

TECHNICAL DATA SHEET



FM-PT



FM-PC

CHARACTERISTICS

- Functioning by friction; install by controlled torque.
- Use for heavy duty loads in tension and shear.
- Easy assembly.
- Use for static or quasi-static loads.
- Hexagonal and countersunk heads.
- Installation through the material to be fixed.
- Assessment for structural uses in cracked and non-cracked concrete.
- It can be disassembled so that the surface is smooth (the expansion tool and cone remain inside the drill).
- Variety of lengths and metrics, flexibly of installation.

ASSESSMENT

APPLICATIONS

- Structural interior fixing in concrete.
- Fixing pillars and beams.
- Fixing bemas, rails, machinery, shelves, scaffolding and corbels.
- Application where fire effects must be taken into account.

DRILL CONDITIONS



DRY



WET



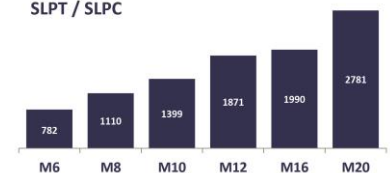
FLOOD

SIZES

M6	M8	M10	M12	M16	M20
Ø10	Ø12	Ø16	Ø18	Ø24	Ø28
10	12	16	18	24	28

RECOMMENDED TENSION LOADS IN NON CRACKED CONCRETE [kg]

