TI: Efficient self tapping fasteners into concrete without plugs

Application specific fastener solutions for use either with solid or pre-cast concrete substrates are highly sought after. Indeed, some systems still rely on plugs to hold the concrete fasteners securely in position.

Using SFS's specially developed, application specific thread-form fastener greatly simplifies the installation of flat roof insulation boards and membranes on concrete deck.

The TI is part of the *isofast*®, *isotak*® and *isoweld*™ system.

The convincing advantages of the TI thread-forming fastener

- Easy to install
- No requirement for plugs
- Low insertion torque
- High pull-out resistance
- Can be easily removed
- Maximum corrosion resistance
- Reduced drilling due to low embedment requirement
- Simply drill the pilot hole, apply with an approriate screwdriver

The optimum solution for many applications

The TI thread forming fastener represents the ideal solution for many applications where secure fastening is required into concrete substrates. These include the installation of waterproof membrane and insulation materials onto solid or precast concrete decks using the appropriate SFS intec sleeves or stress plates. Other applications include fixing timber beams and weatherboarding into concrete / masonry walling or decking.

isofast® TI

Technical information

Application

For the fastening of waterproof membrane and insulation to solid, dense concrete of minimum grade C12/15.

Material

Fastener

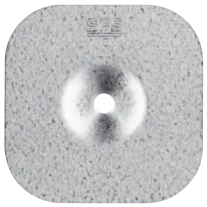
- TI
  Case hardened carbon steel
  Durocoat® corrosion protection:
  Resistance at 15 cycles Kesternich test according to ETAG 006 - D.3.1. and FM Approval Standard 4470 requirements
  Environment-friendly, free of chromium VI

Stress plates

- ID-70x70 / IF/IG-C-82x40 / IRD-82x40
  Steel 1,0 mm, zinc plated
  Resistance at 15 cycles Kesternich test according to ETAG 006 - D.3.1. and FM Approval Standard 4470 requirements

Stress plates

ID-70x70



- Stress plate for insulation, hole diameter 7,5 mm

IF/IG-C-82x40

- Stress plate for membrane and insulation on hard substrates, hole diameter 7,5 mm

IRD-82x40

- Stress plate for membrane and insulation, hole diameter 7,5 mm

Tools and accessories

Recommendation for pre-drilling

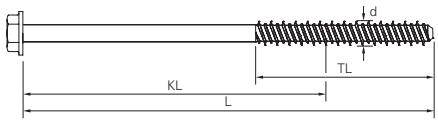
- Use hammer drill with weight class 2 - 3 kg, impact energy ≤ 2,5 J

Recommendation for installation

- Power screwdriver
  - 300 - 700 rpm
  - Min. 500 W
- Battery tool
  - 300 - 700 rpm
  - Approx. 18 V
  - Battery with approx. 2,5 Ah
- Do not use a percussion tool.

Tools and accessories can be found in chapter 10

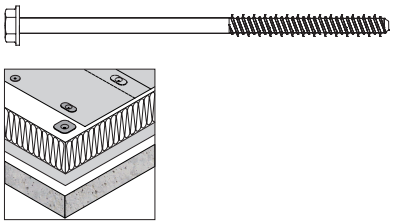
Order information

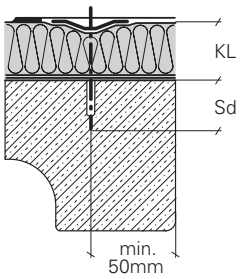


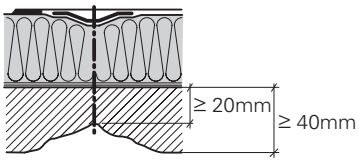
Hexagon 8 mm

KL clamping length | **M** magazine loaded | **d** thread diameter | **L** length | **TL** thread length | **t** thickness of structure | **All measures in mm**

