Tecfi S.p.A. - Sistemi di Fissaggio
Sede operativa, stabilimento e corrispondenza:
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Declaration of Performance number 1488-CPD-162/W

According to Regulation EU No 305/2011

Item code: **DGE02 Sinto ST-VE, DGE12 Sinto ST-VEW, DGE22 Sinto ST-VES**

Manufacturer: **Tecfi S.p.A. - S.S. Appia, km 193 - 81050 Pastorano (CE), Italy**

1. Intended use	
Product-type:	Metal anchor for use in concrete
Anchor type:	Post-installed rebar connections of the sizes 8 to 32 mm with DGE02 Sinto ST-VE, DGE12 Sinto-ST VEW, DGE22 Sinto-ST VES injection mortar
Technical description of the product:	The subject of this DoP are the post-installed connections, by anchoring or overlap connection joint consisting of steel reinforcing bars (rebars) in existing structures made of normal weight concrete, using injection mortar DGE02 Sinto ST-VE, DGE12 Sinto ST-VEW, DGE22 Sinto ST-VES in accordance with the regulations for reinforced concrete construction. The design of the post-installed rebar connections shall be done in accordance with EN 1992-1-1 (Eurocode 2).
Specification of the intended use in accordance with the applicable EAD:	The assessment of fitness of the anchor for the intended use in relation to the requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 has been made in accordance with the « Guideline for European Technical Approval of Metal Anchors for use in Concrete », Part 1 « Anchors in general » and Part 5 « Bonded anchors », and EOTA Technical Report 023 “Assessment of post-installed rebar connections”.
Base material:	The post-installed rebar connections may be used in normal weight concrete of a minimum grade C12/15 and maximum grade C50/60 according to EN 206-1. They may be used in non-carbonated concrete with the allowable chloride content of 0,40 % (Cl 0,40) related to the cement content according to EN 206-1.
Installation:	- Dry or wet concrete (use category 1). - It must not be installed in flooded holes. - Overhead installation is permissible. - Hole drilling by hammer drilling. - Installation of the post-installed rebars shall be done only by suitable trained installer and under supervision on the site. - Check the position of the existing rebars (if the position of existing rebars in not known it shall be determined using a rebar detector suitable for this purpose as well as on the basis of the construction documentation and then marked on the building component for the overlap joint).
Loads:	- Static and quasi-static loads.
Durability:	- Structures subject to dry internal conditions. - Structures subject to external atmospheric exposure including industrial and marine environment). - Structures subject to permanently damp internal conditions if no particular aggressive conditions exist. Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

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1. Intended use	
Service temperature:	The anchors may be used in the following temperature range: -***40°C to +80°C*** (max. short term temperature +80°C and max. long term temperature +50°C).
Resistance to fire:	No Performance Declared (NPD).
Reaction to fire:	No Performance Declared (NPD).
Information referred to in article 31 of Regulation (EC) No 1907/2006 (REACH):	see MSDS
European Assessment Document:	ETAG001, part 1, part 5 and EOTA TR 023
European Technical Assessment:	ETA 12/0254
Technical Assessment Body:	INSTYTUT TECHNIKI BUDOWLANEJ (ITB), ul. Filtrowa 1 00-611 Warszawa, Poland
Design methods:	- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work. - Verifiable calculation notes and drawings are prepared taking into account of the forces to be transmitted. - Design according to EN 1992-1-1. - The actual position of the reinforcement in the existing structure shall be determined.
Assessment and Verification of Constancy of Performance:	EC Certificate No. 1488-CPD-162/W
Notified Body:	INSTYTUT TECHNIKI BUDOWLANEJ (ITB), ul. Filtrowa 1 00-611 Warszawa, Poland
Under the system:	1

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1. *Intended use*

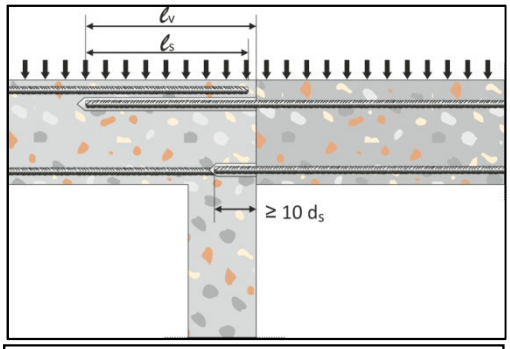

Figure 1 – Overlap joint for rebar connections of slabs and beams

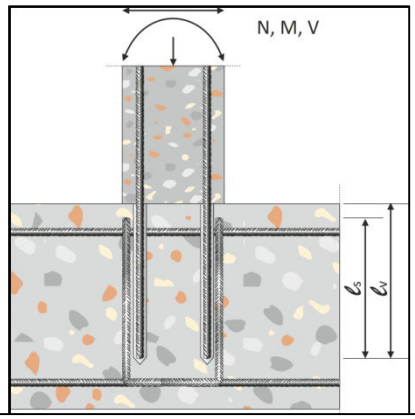

Figure 2 – Overlap joint at a foundation of a column or wall where the rebars are stressed in tension

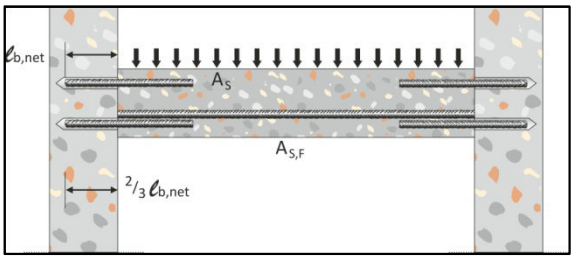

Figure 3 – End anchoring of slabs or beams, designed as simply supported.

