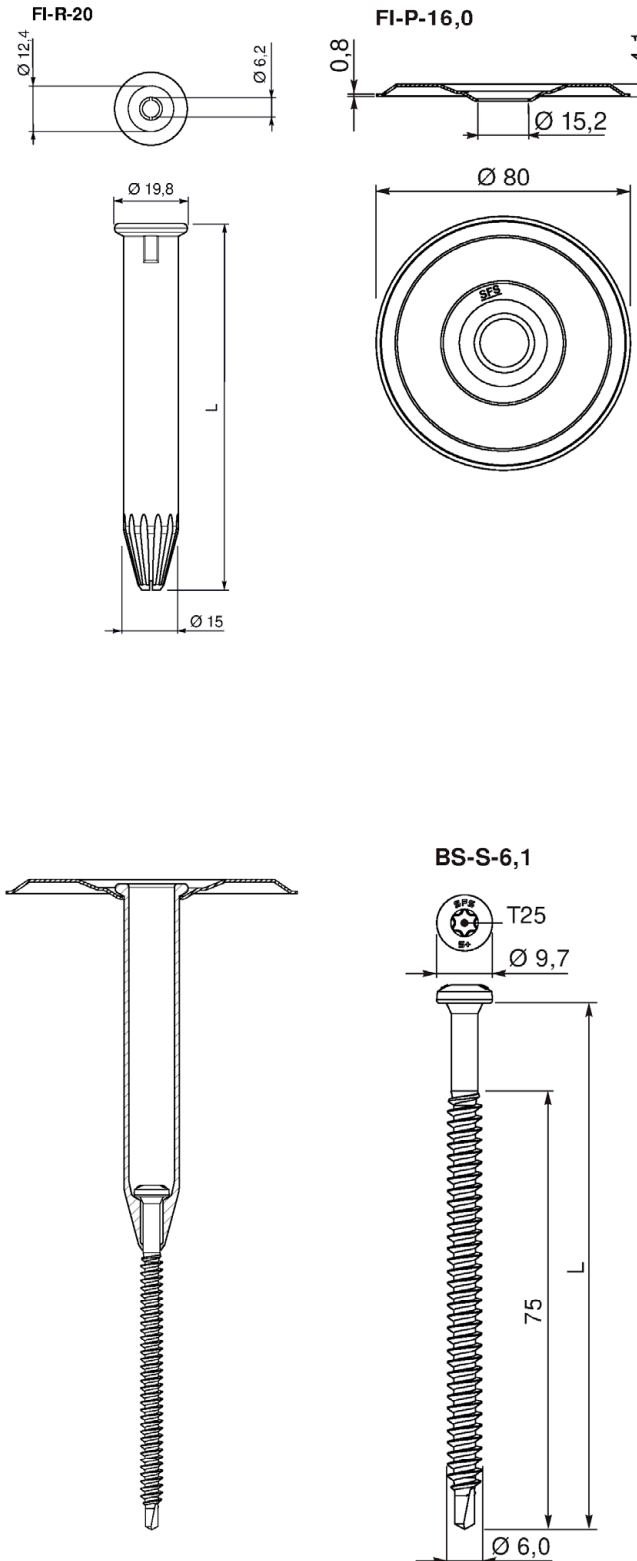
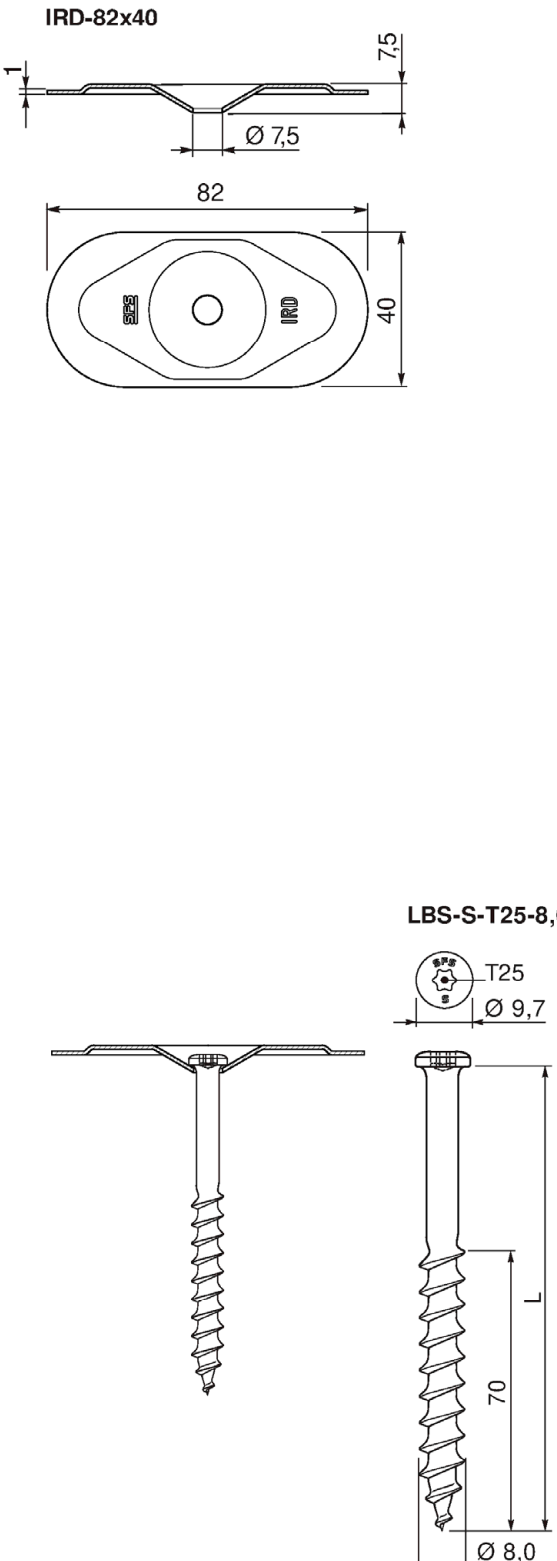
Combination 77A DT-4,8 / Sarnabar		Combination 77B DT-4,8 / Sarnabar Tube SBT-20 / Sarnabar	
			
SFS Flat roof fasteners		Annex 77	

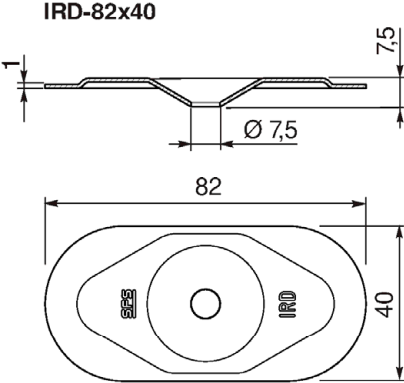
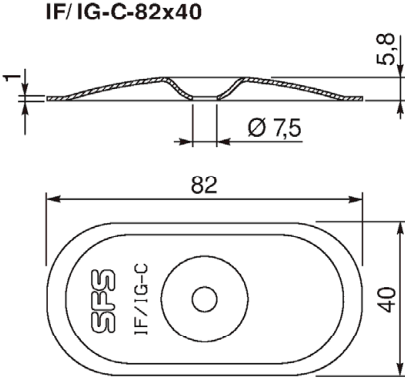
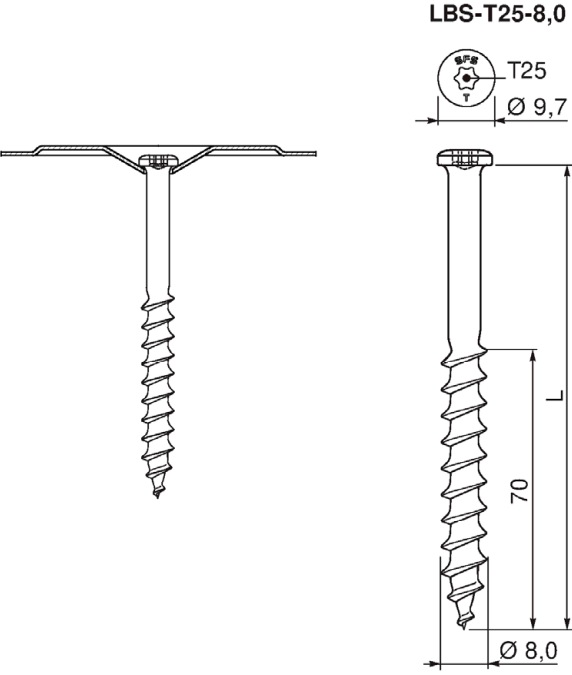
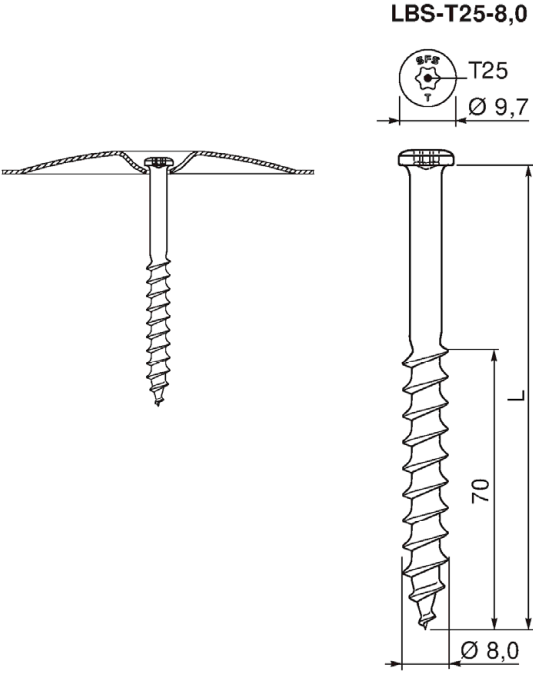
Combination 78A DT-S-4,8 / Sarnabar		Combination 78B DT-S-4,8 / Sarnabar Tube SBT-20 / Sarnabar	
 Technical drawing of the Sarnabar fastener. The top part shows a cross-section of the fastener head with a U-shaped profile. Below it is a side view of the fastener installed in a roof slab, showing the head and the shank. The word 'Sarnabar' is written vertically next to the side view.		 Technical drawing of the Sarnabar Tube SBT-20 fastener. The top part shows a cross-section of the fastener head with dimensions: $\varnothing 12,4$, $\varnothing 6,2$, and $\varnothing 19,8$. Below it is a side view of the fastener installed in a roof slab, showing the head, the tube, and the shank. The word 'Sarnabar' is written vertically next to the side view.	
 Technical drawing of the DT-S-4,8 fastener. The top part shows a cross-section of the fastener head with the SFS 5 logo and a diameter of $\varnothing 9,7$. Below it is a side view of the fastener installed in a roof slab, showing the head, the shank, and the base. The word 'DT-S-4,8' is written above the side view.		 Technical drawing of the DT-S-4,8 fastener. The top part shows a cross-section of the fastener head with the SFS 5 logo and a diameter of $\varnothing 9,7$. Below it is a side view of the fastener installed in a roof slab, showing the head, the shank, and the base. The word 'DT-S-4,8' is written above the side view.	
SFS Flat roof fasteners			Annex 78

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

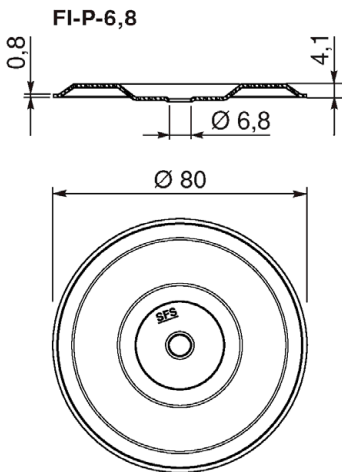
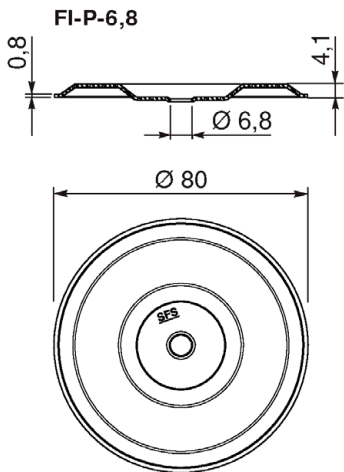
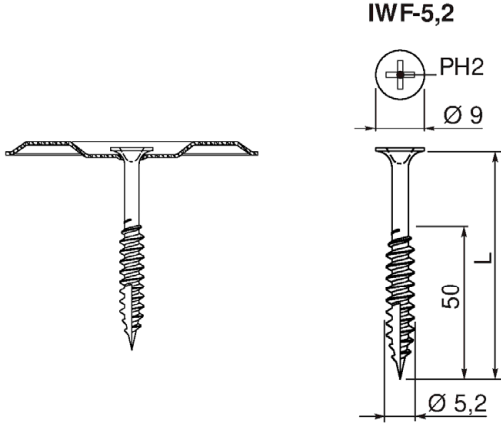
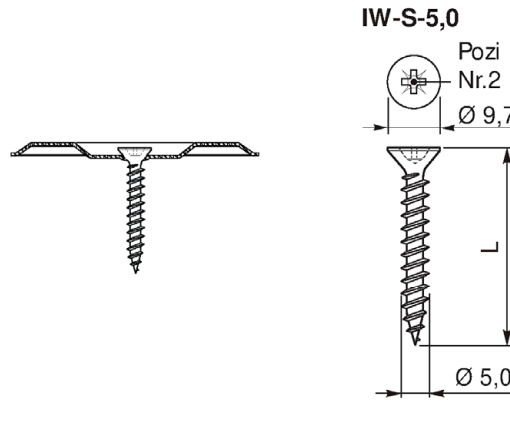
Combination 80A IW-S-5,0 / Sarnabar		Combination 80B No longer in product range	
 Technical drawing showing the Sarnabar fastener assembly. It includes a side view of the fastener with four circular holes and a top view showing the fastener's profile. The word 'Sarnabar' is written vertically next to the side view.		 Technical drawing of the IW-S-5,0 fastener. It includes a side view showing the fastener's profile with a threaded section of length L and a diameter of Ø 5,0. The top view shows a circular head with a diameter of Ø 9,7 and a cross-section labeled 'Pozi Nr.2'.	
SFS Flat roof fasteners		Annex	80