Product / Application	Approval	Order code TI- 6,3x 25 Type	d	L	KL	Drill bits	Application information
■ Carbon steel		TI-	6,3x	25	**5**	5,0x110	
		TI-	6,3x	32	**12**	160	
		TI-	6,3x	45	**25**	160	
		TI-	6,3x	55	**35**	160	
		TI-	6,3x	65	**45**	160	
		TI-	6,3x	75	**55**	160	
		TI-	6,3x	85	**65**	210	
		TI-	6,3x	95	**75**	210	
		TI-	6,3x	105	**85**	210	
		TI-	6,3x	115	**95**	210	
	CE ETA-08/0262	TI-	6,3x	125	**105**	210	
		TI-	6,3x	135	**115**	210	
		TI-	6,3x	145	**125**	260	
		TI-	6,3x	155	**135**	260	
		TI-	6,3x	165	**145**	260	
		TI-	6,3x	175	**155**	260	
		TI-	6,3x	185	**165**	310	
		TI-	6,3x	195	**175**	310	
		TI-	6,3x	205	**185**	310	
		TI-	6,3x	215	**195**	310	
		TI-	6,3x	235	**215**	360	
		TI-	6,3x	255	**235**	360	
		TI-	6,3x	275	**255**	360	







Sd (Setting depth): min. 20 mm

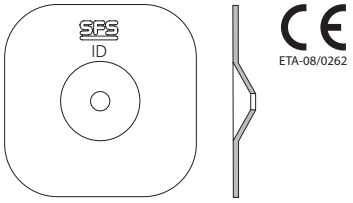
Thread length TL:
Fastener length 25-45 mm: TL = L - 3 mm
Fastener length 55-275 mm: TL = 50 mm

Thickness concrete deck t: min. 40 mm.
Concrete quality minimum C12/15.
Insulation compressive strength at 10% compression min. 0,07 N/mm².

Depth of pilot hole to be min. 15 mm deeper than the setting depth of the fastener, depending on site conditions.

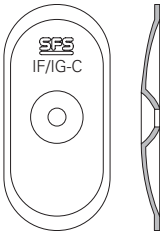
Stress plates

ID-70X70



CE ETA-08/0262

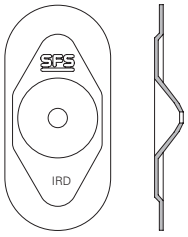
IF/IG-C-82X40



CE ETA-08/0262

FM APPROVED

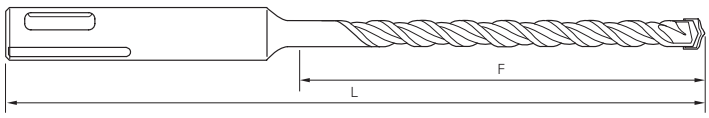
IRD-82X40



CE ETA-08/0262

Tools and accessories can be found in chapter 10

Order information



SDS Carbide-geometry
Dynamic, chisel-shaped drill bit head
Multi-fluted, spacious KVS-spiral
Unique KVS-flute design

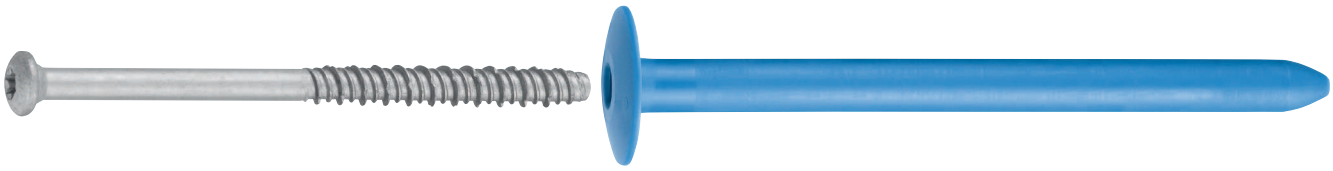
d diameter | **L** Length | **F** working length | **All measures in mm**