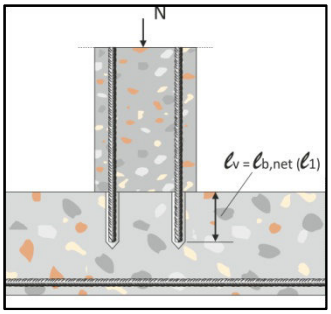

Figure 4 – Rebar connection for components stressed primarly in compression.

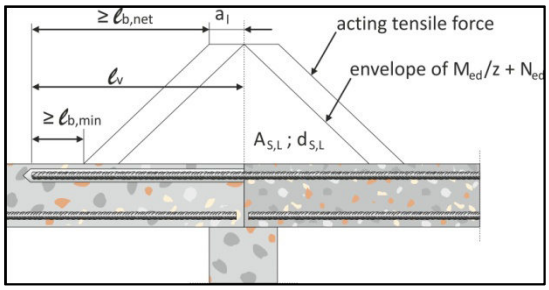

Figure 5 – Anchoring of reinforcement to cover the line of acting tensile force

Note: In the figures no transverse reinforcement is plotted, the transverse reinforcement as required by EC2 shall be present. The shear transfer between old and new concrete shall be designed according to EC2

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2. *Anchor's components*

Table 2.a: Rebars material

Product form		**Bars and de-coiled rods**	
Class		**B**	**C**
Characteristic yield strength f_{yk} or $f_{0,2k}$ [N/mm^2]		400 to 600	
Minimum value of $k=(f_t/f_y)_k$		≥1,08	≥1,15 <1,35
Characteristic strain at minimum force, ε_{uk} [%]		≥5,0	≥7,5
Bendability		bend / rebend test	
Maximum deviation from nominal mass (individual bar) [%]	**Nominal diameter [mm]** **≤Ø8** **>Ø8**	±6 ±4,5	
Bond: minimum relative rib area, $f_{R,min}$	**Nominal diameter [mm]** **Ø8 to Ø12** **>Ø12**	0,040 0,056	

Rib height h: The rib height h should be: 0,05·Ø ≤ h ≤ 0,07·Ø
Ø = nominal bar diameter

Table 2.b: Resin

Injection mortar	**Composition**
DGE 02 Sinto ST-VE DGE 12 Sinto ST-VEW DGE 22 Sinto ST-VES Two components injection mortars	Additive: quartz Bonding agent: vinylester resin styrene free Hardener: dibenzoyl peroxide

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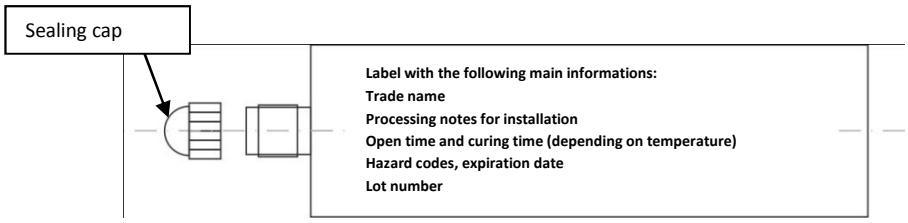
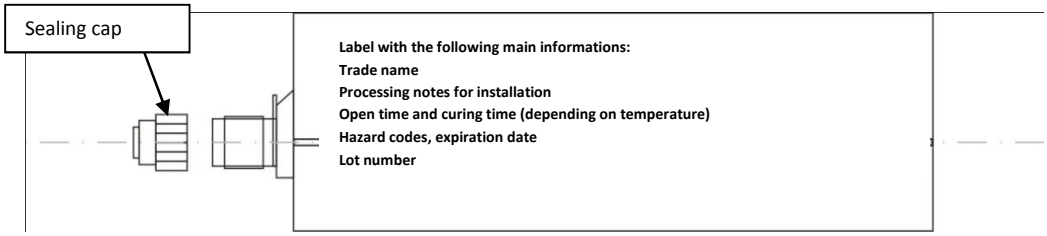
2. *Anchor's components*

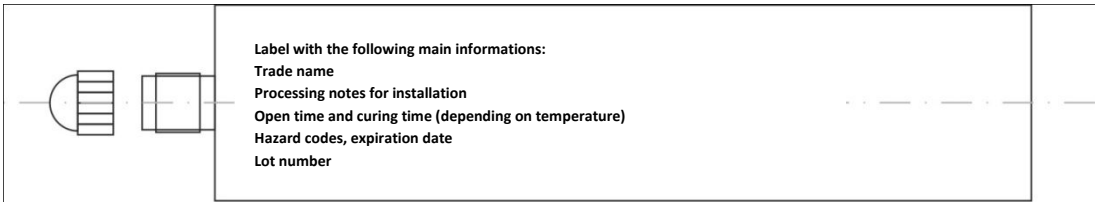
Cartridge 300 ml – Coaxial



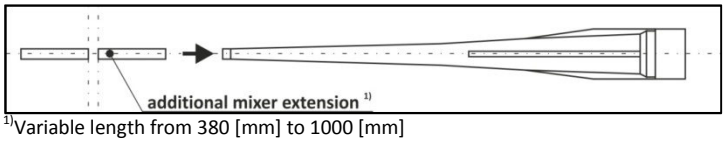
Cartridge 345 ml – Side by side



Cartridge 400 ml – Coaxial

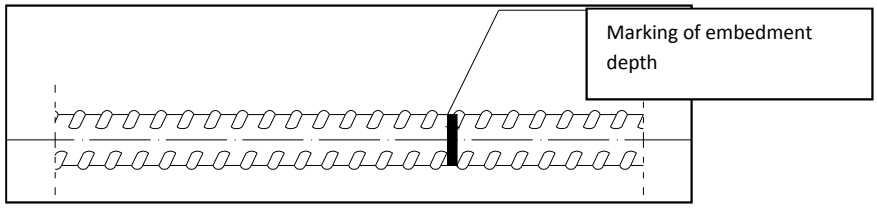


Mixer – the mixer is suitable for each type of cartridge



1) Variable length from 380 [mm] to 1000 [mm]

Rebar:



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3. Installation

3.1 Installation information

Only tension forces in the axis of the rebar may be transmitted.