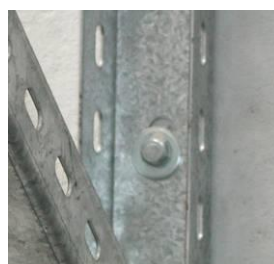
SLPT / SLPC



BASE MATERIAL

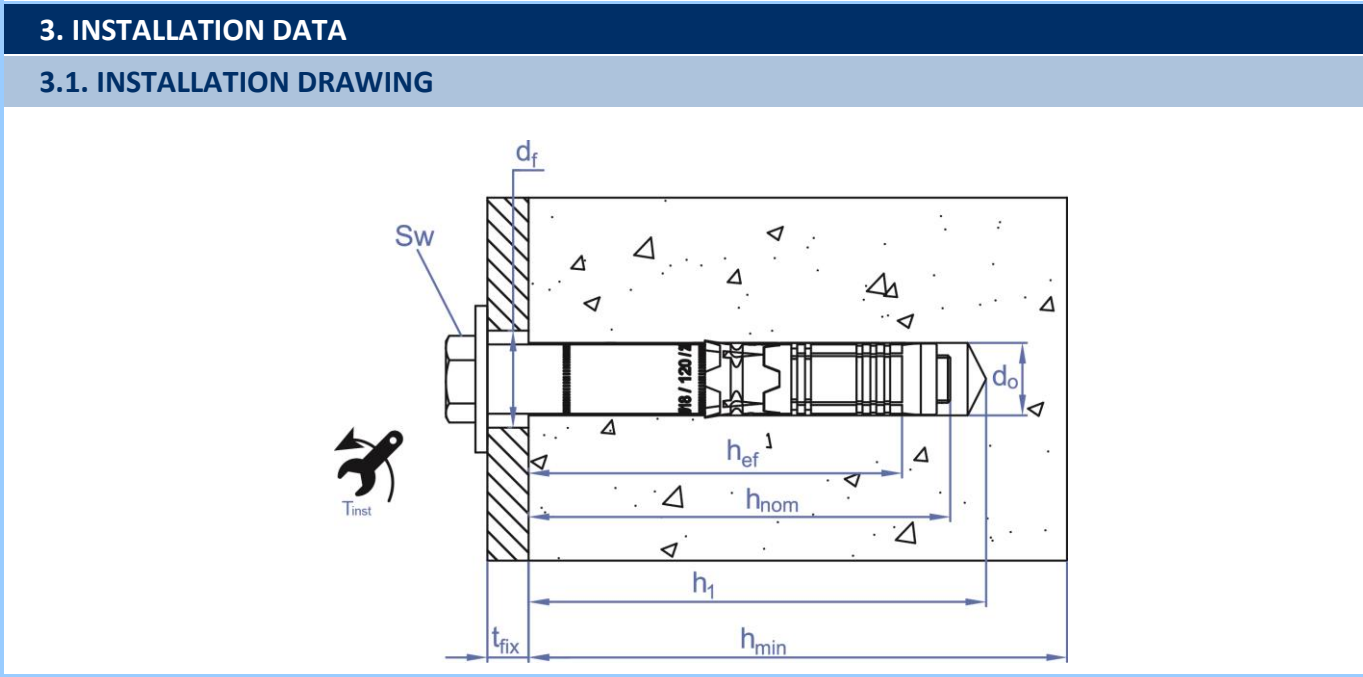


APPLICATION EXAMPLES



TECHNICAL DATA SHEET

1. RANGE							
ITEM	CODE	ETA	SIZE	PHOTO	COMPONENT	MATERIAL	COATING
1	FM-PT	✓	M6 a M20		Bolt	DIN 931 ISO 898-1 class 8.8	
					Washer	DIN 9021 Carbon steel	
					Sleeve	Carbon steel	
					Nylon ring	polyoxymethylene(POM)	
					Expansion sleeve	Carbon steel	
					Cone	Hardened carbon steel	
2	FM-PC	✓	M6 a M12		Bolt	DIN 7991 ISO 898-1 class 10.9	
					Washer	Carbon steel	
					Nylon ring	polyoxymethylene(POM)	
					Expansion sleeve	Carbon steel	
					Cone	Hardened carbon steel	



TECHNICAL DATA SHEET

3.2. INSTALLATION PARAMETERS

Family	Code	Size	Approved	Drill bit diameter	Fixture clearance hole	Torque	Total length of anchor	Minimum concrete thickness	Depth of drill hole	Embedment depth	Effective depth	Thickness of fixture	Minimum spacing	Minimum edge distance
[-]	[-]	[-]	ETA	d ₀	d _f	T _{inst}	L	h _{min}	h ₁	h _{nom}	h _{ef}	t _{fix}	S _{min}	C _{min}
				[mm]	[mm]	[Nm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
FM-PT	SLPT10070	M6 x 70 Ø10	✓	10	12	15	70	100	70	59	50	10	100	50
	SLPT10080	M6 x 80 Ø10	✓				80					20		
	SLPT10100	M6 x 100 Ø10	✓				100					40		
	SLPT10110	M6 x 110 Ø10	✓				110					50		
	SLPT12080	M8 x 80 Ø12	✓	12	14	30	80	120	85	72	60	5	120	60
	SLPT12090	M8 x 90 Ø12	✓				90					15		
	SLPT12100	M8 x 100 Ø12	✓				100					25		
	SLPT12120	M8 x 120 Ø12	✓				120					45		
	SLPT16100	M10 x 100 Ø16	✓	16	18	50	100	140	95	83	70	15	175	70
	SLPT16120	M10 x 120 Ø16	✓				120					35		
	SLPT16140	M10 x 140 Ø16	✓				140					55		
	SLPT16160	M10 x 160 Ø16	✓				160					75		
	SLPT18110	M12 x 110 Ø18	✓	18	20	80	110	170	110	97	85	10	200	80
	SLPT18120	M12 x 120 Ø18	✓				120					20		
	SLPT18140	M12 x 140 Ø18	✓				140					40		
	SLPT18150	M12 x 150 Ø18	✓				150					50		
	SLPT18170	M12 x 170 Ø18	✓				170					70		
	SLPT18200	M12 x 200 Ø18	✓				200					100		
	SLPT24140	M16 x 140 Ø24	✓	24	26	160	140	200	130	117	100	20	220	100
	SLPT24170	M16 x 170 Ø24	✓				170					50		
	SLPT24200	M16 x 200 Ø24	✓				200					80		
	SLPT24220	M16 x 220 Ø24	✓				220					100		
	SLPT28170	M20 x 170 Ø28	✓	28	31	240	170	250	160	146	125	20	320	160
	SLPT28200	M20 x 200 Ø28	✓				200					50		
	SLPT28240	M20 x 240 Ø28	✓				240					90		