Order code SDS- 4,8x 110/ 50- 4PLUS					
Type	d	L	F	Code	Application information
SDS-	4,8x	110/	50-	4PLUS	SPIKE® twister DT-4,8xL SPIKE® twister DT-S-4,8xL TI-6,3xL* TI-T25-6,3xL* TIA-T25-6,3xL*
SDS-	4,8x	160/	100-	4PLUS	
SDS-	4,8x	210/	150-	4PLUS	
SDS-	4,8x	260/	200-	4PLUS	
SDS-	4,8x	310/	250-	4PLUS	
SDS-	4,8x	360/	300-	4PLUS	
SDS-	5,0x	110/	50-	4PLUS	TI-6,3xL TI-T25-6,3xL TIA-T25-6,3xL
SDS-	5,0x	160/	100-	4PLUS	
SDS-	5,0x	210/	150-	4PLUS	
SDS-	5,0x	260/	200-	4PLUS	
SDS-	5,0x	310/	250-	4PLUS	
SDS-	5,0x	360/	300-	4PLUS	
SDS-	5,0x	400/	340-	4PLUS	
SDS-	5,0x	450/	390-	4PLUS	
SDS-	5,0x	500/	440-	4PLUS	
SDS-	5,2x	160/	100-	4PLUS	TI-6,3xL* TI-T25-6,3xL* TIA-T25-6,3xL*
SDS-	5,2x	210/	150-	4PLUS	
SDS-	5,2x	260/	200-	4PLUS	
SDS-	5,2x	310/	250-	4PLUS	
SDS-	5,2x	360/	300-	4PLUS	
SDS-	6,3x	110/	50-	4PLUS	RNR-6,3xL SPIKE® twister DT-6,3xL SPIKE® twister DT-S-6,3xL
SDS-	6,3x	160/	100-	4PLUS	
SDS-	6,3x	210/	150-	4PLUS	
SDS-	6,3x	260/	200-	4PLUS	
SDS-	6,3x	285/	225-	4PLUS	
SDS-	6,3x	360/	300-	4PLUS	
SDS-	6,3x	410/	350-	4PLUS	
SDS-	6,3x	510/	450-	4PLUS	

All approvals and recommended design values are based upon close tolerance pilot holes that are drilled using SFS intec 4PLUS carbide drill bits.

* Technical performance values of the TI fasteners may differ between countries due to variation in the hardness of locally sourced concrete aggregates. Optimum performance can be determined by site testing using different drill diameters, for example between SDS-4,8 and SDS-5,2. Consult your SFS representative for further information.

isotak® TI-T25 / R45



Technical information

Application

For the fastening of waterproof membrane and insulation to solid, dense concrete of minimum grade C12/15.

Material

Fastener

- TI-T25
  Case hardened carbon steel
  Durocoat® corrosion protection:
  Resistance at 15 cycles Kesternich test according to ETAG 006 - D.3.1. and FM Approval Standard 4470 requirements
  Environment-friendly, free of chromium VI

Sleeve

- R45
  High quality polypropylene, PP

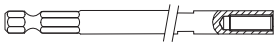
Tools and accessories

Recommendation for pre-drilling

- Use hammer drill with weight class 2 - 3 kg, impact energy ≤ 2,5 J

Accessories

ZA¼"-M6-300/750



T25-32-M6

ZH-11-RING

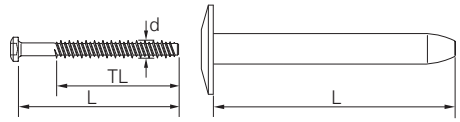
- For the manual installation of *isotak*® fasteners and sleeves

Recommendation for installation

- Power screwdriver
  - 300 - 700 rpm
  - Min. 500 W
- Battery tool
  - 300 - 700 rpm
  - Approx. 18 V
  - Battery with approx. 2,5 Ah
- Do not use a percussion tool.

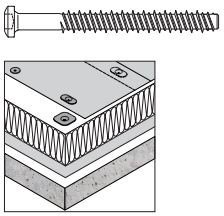
Tools and accessories can be found in chapter 10

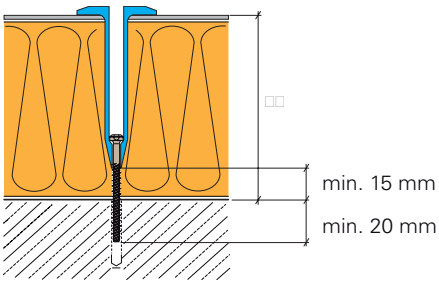
Order information



KL clamping length | **M** magazine loaded | **d** thread diameter | **L** length | **TL** thread length | **t** thickness of structure | **All measures in mm**