The transfer of shear forces between new concrete and existing structure shall be designed additionally according to EN 1992-1-1.

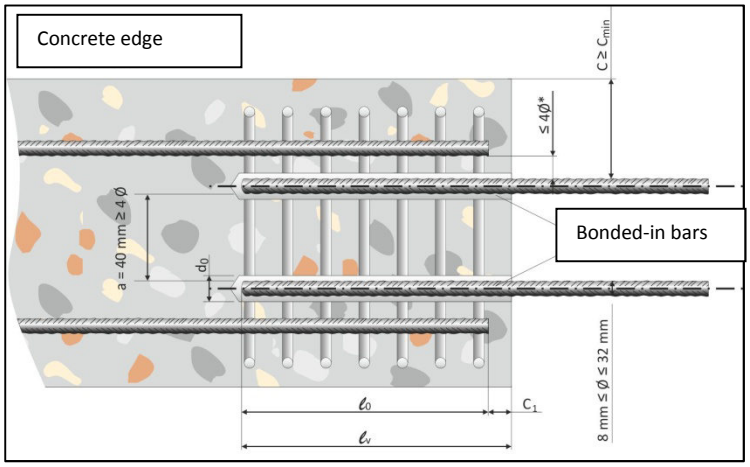

Table 3.a: Installation details

Symbol	Details
Ø	Rebar diameter
d_0	Drill hole diameter
l_0	Overlap length (EN 1992-1-1, clause 8.7.3)
l_v	Effective anchorage depth; $l_v \geq l_0 + c_1$
c	Concrete cover of post-installed rebar
c_{min}	Minimum concrete cover (EN 1992-1-1, clause 4.4.1.2)
c_1	Concrete cover of the existing rebar
a [1)]	Distance between overlapping rebars

[1)] If the clear distance between overlapping rebars is greater than 4·Ø the overlap length shall be enlarged by the difference between the clear distance and 4·Ø.

Table 3.b: Installation data [2),3)]

Diametro barra	d_0 [mm]	$l_{b,min}$ [mm]	$l_{0,min}$ [mm]	$l_{v,max}$ [mm]	c_{min} [mm]	a [mm]
Ø8	12	200	115	400	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø10	14	200	145	500	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø12	16	200	170	600	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø14	18	210	200	700	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø16	20	240	230	800	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø20	25	300	285	1000	30 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø25	30	375	355	1000	40 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø28	35	420	400	1000	40 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø
Ø32	40	480	455	1000	40 + 0,06 l_v ≥ 2 Ø	40 ≥ 4 Ø

[2)] Valid for hammer drilling and diamond drilling methods

[3)] According to EN 1992-1-1 modified with TR023: $l_{b,min}$ (8.6) and l0,min (8.11) with maximum yield stress for rebar BSt 500S, γ_M = 1,15, α_6 = 1,0, concrete C20/25 with f_{bd} = 2,30 N/mm^2 and good bond condition.

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Table 3.c.1: Minimum curing time[1] (DGE02)

Concrete temperature [°C]	Processing time	Minimum curing time[3]
-5[2]	65 min	780 min
0[2]	45 min	420 min
5	25 min	90 min
10	16 min	60 min
15	11,5 min	45 min
20	7,5 min	40 min
25	5 min	35 min
30	3 min	30 min
35[4]	2 min	25 min
40[4]	1 min	20 min

[1] *The minimum time from the end of the mixing to the time when the anchor may be torque or loaded*
[2] *The minimum recommended resin temperature is 5[°C]*
[3] *For wet condition the curing time must be doubled*
[4] *Maximum resin temperature 30°C.*

Table 3.c.2: Minimum curing time[1] (DGE12)

Concrete temperature [°C]	Processing time	Minimum curing time[3]
-5[2]	40 min	210 min
0[2]	25 min	100 min
5	15 min	70 min
10	10 min	50 min
15	7 min	35 min
20	5 min	30 min

[1] *The minimum time from the end of the mixing to the time when the anchor may be torque or loaded*
[2] *The minimum recommended resin temperature is 5[°C]*
[3] *For wet condition the curing time must be doubled*

Table 3.c.3: Minimum curing time[1] (DGE22)

Concrete temperature [°C]	Processing time	Minimum curing time[3]
20	14 min	60 min
25	11 min	50 min
30	8 min	40 min
35[4]	6 min	30 min
40[4]	4 min	20 min
45[4]	3 min	20 min
50[4]	2 min	20 min

[1] *The minimum time from the end of the mixing to the time when the anchor may be torque or loaded*
[3] *For wet condition the curing time must be doubled*
[4] *Maximum resin temperature 30°C.*

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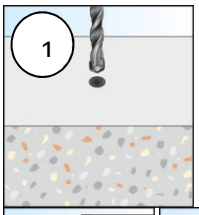
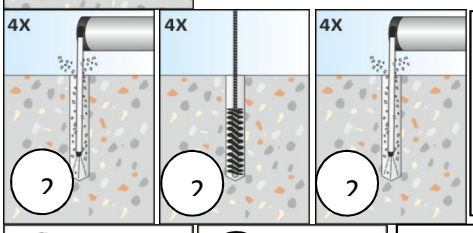
3. Installation