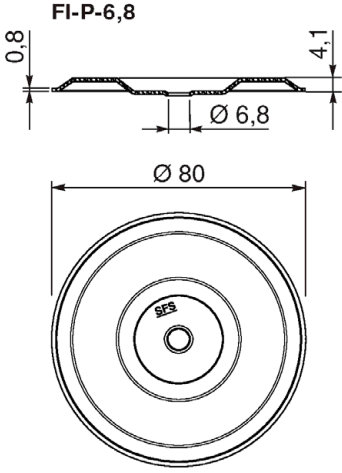
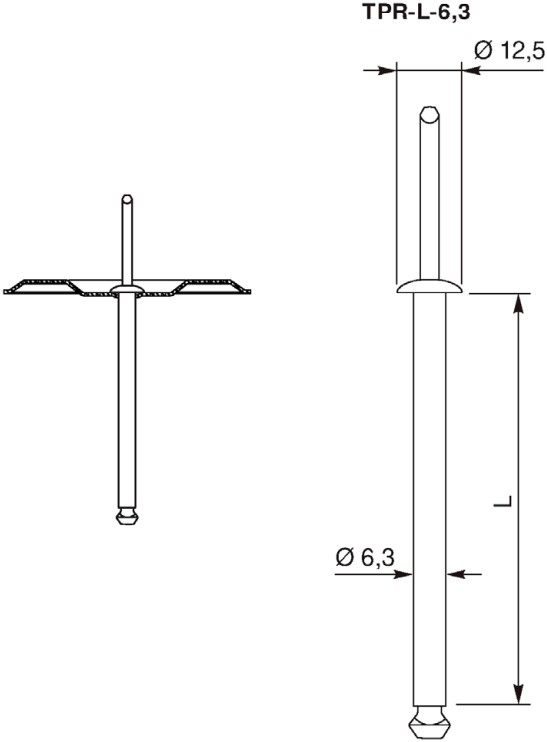
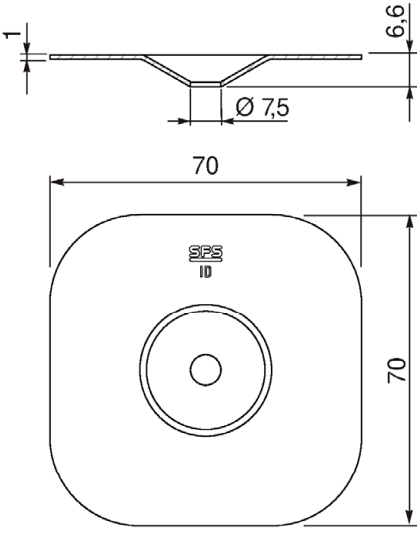
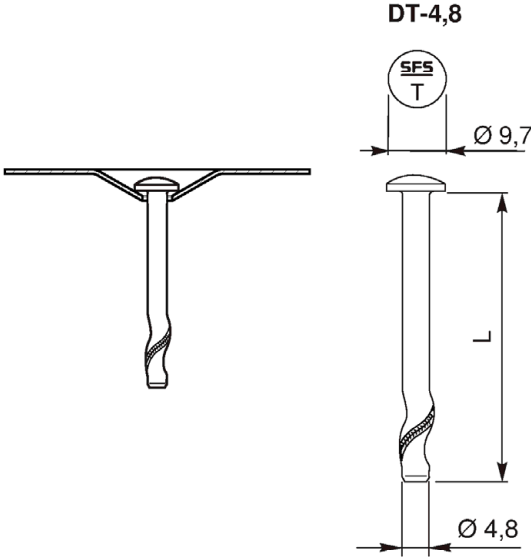
Combination 81A LBS-S-T25-8,0 / Sarnabar  Sarnabar LBS-S-T25-8,0 	Combination 81B BS-S-6,1 / FI-P-6,8 FI-P-6,8  BS-S-6,1 
SFS Flat roof fasteners	Annex 81

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 a central hole, dimensions $\varnothing 12,4$ and $\varnothing 6,2$. Side view shows a threaded rod with a conical base, dimensions $\varnothing 19,8$, $\varnothing 15$, and length L. FI-P-16,0: Top view shows a circular plate with a central hole, dimensions $\varnothing 15,2$ and $\varnothing 80$. Side view shows a profile with dimensions $0,8$ and $4,1$. BS-S-6,1: Side view of a threaded rod with a hexagonal head, dimensions $\varnothing 9,7$, $\varnothing 6,0$, and length 75 (plus L for the threaded section).	 Technical drawings for Combination 82B components: IRD-82x40: Top view shows an oval plate with a central hole, dimensions $\varnothing 7,5$, 82, and 40. LBS-S-T25-8,0: Side view of a threaded rod with a hexagonal head, dimensions $\varnothing 9,7$, $\varnothing 8,0$, and length 70 (plus L for the threaded section).
SFS Flat roof fasteners	Annex 82

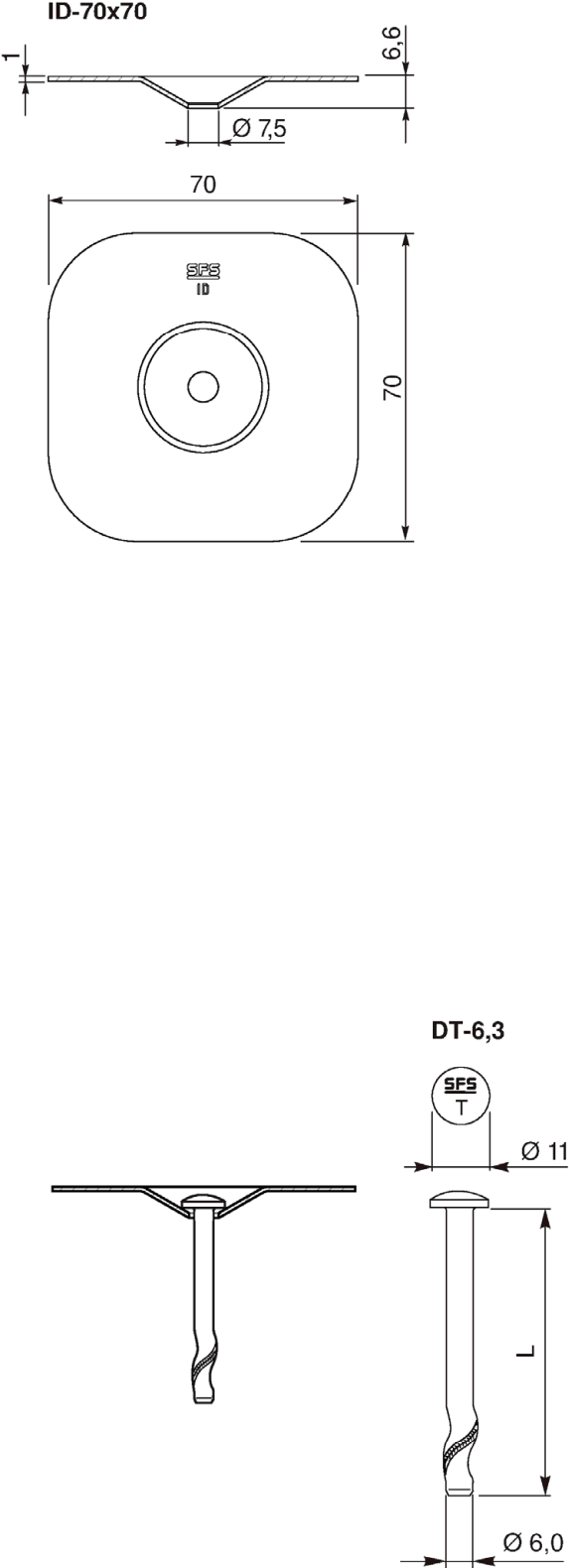
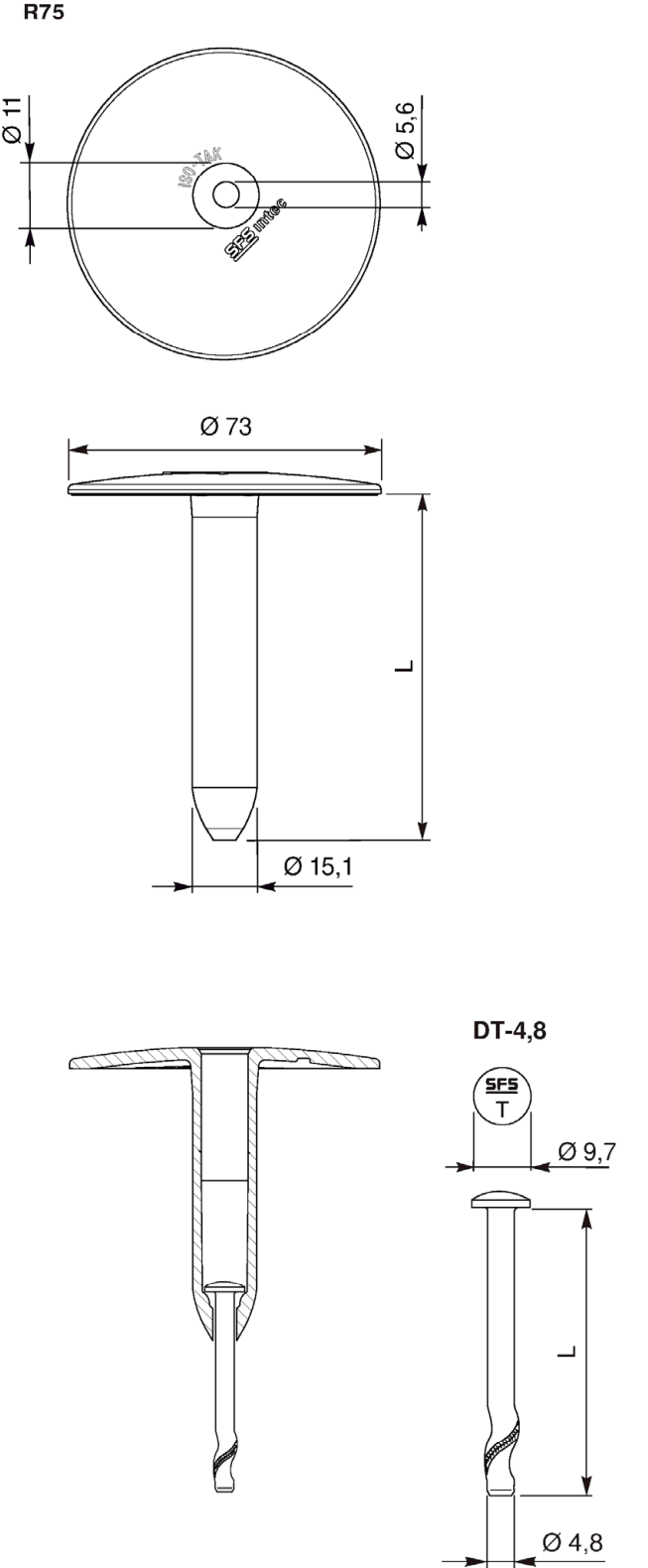
Combination 83A LBS-T25-8,0 / IRD-82x40		Combination 83B LBS-T25-8,0 / IF/IG-C-82x40	
			
			
SFS Flat roof fasteners			Annex 83

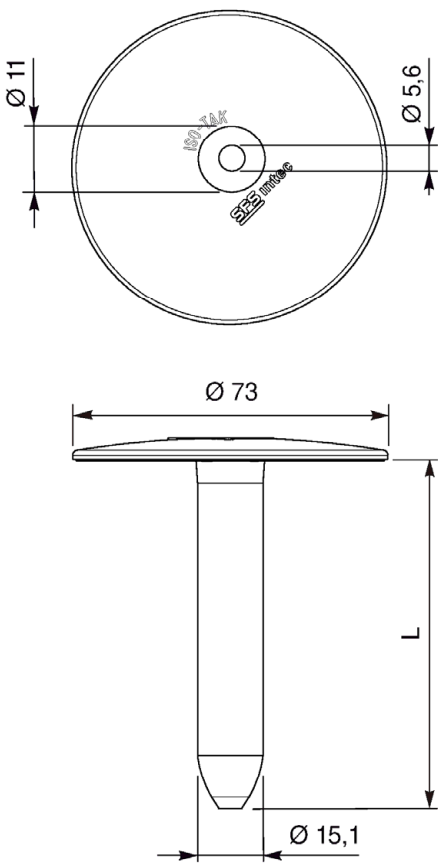
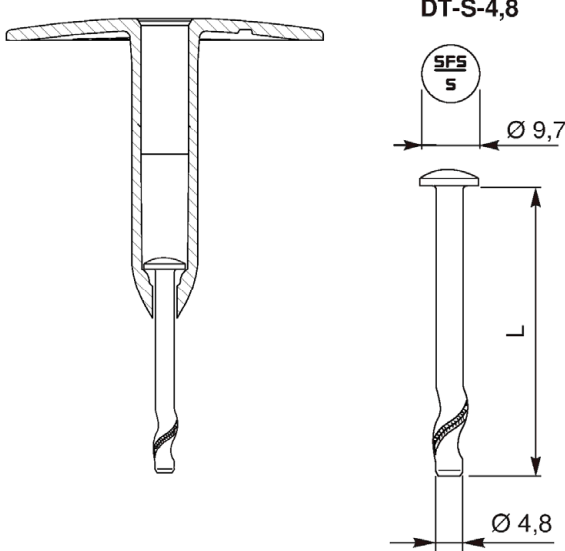
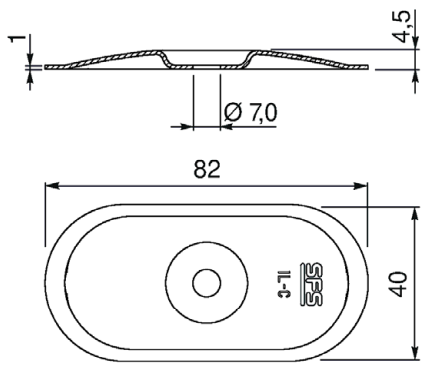
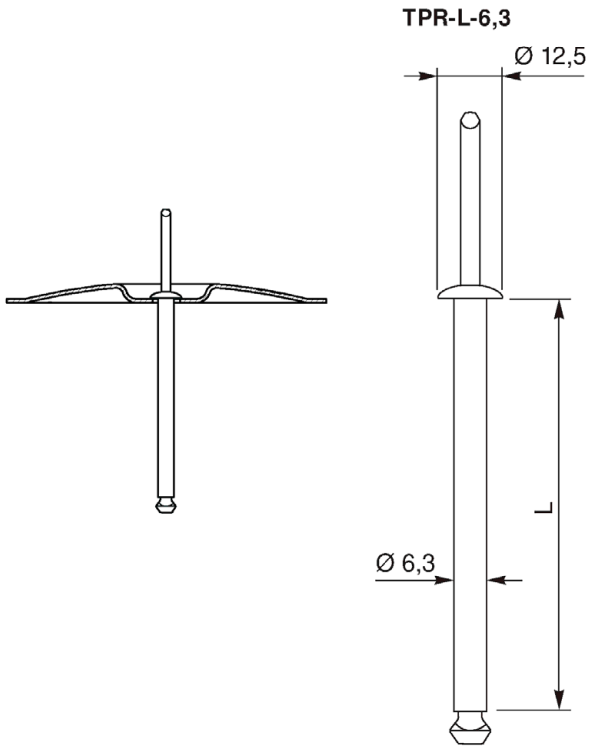
Electronic copy of the ETA by DIBt: ETA-08/0262