Product / Application	Approval	Order code TI-T25- 6,3x 50 Type	d	L	KL	Application information
■ Carbon steel	CE ETA-08/0262	TI-T25-	6,3x	50		
		TI-T25-	6,3x	60		
		TI-T25-	6,3x	70		
		TI-T25-	6,3x	80		
		TI-T25-	6,3x	90		
		TI-T25-	6,3x	100		
		TI-T25-	6,3x	120		
		TI-T25-	6,3x	140		
		TI-T25-	6,3x	160		
● Plastic	CE ETA-08/0262	R	45x	15		KL see combination table
		R	45x	35		
		R	45x	65		
		R	45x	85		
		R	45x	105		
		R	45x	135		
		R	45x	165		
		R	45x	185		
		R	45x	195		
		R	45x	225		
		R	45x	255		
		R	45x	285		
		R	45x	325		
		R	45x	365		
		R	45x	405		
		R	45x	485		
		R	45x	565		
		R	45x	645		
		R	45x	705		



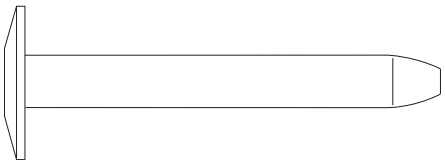


Sd (Setting depth): min. 20 mm

Thread length TL:
Fastener length 50 mm: TL = 47 mm
Fastener length 60-160 mm: TL = 50 mm

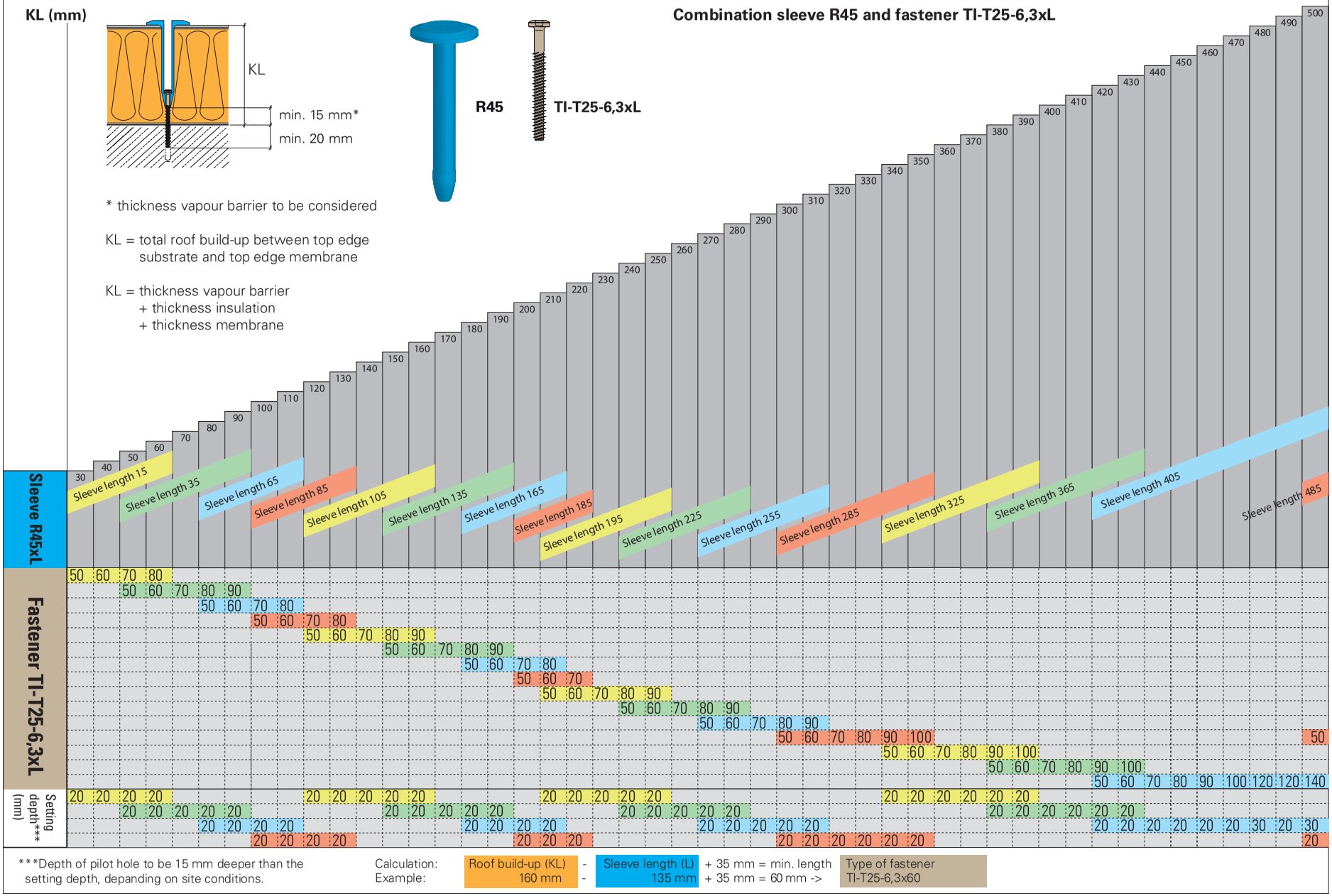
Thickness concrete deck t: min. 40 mm.
Concrete quality minimum C12/15.