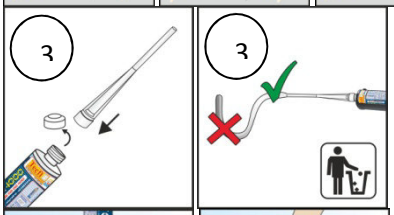
Table 3.d: Installation procedure up to 300 [mm] embedment depth



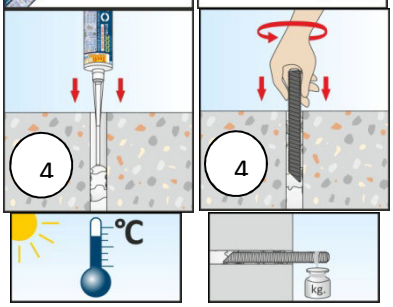
1 – Drill the hole with the correct diameter and depth using a rotary percussive machine, perpedicularly to the concrete surface.



2 – Clean the hole from drilling dust: the hole shall be cleaned by at least 4 blowing operations, by at least 4 brushing operations followed again by at least 4 blowing operations; before brushing, clean the brush and check if the brush diameter is sufficient.



3 – Unscrew the front cap of the cartridge, screw in the mixer and insert the cartridge in the extruder. Before starting to use the cartridge, eject a first part of the product, being sure that the two components are completely mixed. The complete mixing is reached only after that the product, obtained by the mixing of the two components, comes out from the mixer with an uniform color.



4 – Fill the drill hole uniformly starting from the bottom, in order to avoid entrapment of the air; remove the mixer slowly during the extrusion. Fill the drill hole with a quantity of injection mortar corresponding to 2/3 of the drill hole depth. Insert immediately the rod, marked according to the proper anchorage depth, slowly and with a slight twisting motion, removing excess of injection mortar around the rod. Observe the processing and the curing time before torque or load the anchor. (the rod must be free from oil or other contaminations)

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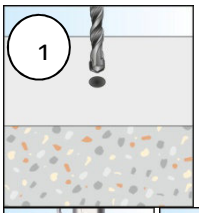
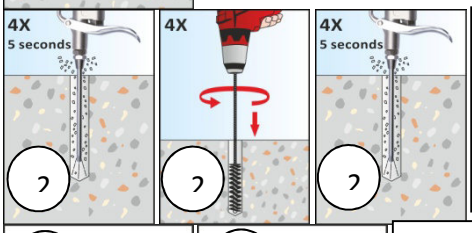
3. Installation

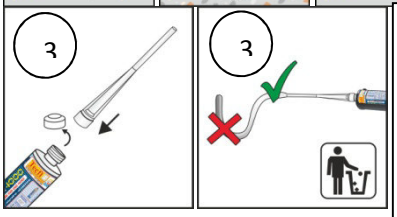
Table 3.e: Installation procedure up to 600 [mm] embedment depth



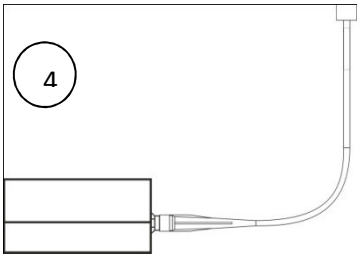
1 – Drill the hole with the correct diameter and depth using a rotary percussive machine, perpedicularly to the concrete surface.



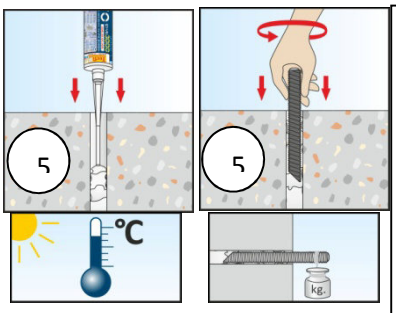
2 – Clean the hole from drilling dust: the hole shall be cleaned by at least 4 blowing operations, by at least 4 brushing operations followed again by at least 4 brushing operations; before brushing, clean the brush and check if the brush diameter is sufficient.



3 – Unscrew the front cap of the cartridge, screw in the mixer and insert the cartridge in the proper pneumatic-pump. Before starting to use the cartridge, eject a first part of the product, being sure that the two components are completely mixed. The complete mixing is reached only after that the product, obtained by the mixing of the two components, comes out from the mixer with an uniform color.



4 – Before starting the injection insert the mixer extension and the injection plug (see paragraph 3.3.2.2).



5 – Fill the drill hole uniformly starting from the bottom, in order to avoid entrapment of the air; remove the mixer slowly during the extrusion. Fill the drill hole with a quantity of injection mortar corresponding to 2/3 of the drill hole depth. Insert immediately the rod, marked according to the proper anchorage depth, slowly and with a slight twisting motion, removing excess of injection mortar around the rod. Observe the processing and the curing time before torque or load the anchor (the rod must be free from oil or other contaminations)

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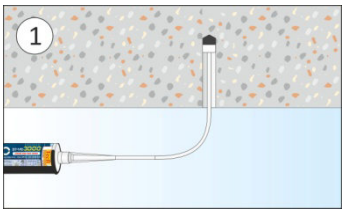
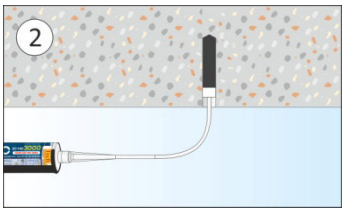
3. Installation

Table 3.g: Overhead application

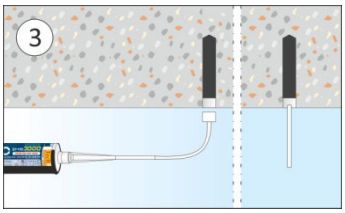
In addition to standard procedure, for overhead installation, follow the instructions below



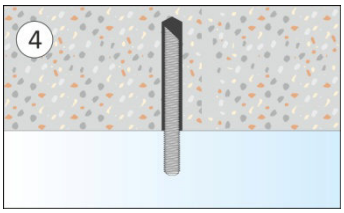
1 – Start injection: Inject from the bottom of the hole using the proper pneumatic-pump. Hold this position during the injection phase.