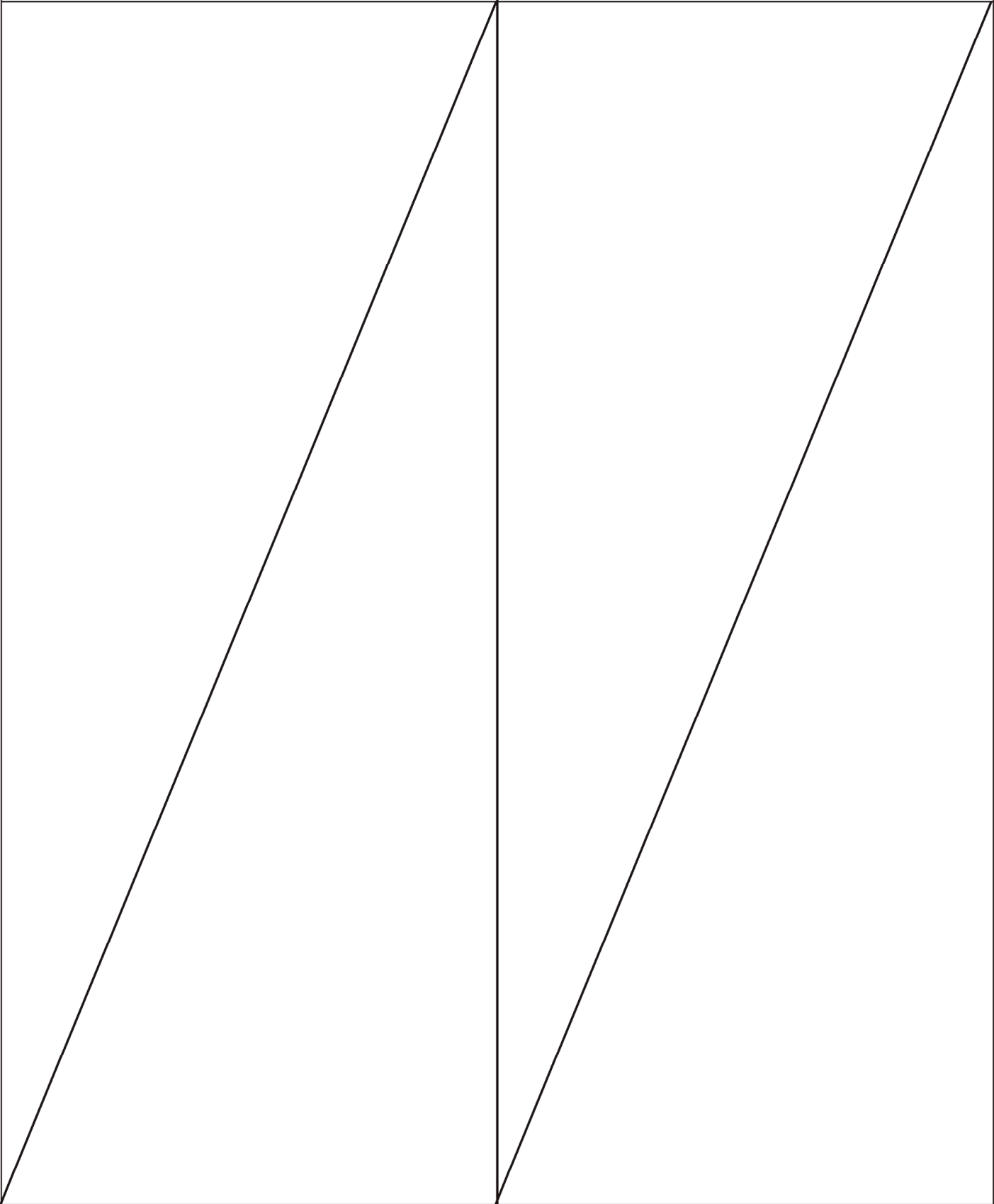
Combination 84A IWF-5,2 / FI-P-6,8		Combination 84B IW-S-5,0 / FI-P-6,8	
			
			
SFS Flat roof fasteners			Annex 84

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

Electronic copy of the ETA by DIBt: ETA-08/0262

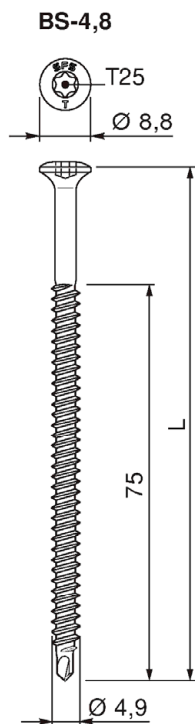
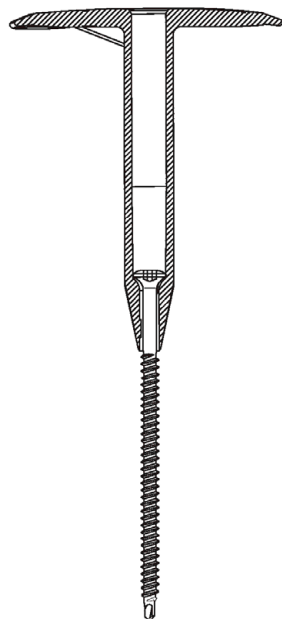
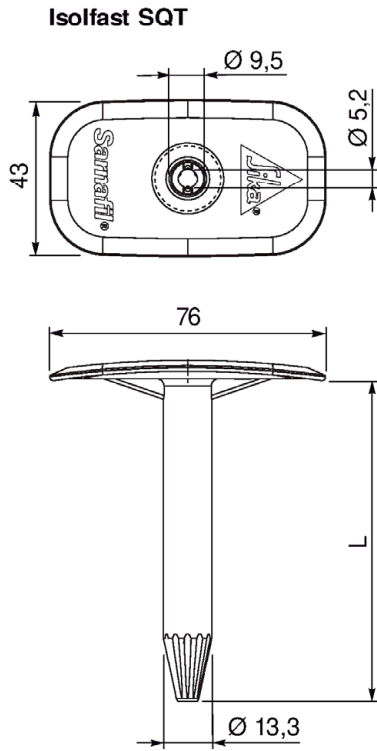
Combination 86A DT-6,3 / ID-70x70	Combination 86B DT-4,8 / R75
	
SFS Flat roof fasteners	Annex 86

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

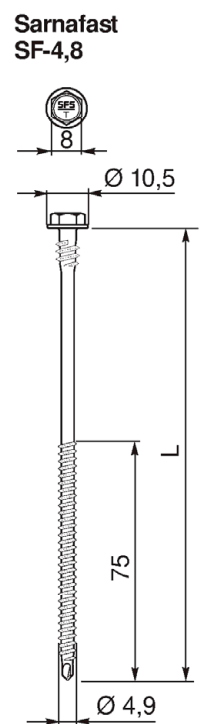
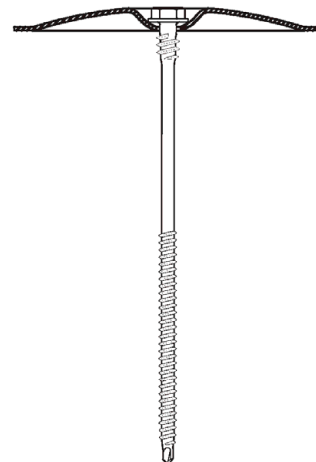
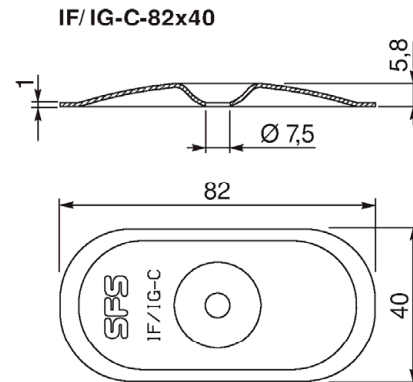
Combination 88A No longer in product range	Combination 88B No longer in product range
	
SFS Flat roof fasteners	Annex 88

Electronic copy of the ETA by DIBt: ETA-08/0262

Combination 89A
BS-4,8 / Isolfast SQT

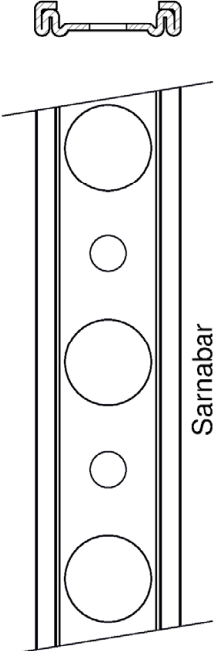
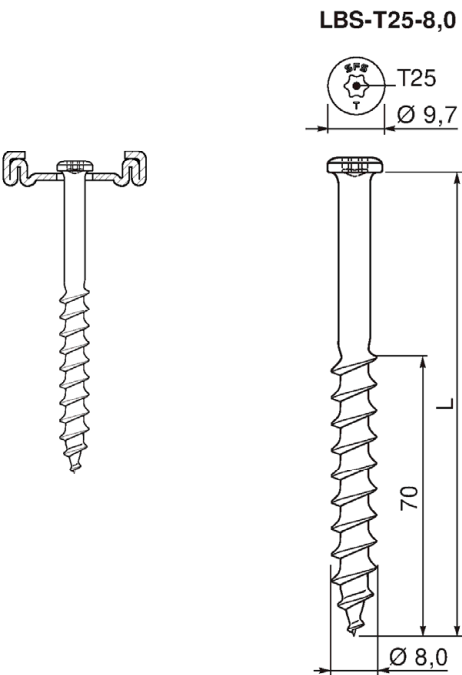
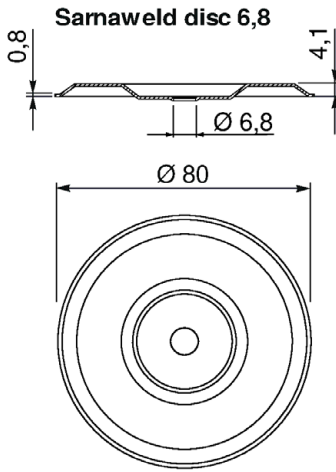
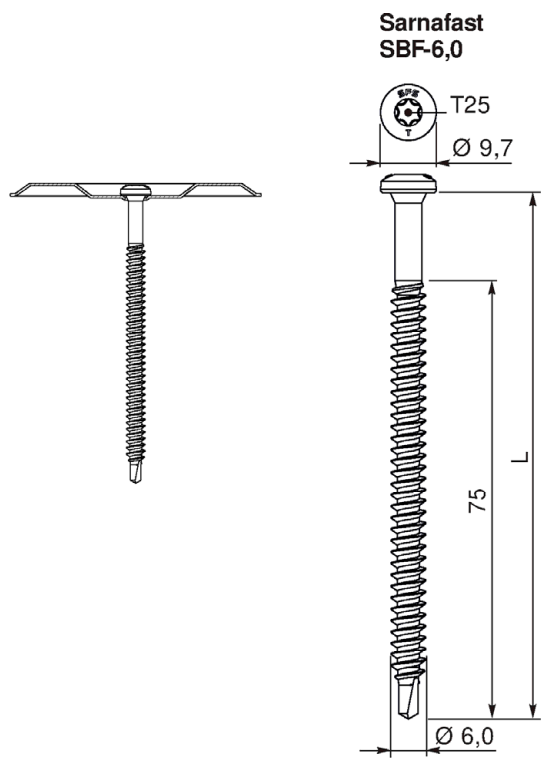


Combination 89B
Sarnafast SF-4,8 / IF/IG-C-82x40



SFS Flat roof fasteners

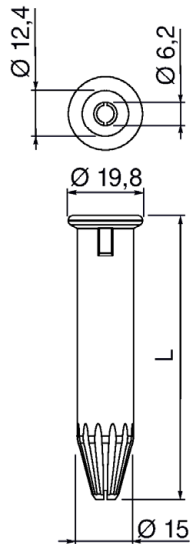
Annex 89

Combination 90A LBS-T25-8,0 / Sarnabar	Combination 90B Sarnafast SBF-6,0 / Sarnaweld disc 6,8
 Sarnabar LBS-T25-8,0 	Sarnaweld disc 6,8  Sarnafast SBF-6,0 
SFS Flat roof fasteners	Annex 90

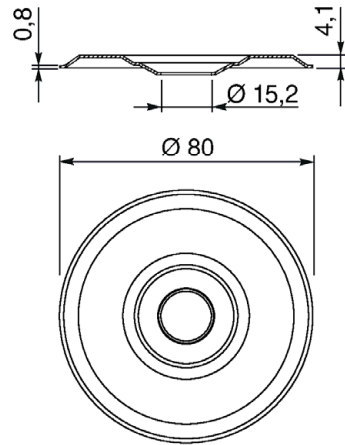
Combination 91A
Sarnafast SBF-6,0 / Sarnaweld disc 16 / Sarnabar Tube SBT-20

Combination 91B
Sarnafast SBF-S-6,0 / Sarnaweld disc 6,8

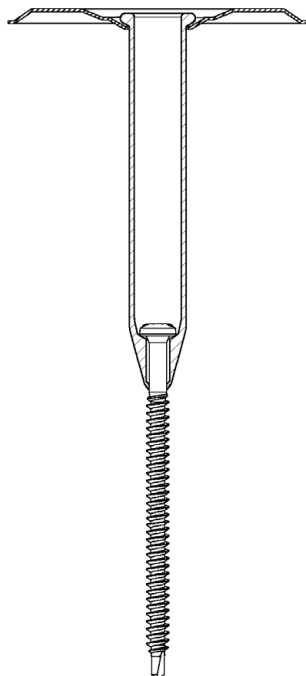
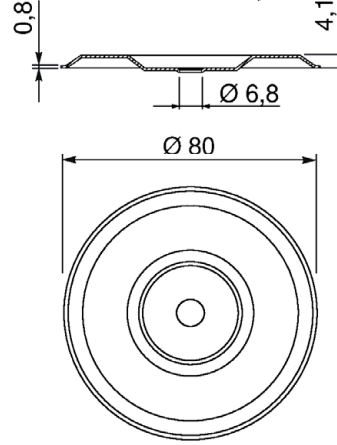
**Sarnabar Tube
SBT-20**