Depth of pilot hole to be min. 15 mm deeper than the setting depth of the fastener, depending on site conditions.



Tools and accessories can be found in chapter 10

Selection of the correct fastener and sleeve combination



* thickness vapour barrier to be considered

KL = total roof build-up between top edge substrate and top edge membrane

KL = thickness vapour barrier
+ thickness insulation
+ thickness membrane

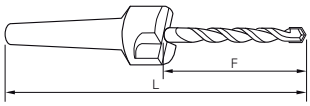
***Depth of pilot hole to be 15 mm deeper than the setting depth, depanding on site conditions.

Calculation: Roof build-up (KL) 160 mm - Sleeve length (L) 135 mm + 35 mm = min. length + 35 mm = 60 mm -> Type of fastener TI-T25-6,3x60

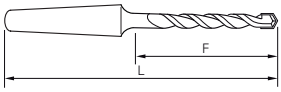
Example:

Order information

ZVK-STOP



ZVK



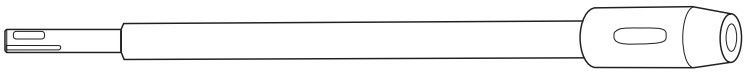
d diameter | **L** Length | **F** working length | **All measures in mm**

Order code **ZVK- 4,8x 100x 160**					
Type	d	F	L	Code	Application information
ZVK- 4,8x 100x 160 ZVK- 4,8x 100x 165 STOP					SPIKE® twister DT-4,8xL SPIKE® twister DT-S-4,8xL TI-T25-6,3xL* TIA-T25-6,3xL*
ZVK- 5,0x 55x 115 ZVK- 5,0x 100x 160 ZVK- 5,0x 25x 90 STOP ZVK- 5,0x 35x 100 STOP ZVK- 5,0x 45x 110 STOP ZVK- 5,0x 55x 120 STOP					TI-T25-6,3xL TIA-T25-6,3xL
ZVK- 5,2x 25x 90 STOP ZVK- 5,2x 35x 100 STOP ZVK- 5,2x 45x 110 STOP ZVK- 5,2x 100x 165 STOP					TI-T25-6,3xL* TIA-T25-6,3xL*

ZVK-STOP: The special STOP drills additionally core out the insulation providing for easy sleeve insertion and accurate fastener alignment with the pilot hole.

ZVK: Conus drills for different use, mostly to replace very long SDS drills

ZAK-500 / ZAK-750 / ZAK-1000 - Drill extension for the ZVK conus drills



All approvals and recommended design values are based upon close tolerance pilot holes that are drilled with ZVK carbide drill bits.

* Technical performance values of the TI fasteners may differ between countries due to variation in the hardness of locally sourced concrete aggregates. Optimum performance can be determined by site testing using different drill diameters, for example between ZVK-4,8 and ZVK-5,2. Consult your SFS representative for further information.