2 – Injection phase: inject the product about 2/3 of the hole depth. During the injection hold this position to assure the correct installation.



3 – End injection: remove the injection plug. Insert immediately the rod (turn the rod during the insertion).



4 – End installation: to avoid the slipping of the rod during the open time of the product (due to the rod own weight) use a temporary interlocking element (e.g. wedge of wood).

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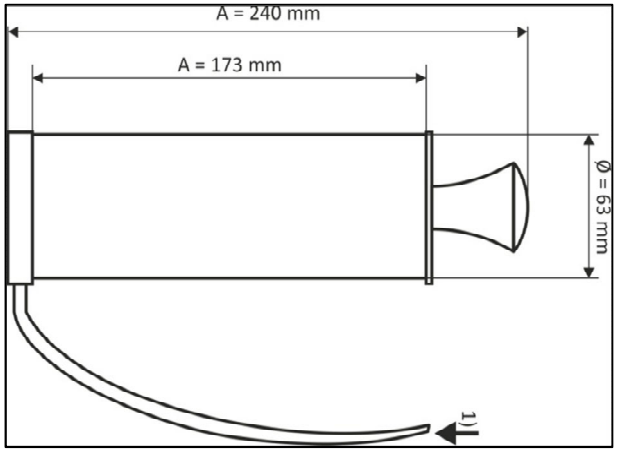
3. Installation

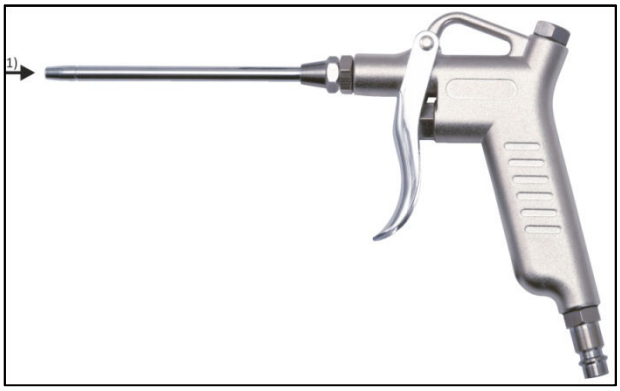
3.2: Cleaning tools

- Manual blower pump



It's possible to use the mixer extension with the manual blower pump

- Mechanical air system (compressed air)



The use of the mixer extension is also allowed if using the compressor (compressed air)

- ***Minimum suitable pressure 6 [bar] at 6 [m^3/h].***
- ***Oil free compressed air.***
- ***Recommended air gun with an orifice opening minimum 3,5 [mm] in diameter.***

[1)]Position to insert the mixer extension[2)]
[2)]Mixer extension (from 380 [mm] to 1000 [mm]) with nominal diameter equal to 8 [mm]

3. Installation

- Standard brush

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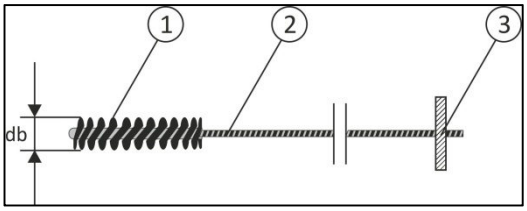
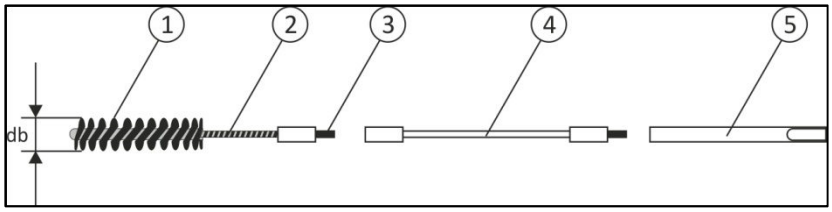


1 – Steel bristles
2 – Steel stem
3 – Wood handle

Table 3.h: Standard brush diameter

Rebar diameter Ø			Ø8	Ø10	Ø12	Ø14	Ø16
d_0	Drill hole diameter	[mm]	12	14	16	18	20
d_b	Brush diameter	[mm]	14	16	18	20	22

- Special brush



1 – Steel bristles
2 – Steel stem
3 – Threaded connection for drilling tool extension
4 – Special brush extension
5 – Drilling tool connection (SDS connection)

Table 3.i: Special brush diameter (mechanical brush)

Rebar diameter Ø			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
d_0	Drill hole diameter	[mm]	12	14	16	18	20	25	30	35	40
d_b	Brush diameter	[mm]	14	16	18	20	22	27	32	37	42

3. Installation

3.3: Tools for injection:

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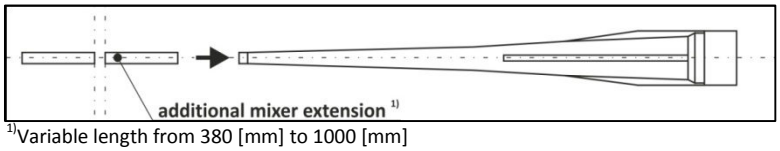
3.3.1 Standard installation conditions:

Installation procedure up to 300 [mm] embedment depth (no overhead installation)

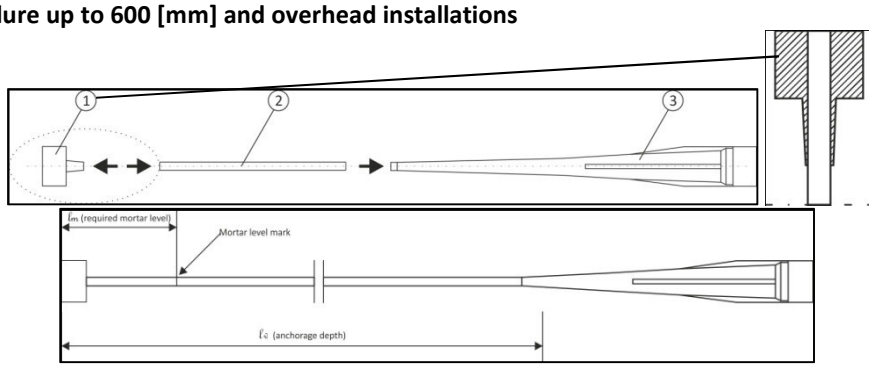
3.3.2 Special installation conditions:

Use the mixer extension (assembled on the standard mixer) in the installation procedure up to 300 [mm] embedment depth if needed



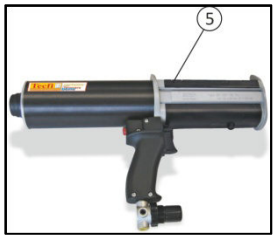
1) Variable length from 380 [mm] to 1000 [mm]

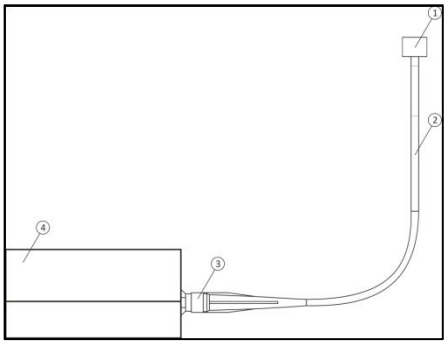
3.3.2.1 Use the mixer extension (assembled on the standard mixer) with the injection plug for installation procedure up to 600 [mm] and overhead installations



1 – Injection plug (nominal diameter according to the nominal diameter of the drill hole)
2 – Special mixer extension (variable length, with nominal diameter 10 [mm])
Mark the required mortar level l_m and embedment depth l_v with tape or marker on the injection extension.
Quick estimation l_m = 1/3 l_v. Continue the injection until the mortar level mark l_m become visible.
3 – Standard mixer (suitable for all cartridges size)

- System assembled





1 – Injection plug
2 – Special mixer extension
3 – Standard mixer
4 – Cartridge
5 – Injection pneumatic pump

3. Installation

Table 3.i: Resin injection pump details

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Pump example	Cartridge size	Type
DH 03 00 400 	**400 ml**	**Pneumatic**[1)]
DH 01 00 400 	**400 ml**	**Manual (up to 300 [mm] embedment depth)**
DH 01 00 345 	**345 ml**	**Manual (up to 300 [mm] embedment depth)**
DH 01 01 300 	**300 ml**	**Manual (up to 300 [mm] embedment depth)**

[1)] *The pneumatic injection pump is recommended for all special applications*

4. Declared performance according to ETAG 001 part 1, part 5 and EOTA TR023

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4.a Design values of the ultimate bond resistance f_{bd} [N/mm^2]according to EN 1992-1-1

Concrete strength class	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
Barre da Ø8 a Ø14	1,60	2,00	2,30	2,70	3,00	3,40	3,70	4,00	4,30
Barre da Ø16 a Ø20	1,60	2,00	2,30	2,70	3,00	3,40	3,70	4,00	4,00
Barre Ø25	1,60	2,00	2,30	2,70	3,00	3,40	3,70	3,70	3,70
Barre Ø28	1,60	2,00	2,30	2,70	3,00	3,40	3,40	3,40	3,40
Barre Ø32	1,60	2,00	2,30	2,70	2,70	2,70	2,70	2,70	2,70

The above values are valid only for good bond conditions according to EN 1992-1-1. For other bond conditions multiply the values by 0,7.

5. Values for pre-calculation of anchoring

Examples of anchorage length for rebars ($f_{y,k}$ = 500 N/mm^2) on concrete C20/25 (f_{bd} = 2,3 N/mm^2) - Values for hammer drilling and diamond drilling perforation technique