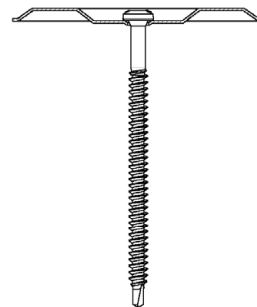
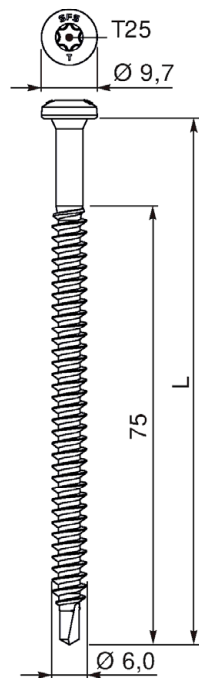
Sarnaweld disc 16



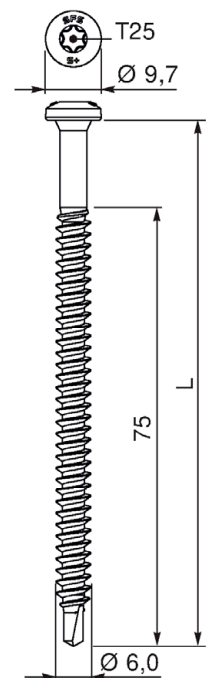
Sarnaweld disc 6,8



**Sarnafast
SBF-6,0**

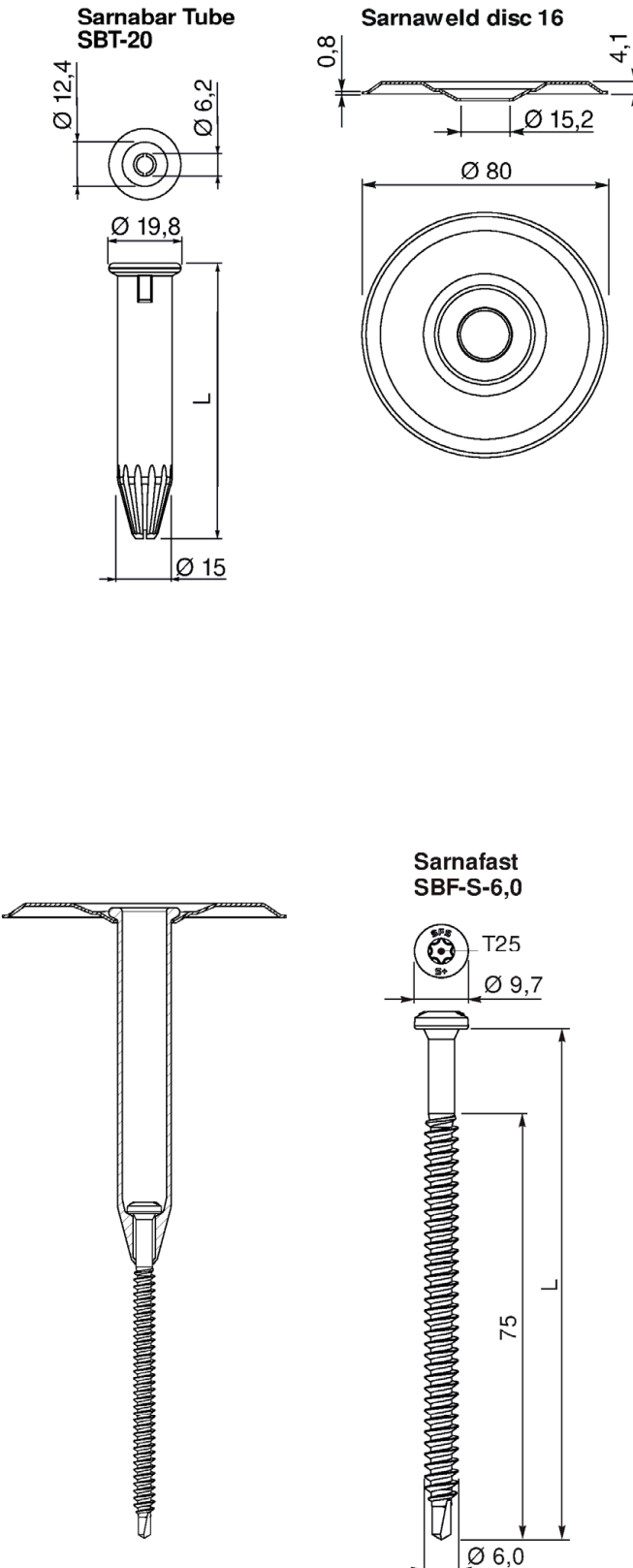
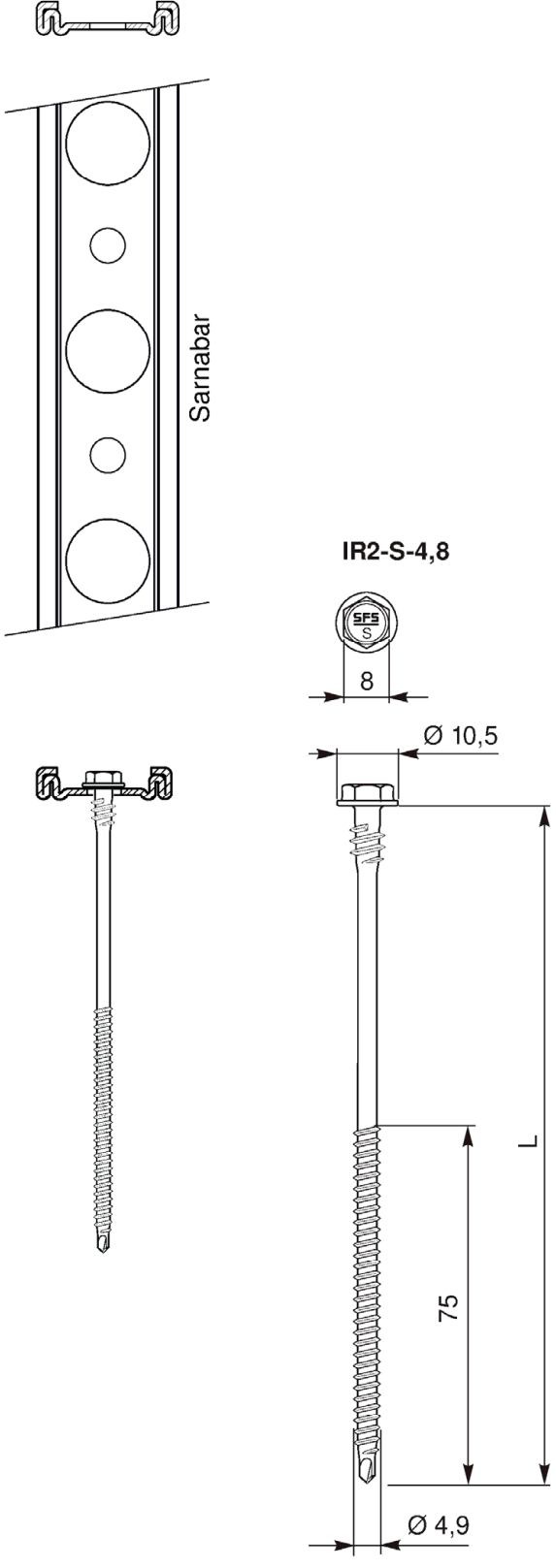


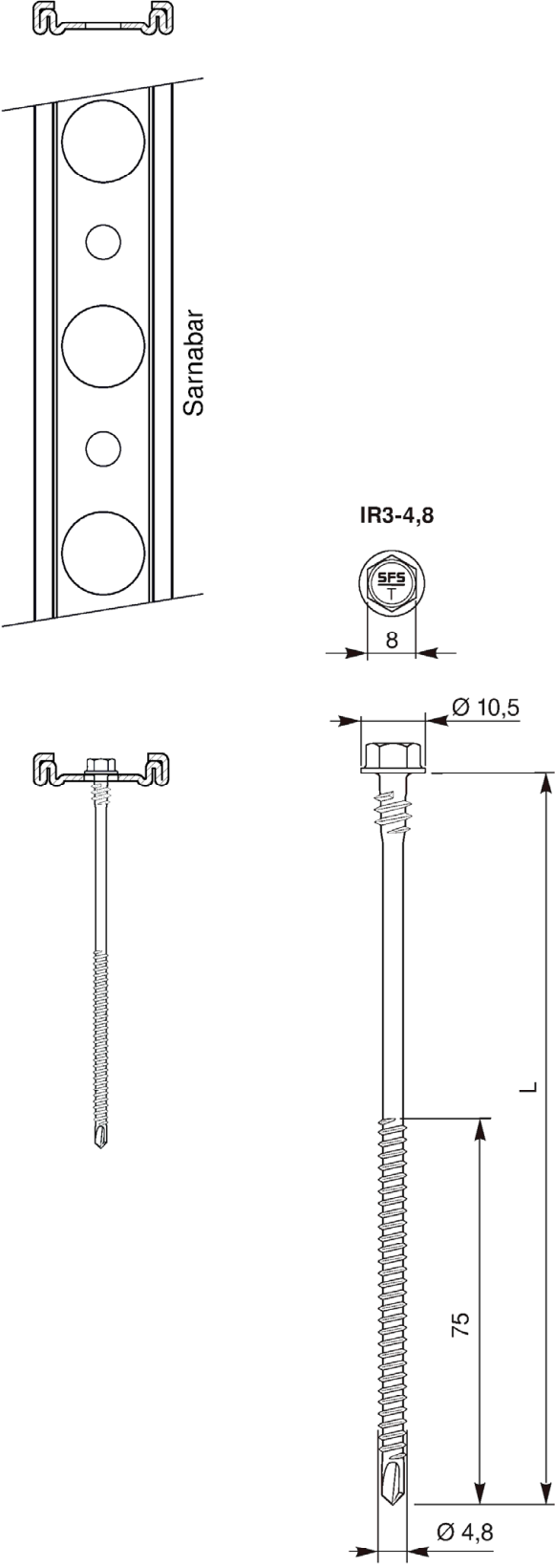
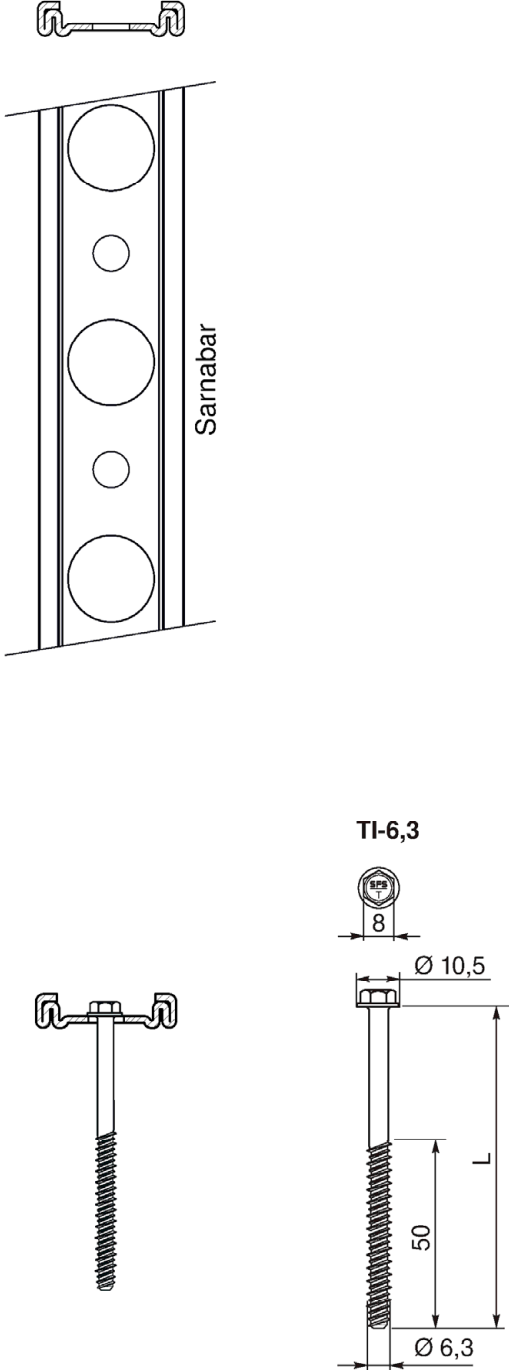
**Sarnafast
SBF-S-6,0**

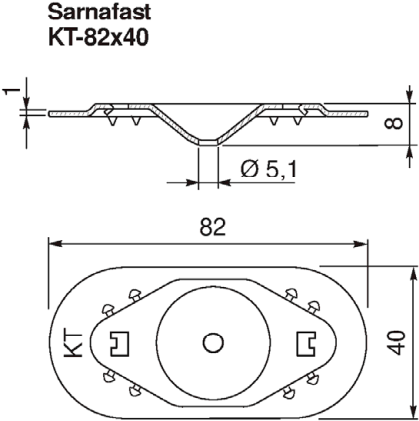
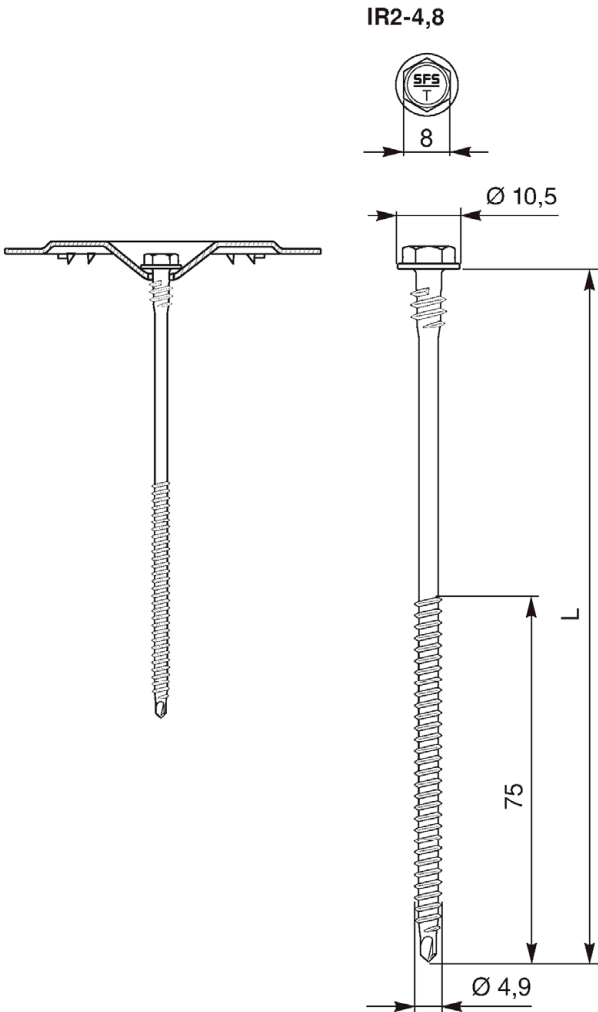


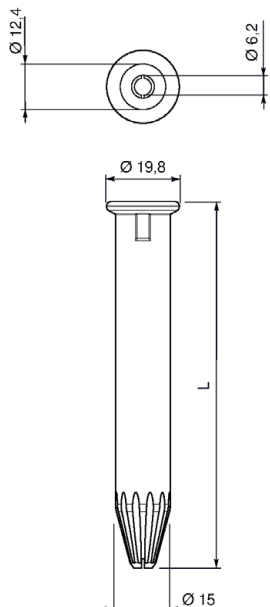
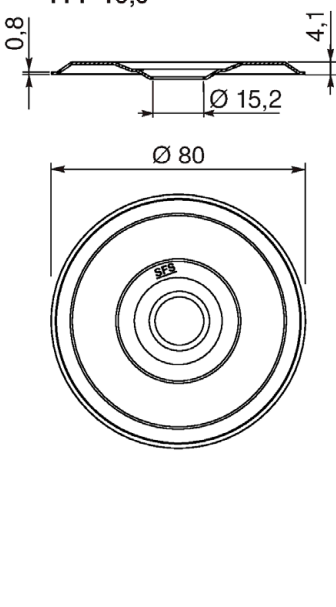
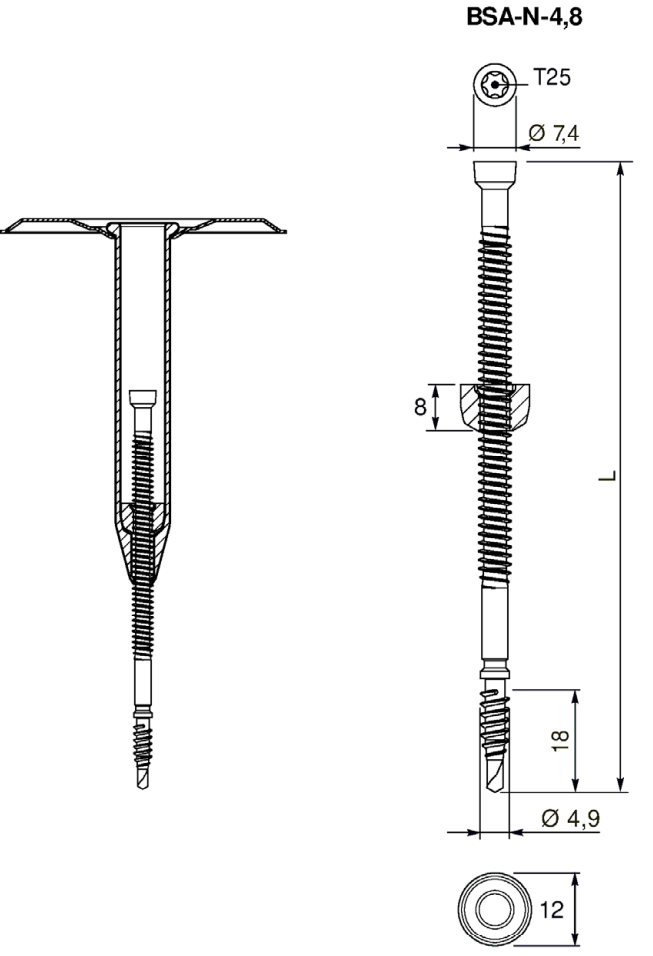
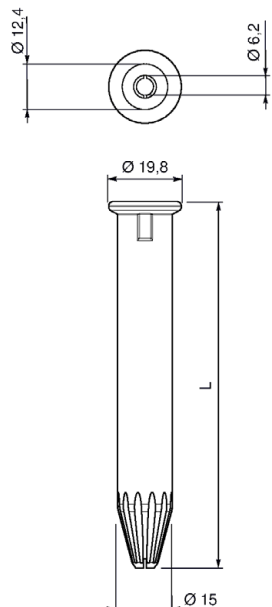
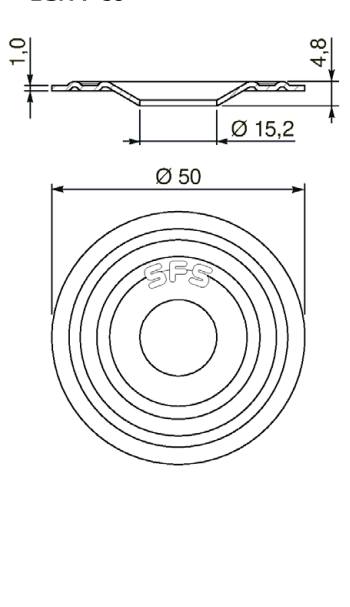
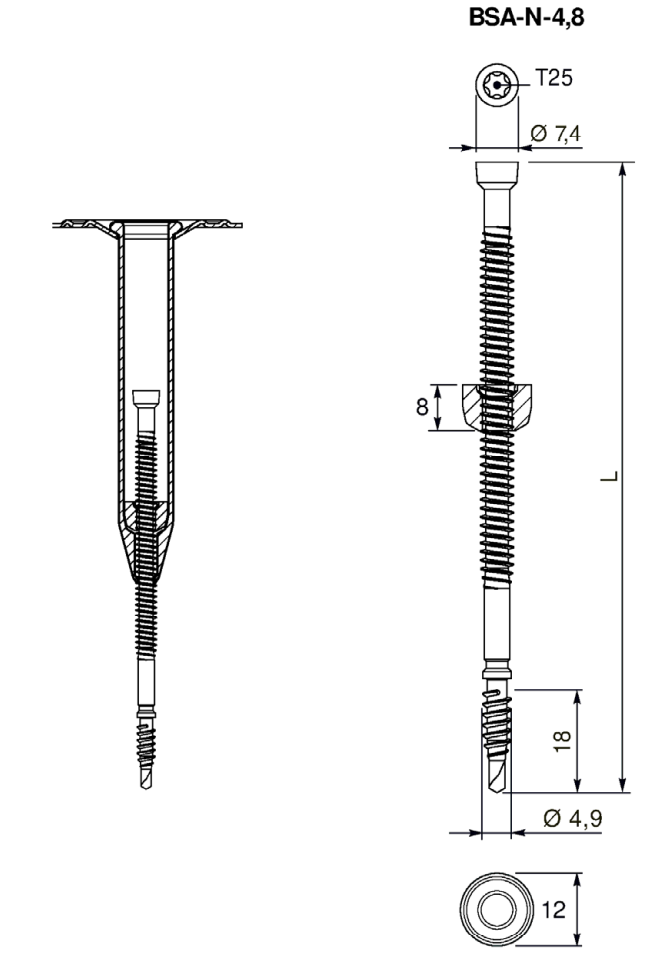
SFS Flat roof fasteners

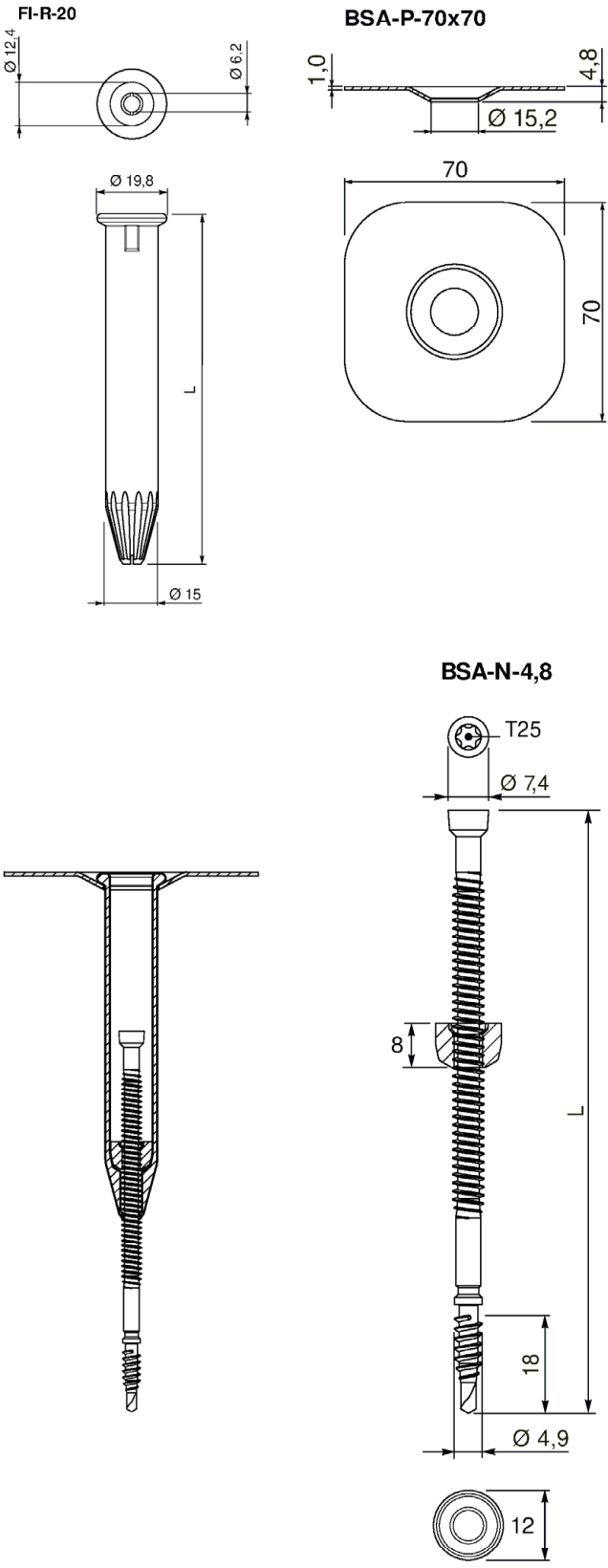
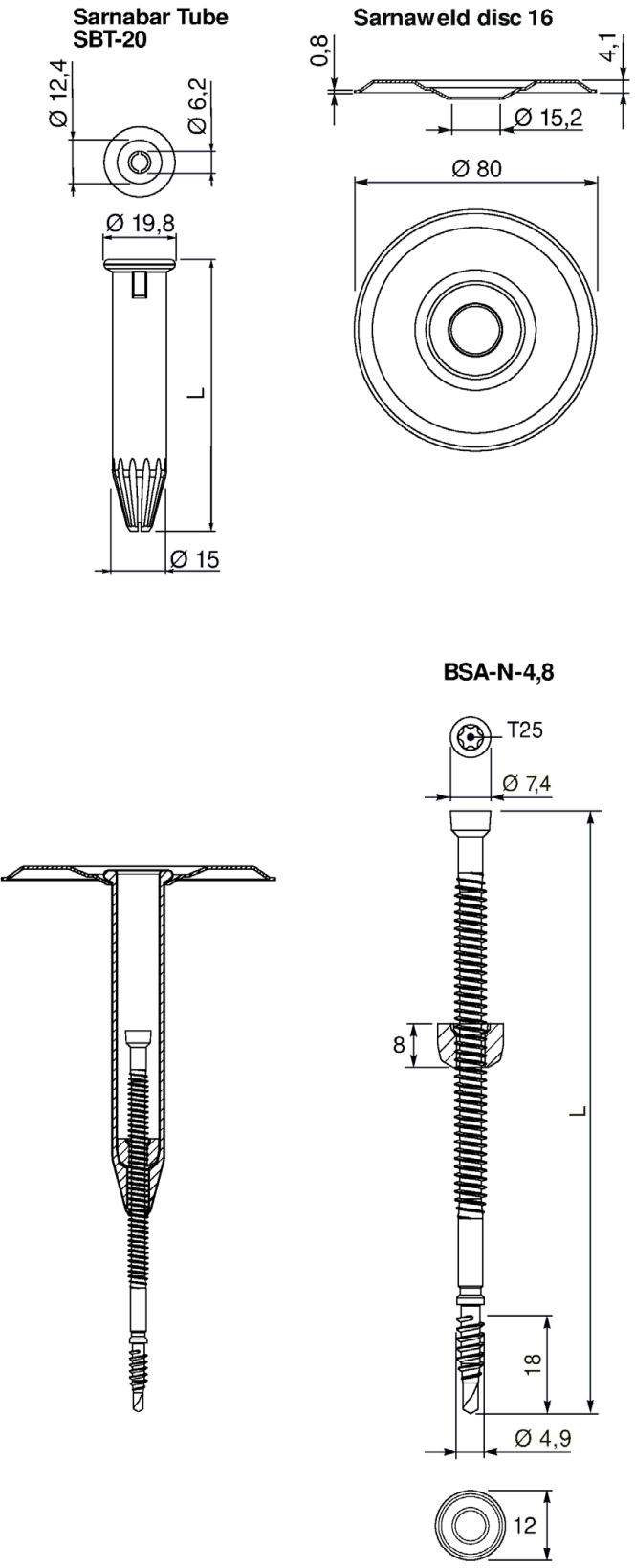
Annex 91

Combination 92A Sarnafast SBF-S-6,0 / Sarnaweld disc 16 / Sarnabar Tube SBT-20  The drawings show the Sarnabar Tube SBT-20 (left) and Sarnafast SBF-S-6,0 (right). The SBT-20 has a top flange with diameters of 12,4 and 6,2, a central hole of 19,8, and a total length L. The SBF-S-6,0 has a T25 head with a diameter of 9,7, a threaded section of length 75, and a base diameter of 6,0. The Sarnaweld disc 16 (top right) has a diameter of 80, a central hole of 15,2, and a thickness of 4,1.	Combination 92B IR2-S-4,8 / Sarnabar  The drawings show the IR2-S-4,8 (left) and Sarnabar (right). The IR2-S-4,8 has a head with a diameter of 8, a threaded section of length 75, and a base diameter of 4,9. The Sarnabar (right) is a vertical plate with four circular holes and a total length L.
SFS Flat roof fasteners	Annex 92