Rebar Ø	Tensile load for Bst 500	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,0$			$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,1$		
		l_{bd}	Tension load	Mortar volume	l_{bd}	Tension load	Mortar volume
[mm]	[kN]	[mm]	[kN]	[ml]	[mm]	[kN]	[ml]
8	21,85	115,00	6,65	8,50	115,00	9,50	8,50
		180,00	10,40	13,31	180,00	14,86	13,31
		250,00	14,45	18,48	200,00	16,52	14,78
		320,00	18,50	23,65	220,00	18,17	16,26
		378,00	21,85	27,95	265,00	21,85	19,56
10	34,15	145,00	10,48	12,86	145,00	14,97	12,86
		230,00	16,62	20,40	230,00	23,74	20,40
		310,00	22,40	27,50	260,00	26,84	23,06
		390,00	28,18	34,59	290,00	29,93	25,72
		473,00	34,15	41,92	331,00	34,15	29,34
12	49,17	170,00	14,74	17,59	170,00	21,06	17,59
		270,00	23,41	27,94	270,00	33,44	27,94
		370,00	32,08	38,29	300,00	37,16	31,05
		470,00	40,75	48,64	330,00	40,88	34,15
		567,00	49,17	58,69	397,00	49,17	41,08
14	66,93	200,00	20,23	23,65	200,00	28,90	23,65
		320,00	32,37	37,85	320,00	46,24	37,85
		440,00	44,51	52,04	360,00	52,02	42,58
		560,00	56,65	66,23	400,00	57,81	47,31
		662,00	66,93	78,25	463,00	66,93	54,78
16	87,42	230,00	26,59	30,60	230,00	37,99	30,60
		360,00	41,62	47,90	360,00	59,46	47,90
		490,00	56,65	65,20	400,00	66,06	53,22
		620,00	71,68	82,49	440,00	72,67	58,54
		756,00	87,42	100,61	529,00	87,42	70,43
20	136,59	285,00	41,19	59,25	285,00	58,84	59,25
		450,00	65,03	93,55	450,00	92,90	93,55
		620,00	89,60	128,90	500,00	103,22	103,95
		790,00	114,17	164,24	550,00	113,55	114,34
		945,00	136,59	196,50	662,00	136,59	137,55

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5. Values for pre-calculation of anchoring

Examples of anchorage length for rebars ($f_{y,k}$ = 500 N/mm^2) on concrete C20/25 (f_{bd} = 2,3 N/mm^2) - Values for hammer drilling and diamond drilling perforation technique

Rebar Ø	Tensile load for Bst 500	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,0$			$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,1$		
		l_{bd}	Tension load	Mortar volume	l_{bd}	Tension load	Mortar volume
[mm]	[kN]	[mm]	[kN]	[ml]	[mm]	[kN]	[ml]
25	213,42	355,00	64,13	90,21	355,00	91,61	90,21
		520,00	93,93	132,13	520,00	134,19	132,13
		680,00	122,84	172,79	600,00	154,84	152,46
		840,00	151,74	213,44	650,00	167,74	165,16
		1000,00	180,64	254,10	700,00	180,64	177,87
28	267,72	400,00	80,93	162,99	400,00	115,61	162,99
		550,00	111,28	224,12	550,00	158,96	224,12
		700,00	141,62	285,24	700,00	202,32	285,24
		850,00	171,97	346,36	850,00	245,67	346,36
		1000,00	202,32	407,48	926,00	267,72	377,44
32	349,67	455,00	105,21	242,16	455,00	150,29	242,16
		590,00	136,42	314,01	500,00	165,16	266,11
		730,00	168,79	388,52	550,00	181,67	292,72
		870,00	201,16	463,03	600,00	198,19	319,33
		1000,00	231,22	532,22	700,00	231,22	372,56

6. Values for pre-calculation of lap splice lengths

Examples of lap splice length for rebars ($f_{y,k}$ = 500 N/mm^2) on concrete C20/25 (f_{bd} = 2,3 N/mm^2) - Values for hammer drilling and diamond drilling perforation technique

Rebar Ø	Tensile load for Bst 500	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,0$			$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,1$		
		l_{bd}	Tension load	Mortar volume	l_{bd}	Tension load	Mortar volume
[mm]	[kN]	[mm]	[kN]	[ml]	[mm]	[kN]	[ml]
8	21,85	200,00	11,56	14,78	200,00	16,52	14,78
		240,00	13,87	17,74	-	-	-
		280,00	16,19	20,70	-	-	-
		320,00	18,50	23,65	-	-	-
		378,00	21,85	27,95	-	-	-
10	34,15	200,00	14,45	17,74	200,00	20,64	17,74
		270,00	19,51	23,95	235,00	24,26	20,85
		340,00	24,57	30,16	270,00	27,87	23,95
		410,00	29,63	36,37	305,00	31,48	27,05
		473,00	34,15	41,92	331,00	34,15	29,34
12	49,17	200,00	17,34	20,70	200,00	24,77	20,70
		290,00	25,15	30,01	250,00	30,97	25,87
		380,00	32,95	39,33	300,00	37,16	31,05
		470,00	40,75	48,64	350,00	43,35	36,22
		567,00	49,17	58,69	397,00	49,17	41,08
14	66,93	210,00	21,24	24,84	210,00	30,35	24,84
		320,00	32,37	37,85	270,00	39,02	31,93
		430,00	43,50	50,86	330,00	47,69	39,03
		540,00	54,63	63,87	390,00	56,36	46,13
		662,00	66,93	78,25	463,00	66,93	54,78

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6. Values for pre-calculation of lap splice lengths

Examples of lap splice length for rebars ($f_{y,k}$ = 500 N/mm^2) on concrete C20/25 (f_{bd} = 2,3 N/mm^2) - Values for hammer drilling and diamond drilling perforation technique