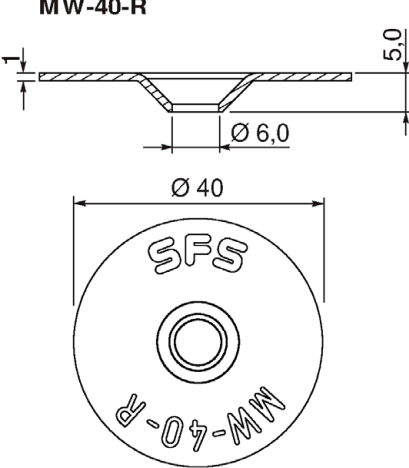
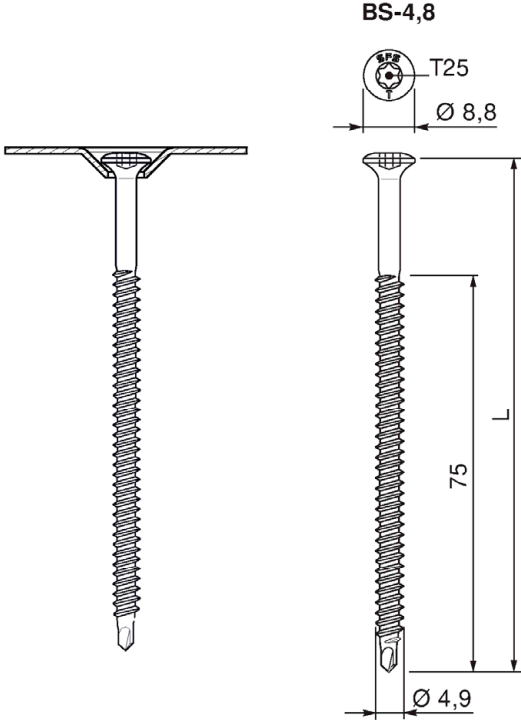
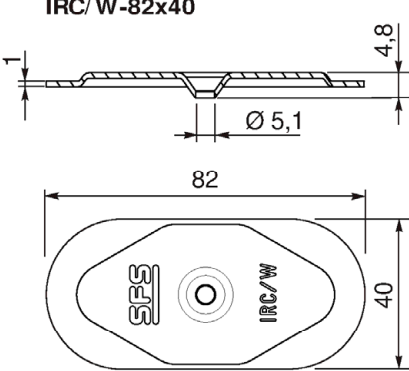
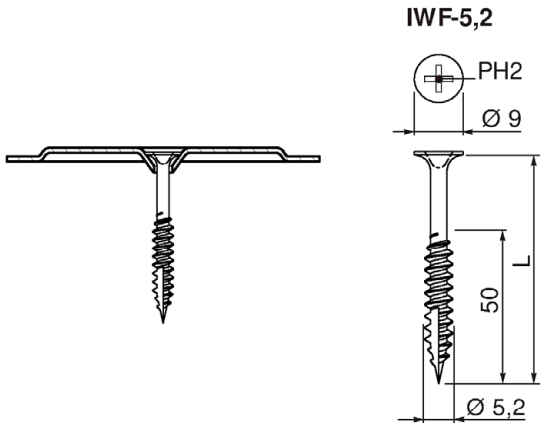
Combination 93A IR3-4,8 / Sarnabar  The drawing shows the IR3-4,8 fastener assembly. At the top, a cross-section of the Sarnabar profile is shown with the fastener passing through it. Below, a side view of the Sarnabar profile is labeled 'Sarnabar'. The fastener itself is shown in detail with dimensions: a head diameter of 8, a neck diameter of Ø 10,5, a threaded length of 75, and a total length of L. The fastener has a diameter of Ø 4,8 at the bottom. A small detail of the fastener head is labeled 'IR3-4,8'.	Combination 93B TI-6,3 / Sarnabar  The drawing shows the TI-6,3 fastener assembly. At the top, a cross-section of the Sarnabar profile is shown with the fastener passing through it. Below, a side view of the Sarnabar profile is labeled 'Sarnabar'. The fastener itself is shown in detail with dimensions: a head diameter of 8, a neck diameter of Ø 10,5, a threaded length of 50, and a total length of L. The fastener has a diameter of Ø 6,3 at the bottom. A small detail of the fastener head is labeled 'TI-6,3'.
SFS Flat roof fasteners	Annex 93

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

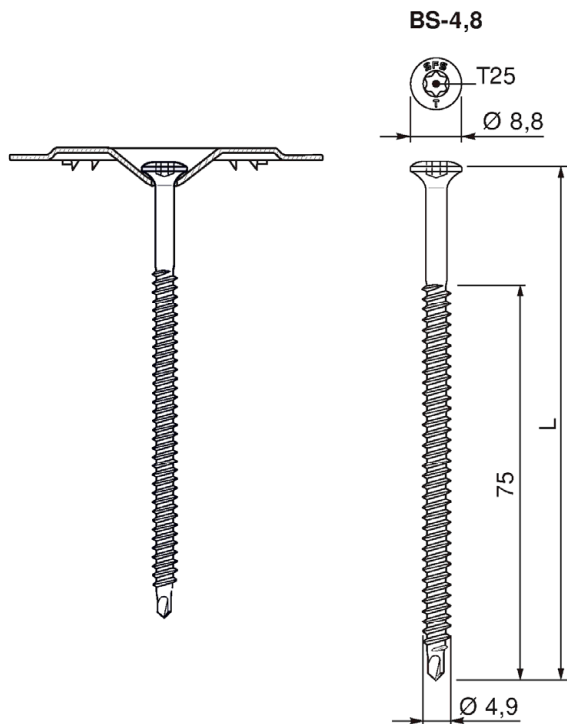
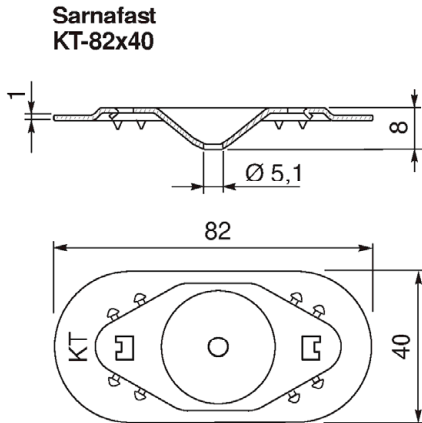
Combination 95A BSA-N-4,8 / FI-P-16,0 / FI-R-20	Combination 95B BSA-N-4,8 / BSA-P-50 / FI-R-20
FI-R-20  FI-P-16,0  BSA-N-4,8 	FI-R-20  BSA-P-50  BSA-N-4,8 
SFS Flat roof fasteners	Annex 95

Combination 96A BSA-N-4,8 / BSA-P-70x70 / FI-R-20 	Combination 96B BSA-N-4,8 / Sarnaweld disc 16 / Sarnabar Tube SBT-20 
SFS Flat roof fasteners	Annex 96

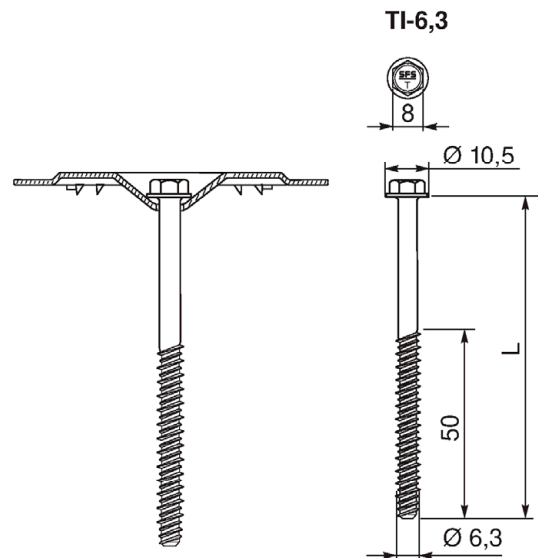
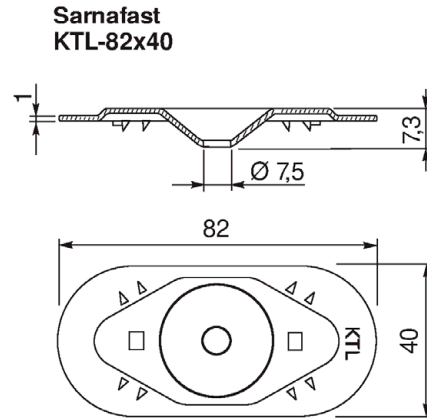
Combination 97A BSA-N-4,8 / BSA-P-50 / Sarnabar Tube SBT-20		Combination 97B BSA-N-4,8 / Sarnafast Tube SFT-50	
SFS Flat roof fasteners		Annex	97

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

Combination 99A
BS-4,8 / Sarnafast KT-82x40

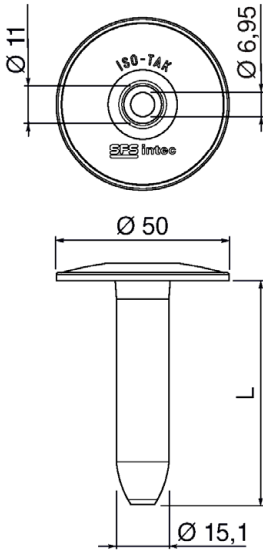
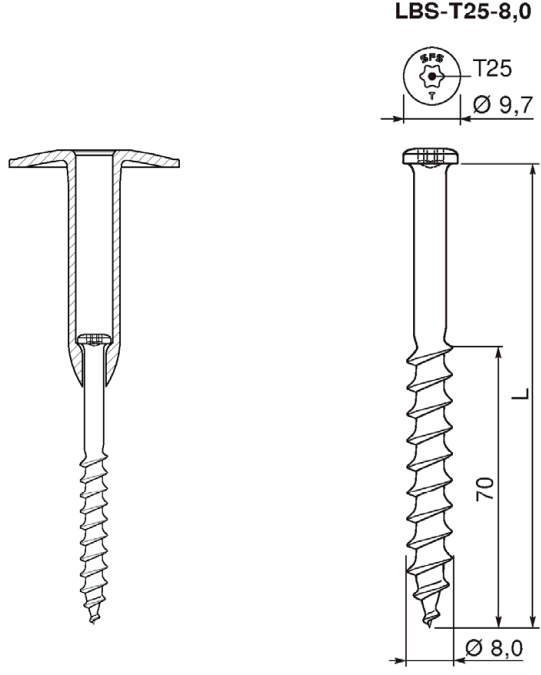
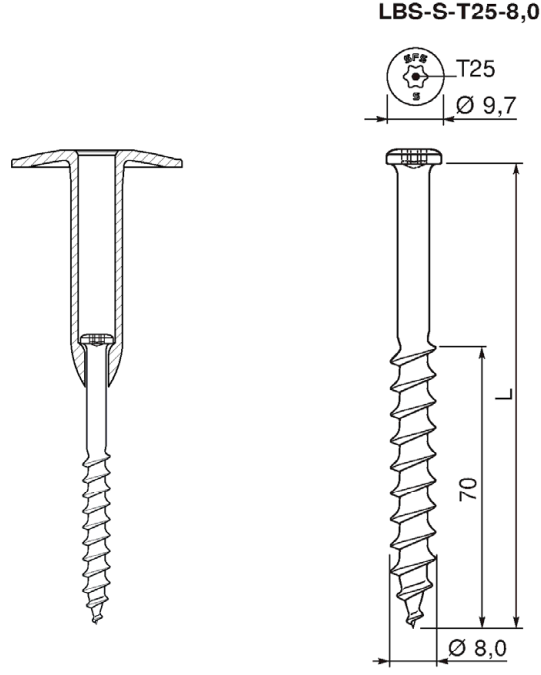
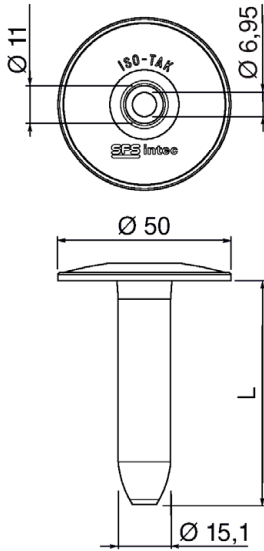
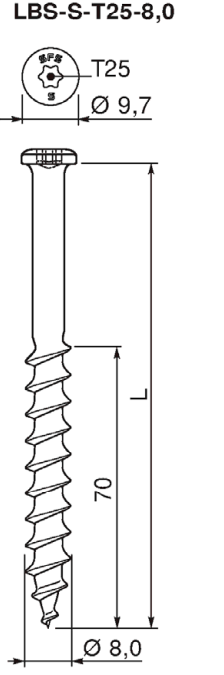


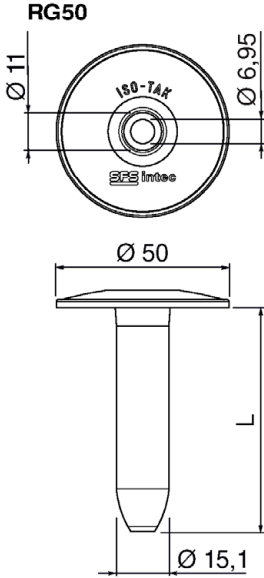
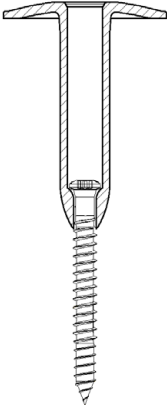
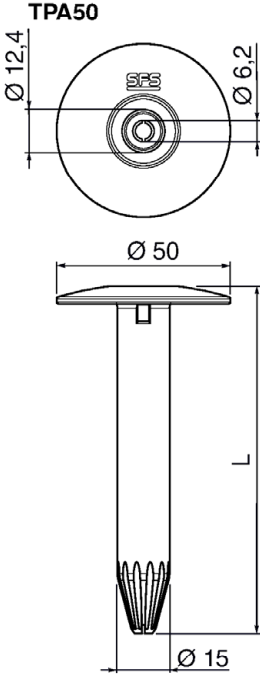
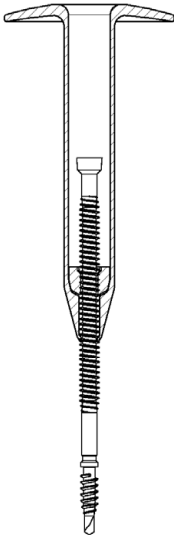
Combination 99B
TI-6,3 / Sarnafast KTL-82x40

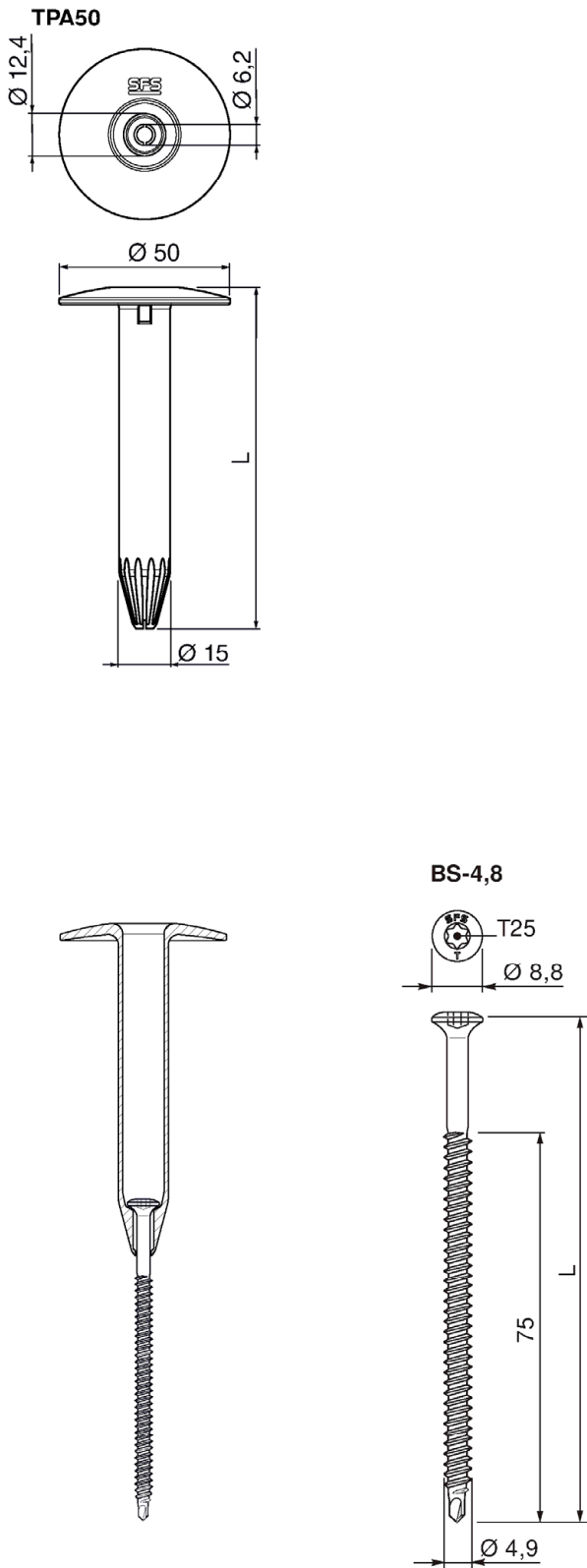
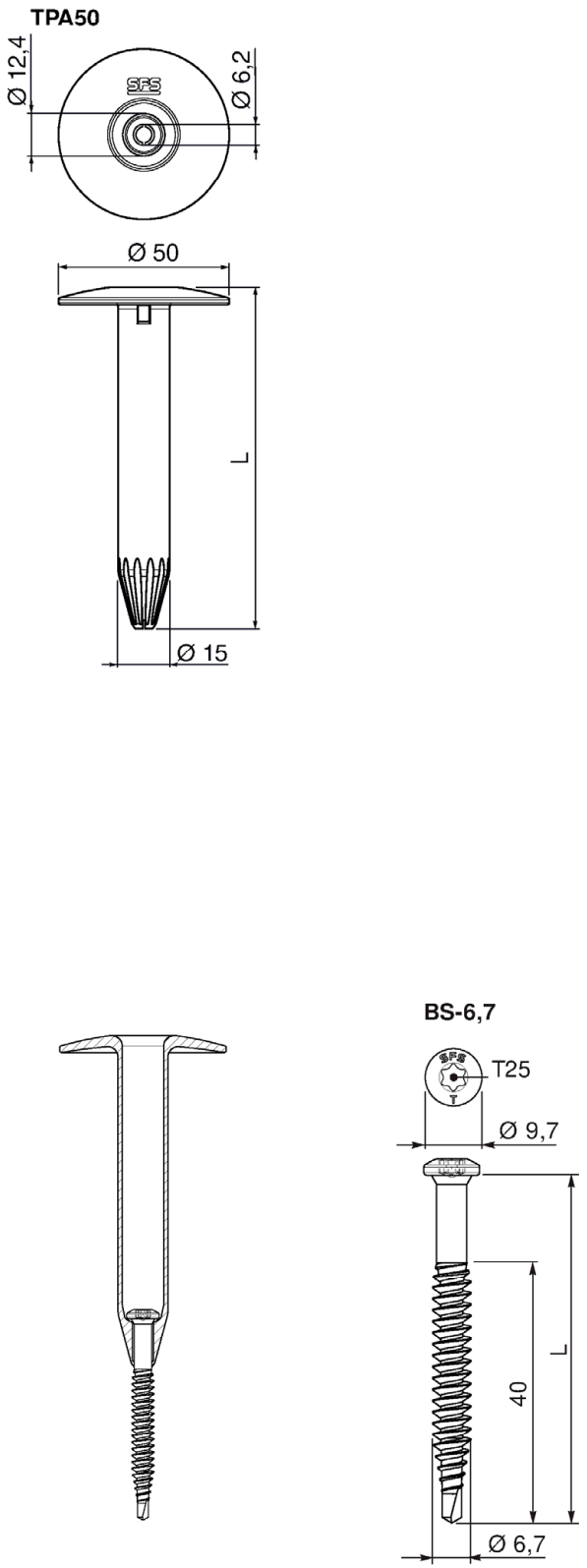


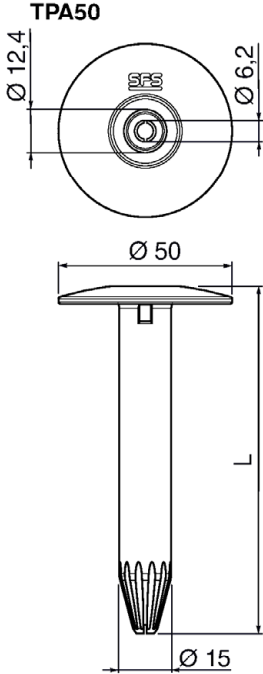
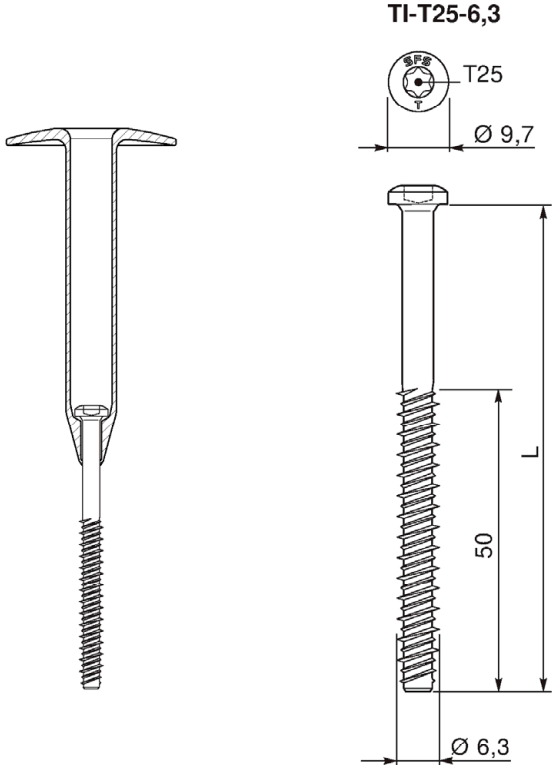
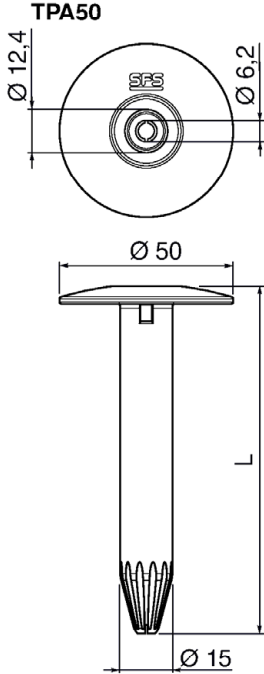
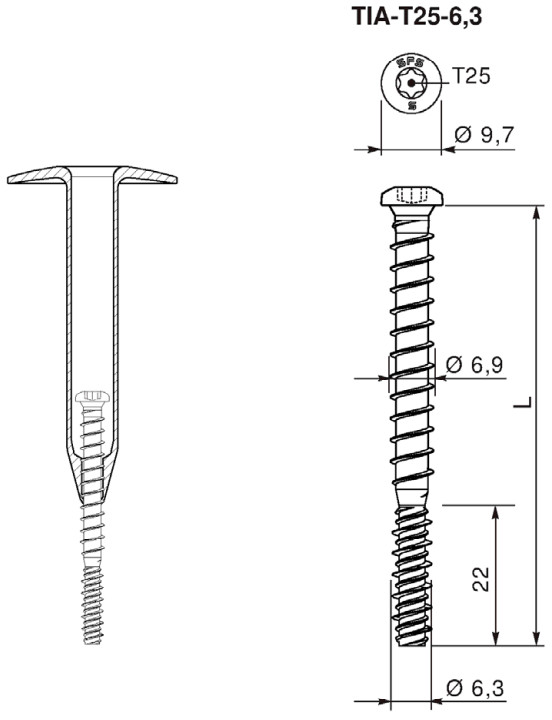
SFS Flat roof fasteners

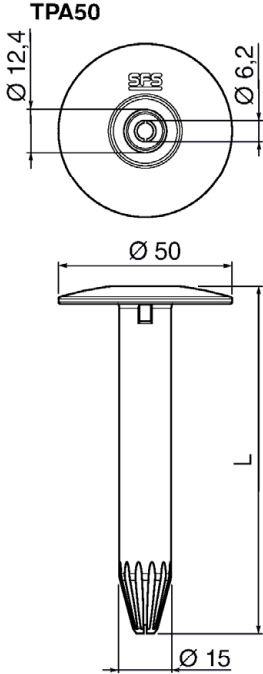
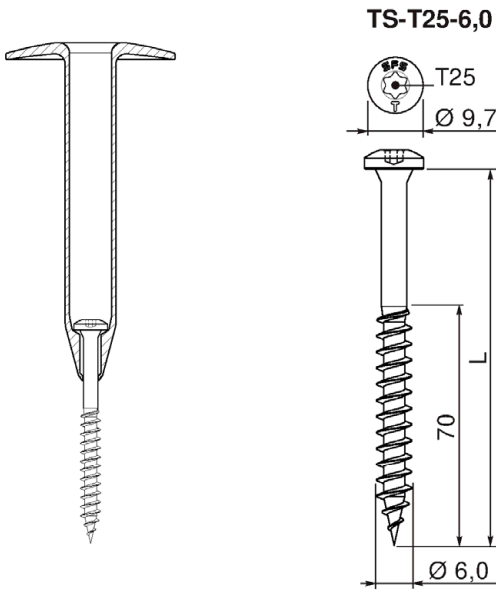
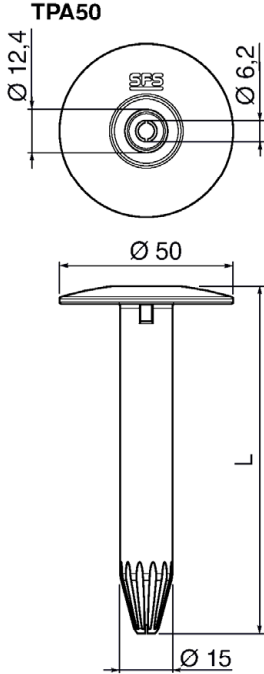
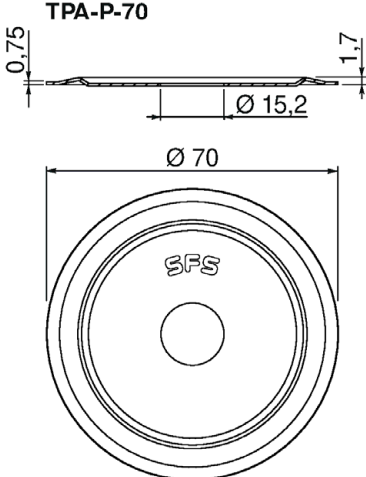
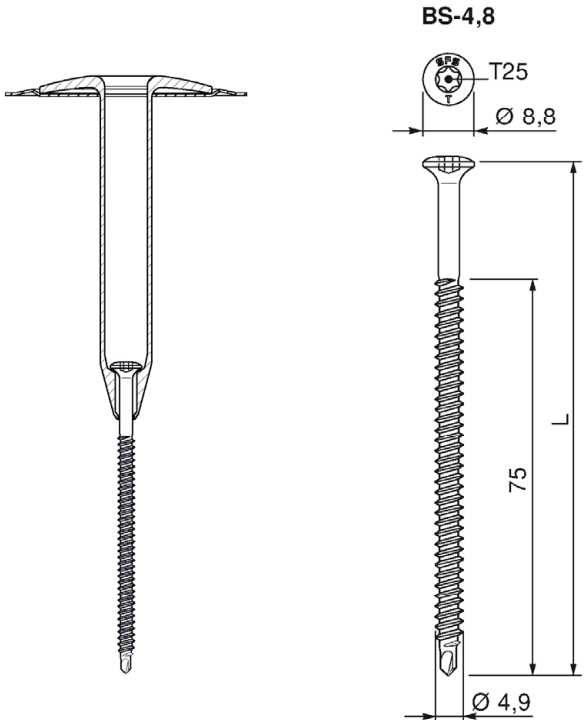
Annex 99