Rebar Ø	Tensile load for Bst 500	$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,0$			$\alpha_1=\alpha_2=\alpha_3=\alpha_4=\alpha_1=1,1$		
		l_{bd}	Tension load	Mortar volume	l_{bd}	Tension load	Mortar volume
[mm]	[kN]	[mm]	[kN]	[ml]	[mm]	[kN]	[ml]
16	87,42	240,00	27,75	31,93	240,00	39,64	31,93
		370,00	42,78	49,23	310,00	51,20	41,25
		500,00	57,81	66,53	380,00	62,76	50,56
		630,00	72,83	83,83	450,00	74,32	59,88
		756,00	87,42	100,61	529,00	87,42	70,43
20	136,59	300,00	43,35	62,37	300,00	61,93	62,37
		460,00	66,48	95,63	390,00	80,51	81,08
		620,00	89,60	128,90	480,00	99,09	99,79
		780,00	112,72	162,16	570,00	117,68	118,50
		945,00	136,59	196,50	662,00	136,59	137,55
25	213,42	375,00	67,74	95,29	375,00	96,77	95,29
		530,00	95,74	134,67	670,00	172,90	170,25
		690,00	124,64	175,33	780,00	201,29	198,20
		850,00	153,55	215,98	800,00	206,45	203,28
		1000,00	180,64	254,10	827,00	213,42	210,14
28	267,72	420,00	84,97	171,14	420,00	121,39	171,14
		570,00	115,32	232,27	720,00	208,10	293,39
		720,00	145,67	293,39	810,00	234,11	330,06
		870,00	176,02	354,51	900,00	260,12	366,73
		1000,00	202,32	407,48	926,00	267,72	377,44
32	349,67	480,00	110,99	255,47	480,00	158,55	255,47
		610,00	141,04	324,66	610,00	201,49	324,66
		740,00	171,10	393,84	740,00	244,43	393,84
		870,00	201,16	463,03	870,00	287,37	463,03
		1000,00	231,22	532,22	1000,00	330,32	532,22

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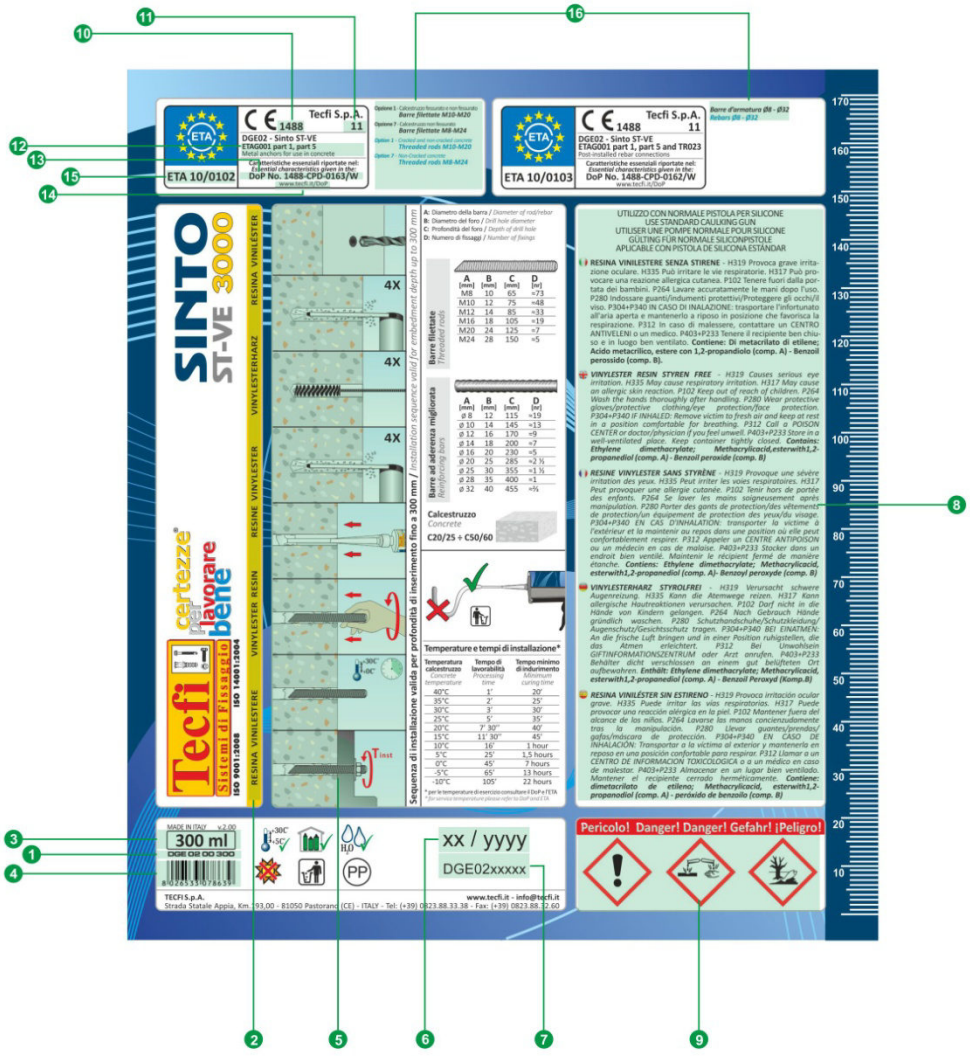
7. Label



1 Item Code	9 Danger symbols
2 Descriptions	10 Identification number of the Notified Body
3 Cartridge capacity (ml)	11 Last two digits of the year in wich the marking was first affixed
4 EAN 13 code	12 European standard applied and intended use
5 Installation sequence	13 DoP number
6 Expiring date	14 Link to DoP
7 Lot Number	15 European Assessment Document's number
8 Warnings	16 Declared level of performance

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8. Item codes

Table 8.a: Item codes

Cartridge capacity	*Cartridge type*	*Item codes*
300 ml	Coaxial	DGE 02 00 300
345 ml	Side by side (shuttle)	DGE 02 00 345
400 ml	Coaxial	DGE 02 00 400 DGE 12 00 400 – DGE 22 00 400

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Name and function	*Place and date of issue*	*Signature*
President Antonio Guarino	Pastorano, *April 30th 2014*	