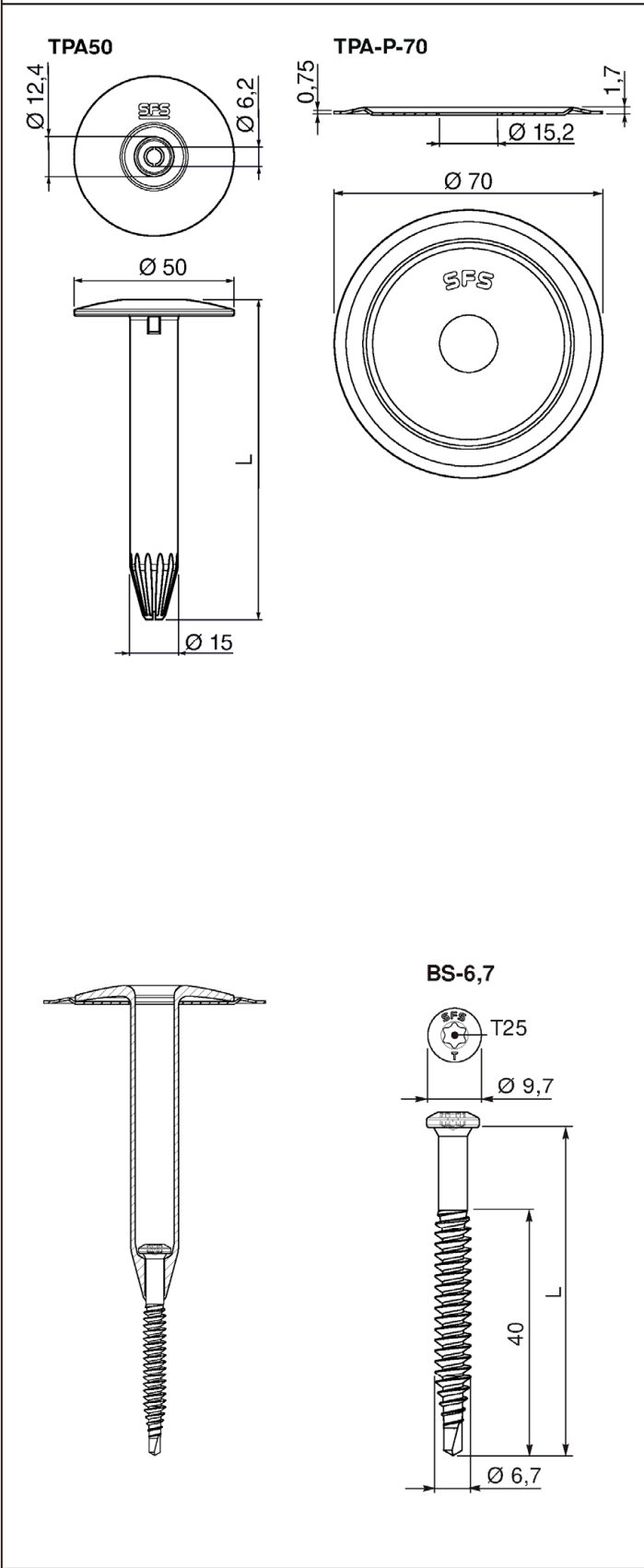
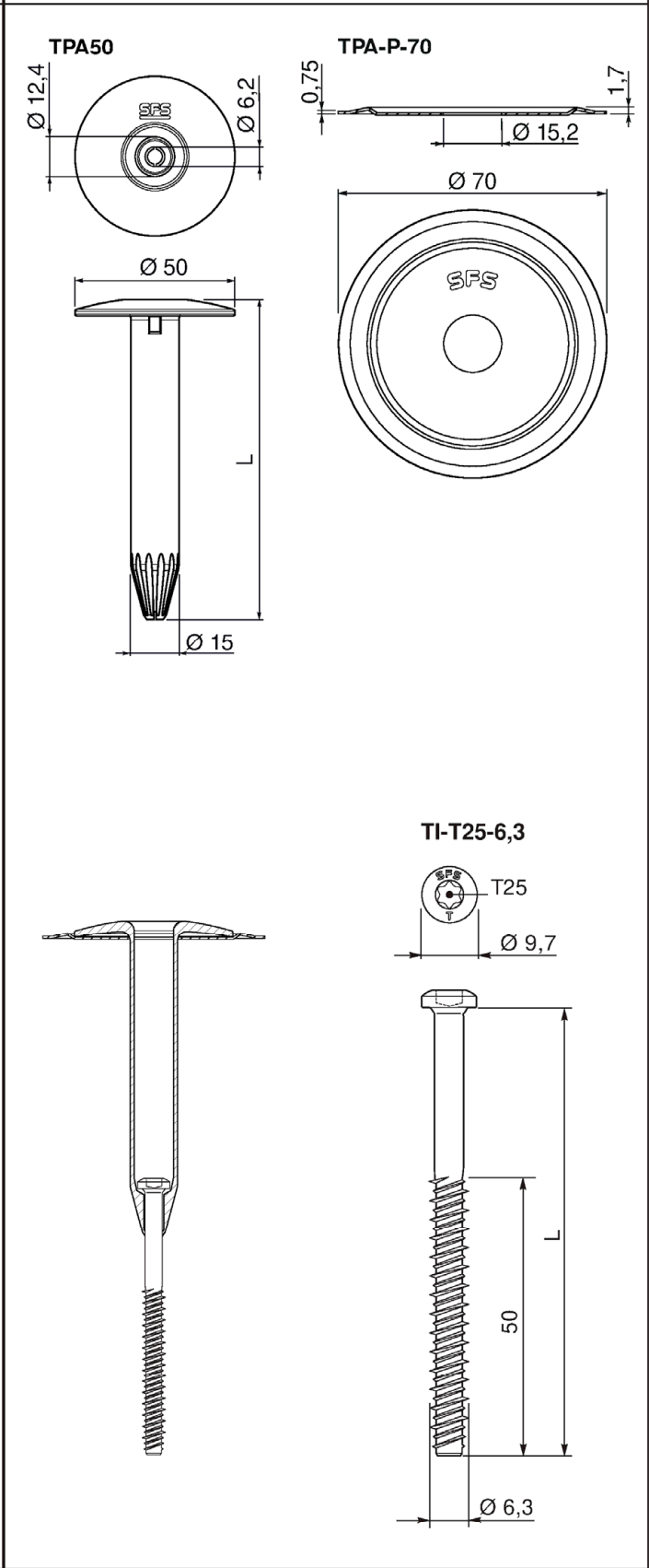
Combination 100A LBS-T25-8,0 / RG50		Combination 100B LBS-S-T25-8,0 / RG50	
RG50  LBS-T25-8,0  LBS-S-T25-8,0 		RG50  LBS-S-T25-8,0 	
SFS Flat roof fasteners			Annex 100

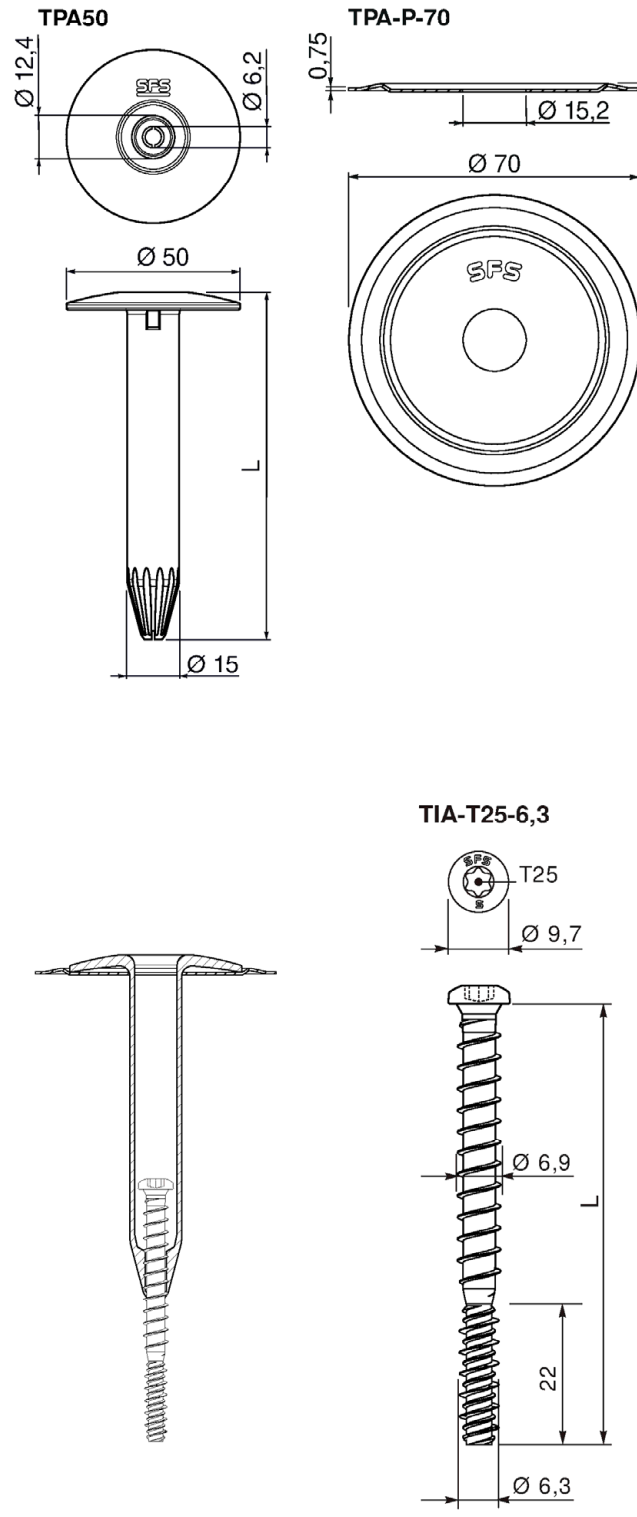
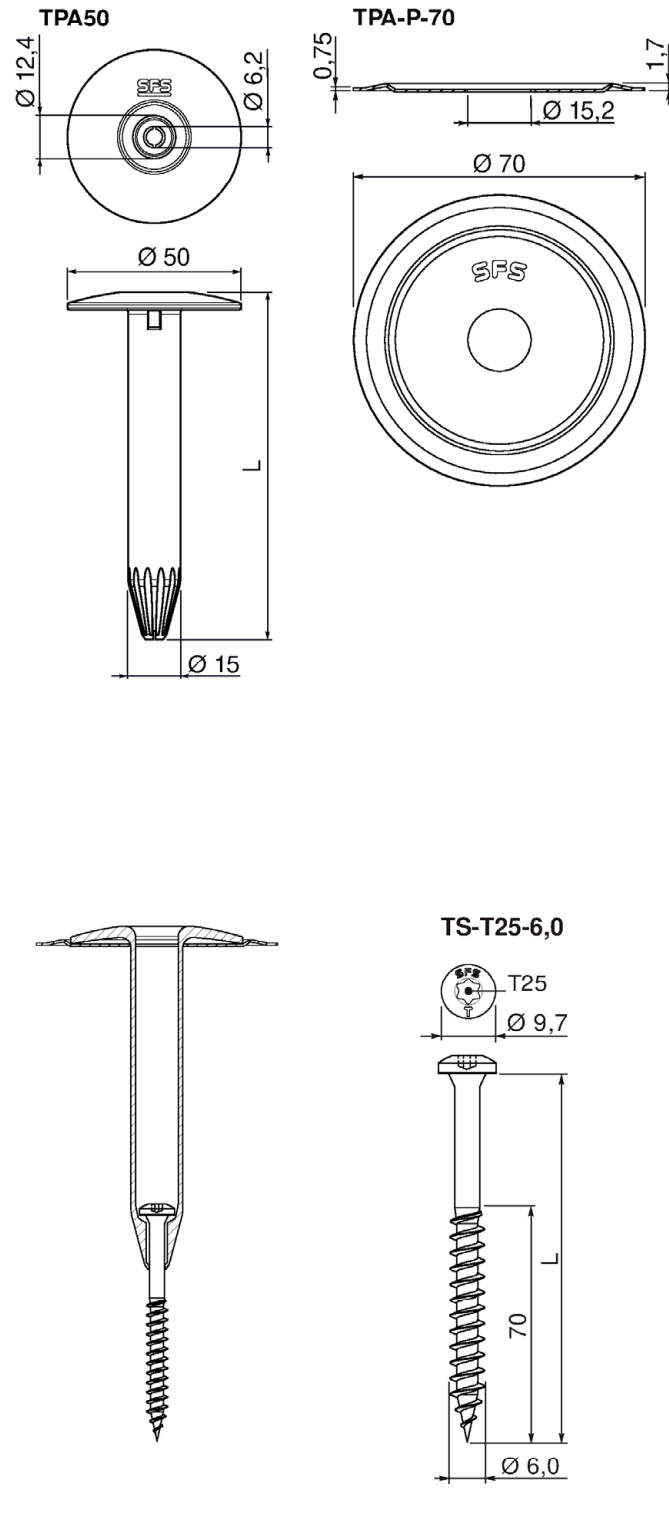
Combination 101A FB-S-T25-7,5 / RG50  RG50 Ø 11 Ø 6,95 ISO-TAK SFS imtec Ø 50 L Ø 15,1  FB-S-T25-7,5 T25 Ø 9,7 Ø 7,5 100 L Ø 6,6	Combination 101B BSA-N-4,8 / TPA50  TPA50 Ø 12,4 Ø 6,2 SFS Ø 50 L Ø 15  BSA-N-4,8 T25 Ø 7,4 8 L 18 Ø 4,9  12
SFS Flat roof fasteners	Annex 101

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

Combination 103A TI-T25-6,3 / TPA50  TPA50 Ø 12,4 Ø 6,2 Ø 50 L Ø 15  TI-T25-6,3 T25 Ø 9,7 50 L Ø 6,3	Combination 103B TIA-T25-6,3 / TPA50  TPA50 Ø 12,4 Ø 6,2 Ø 50 L Ø 15  TIA-T25-6,3 T25 Ø 9,7 Ø 6,9 22 L Ø 6,3
SFS Flat roof fasteners	Annex 103

Combination 104A TS-T25-6,0 / TPA50		Combination 104B BS-4,8 / TPA-P-70 / TPA50	
 		  	
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 
SFS Flat roof fasteners	Annex 105

Combination 106A TIA-T25-6,3 / TPA-P-70 / TPA50  TPA50 TPA-P-70 TIA-T25-6,3	Combination 106B TS-T25-6,0 / TPA-P-70 / TPA50  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⁾ 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/mm²⁴⁾ 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) 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/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

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-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	-	-	
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-82×40	-	-	-	2,93	3,68	32	6,3	-	-	-	-	-	-	-	-	-	-	-
23A	DT-6,3	IF/IG-C-82×40	-	-	-	2,93	4,07	32	6,3	-	-	-	-	-	-	-	-	-	-	-
23B	DT-S-6,3	IRD-82×40	-	-	-	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/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]
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),

t ≥ 18mm, effective setting depth (penetration length of threaded part) ≥ 18mm, minimum density = 550kg/m³

2)

C24/Structural Timber (EN 338),

t ≥ 22mm, effective setting depth (penetration length of threaded part) ≥ 22mm, minimum density = 350kg/m³

3)

Plywood (EN 636),

t ≥ 18mm, effective setting depth (penetration length of threaded part) ≥ 18mm, minimum density = 400kg/m³

4)

sd = setting depth

5)

pdd = pre-drill diameter

- 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-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/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]
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 ≥ 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																	

1) OSB3 (EN 300), $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 550kg/m^3
2) C24/Structural Timber (EN 338), $t \geq 22\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 22\text{mm}$, minimum density = 350kg/m^3
3) Plywood (EN 636), $t \geq 18\text{mm}$, effective setting depth (penetration length of threaded part) $\geq 18\text{mm}$, minimum density = 400kg/m^3
4) sd = setting depth
5) pdd = pre-drill diameter

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