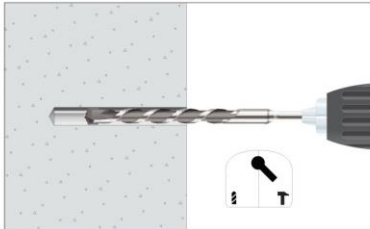
TECHNICAL DATA SHEET

3.2. INSTALLATION VALUES

Family	Code	Size	Approved	Drill bit diameter	Fixture clearance hole	Torque	Total length of anchor	Minimum concrete thickness	Depth of drill hole	Embedment depth	Effective depth	Thickness of fixture	Minimum spacing	Minimum edge distance
[--]	[--]	[--]	ETA	d ₀	d _f	T _{inst}	L	h _{min}	h ₁	h _{nom}	h _{ef}	t _{fix}	S _{min}	C _{min}
FM-PC	SLPC10070	M6 x 70 Ø10	✓	10	12	15	70	100	70	59	50	10	100	50
	SLPC10080	M6 x 80 Ø10	✓				80					20		
	SLPC10100	M6 x 100 Ø10	✓				100					40		
	SLPC12100	M8 x 100 Ø12	✓	12	14	30	100	120	85	72	60	25	120	60
	SLPC16100	M10 x 100 Ø16	✓	16	18	50	100	140	95	83	70	15	175	70
	SLPC16120	M10 x 120 Ø16	✓				120					35		
	SLPC18120	M12 x 120 Ø18	✓	18	20	80	120	170	110	97	85	20	200	80

4. INSTALLATION PROCEDURE

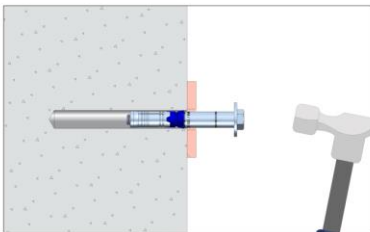
4.1. INSTALLATION IN CONCRETE



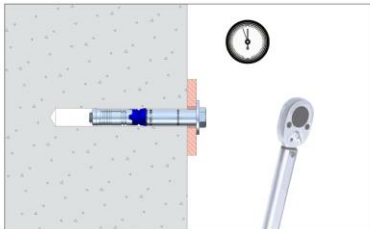
1. DRILL
Check the concrete base is well compacted and porosity insignificant.
Dry, wet and flood drill allowed.
Drill at hammer or percussion position.
Respect specified diameter and depth.



2. BLOW AND CLEAN
Clean hole from dust and drill debris.
Use air pump and brush.



3. INSTALLATION
Introduce the anchor until the head is in the same level of the fixture material surface.
Use hammer if necessary.
The anchor must be introduced through the material to be fixed.



4. APPLY NOMINAL TORQUE
Apply the nominal torque specified by using a dynamometric wrench.

TECHNICAL DATA SHEET

5. RESISTANCE

Characteristic resistance in C20/25 concrete for an isolated anchor, without spacing and edge distance effects.

5.1 CHARACTERISTIC RESISTANCE [kN]

General parameters				Non cracked concrete		Cracked concrete	
Family	Code	Size	Approved	Tension N _{Rk}	Shear V _{Rk}	Tension N _{Rk}	Shear V _{Rk}
FM-PT	SLPT10070	M6 x 70 Ø10	✓	<u>16,1</u>	17,4	12,2	12,2
	SLPT10080	M6 x 80 Ø10	✓				
	SLPT10100	M6 x 100 Ø10	✓				
	SLPT10110	M6 x 110 Ø10	✓				
	SLPT12080	M8 x 80 Ø12	✓	22,9	<u>33,0</u>	16,0	32,0
	SLPT12090	M8 x 90 Ø12	✓				
	SLPT12100	M8 x 100 Ø12	✓				
	SLPT12120	M8 x 120 Ø12	✓				
	SLPT16100	M10 x 100 Ø16	✓	28,8	57,6	20,2	40,3
	SLPT16120	M10 x 120 Ø16	✓				
	SLPT16140	M10 x 140 Ø16	✓				
	SLPT16160	M10 x 160 Ø16	✓				
	SLPT18110	M12 x 110 Ø18	✓	38,6	77,1	27,0	54,0
	SLPT18120	M12 x 120 Ø18	✓				
	SLPT18140	M12 x 140 Ø18	✓				
	SLPT18150	M12 x 150 Ø18	✓				
	SLPT18170	M12 x 170 Ø18	✓				
	SLPT18200	M12 x 200 Ø18	✓				
	SLPT24140	M16 x 140 Ø24	✓	49,2	98,4	34,4	68,9
	SLPT24170	M16 x 170 Ø24	✓				
	SLPT24200	M16 x 200 Ø24	✓				
	SLPT24220	M16 x 220 Ø24	✓				
	SLPT28170	M20 x 170 Ø28	✓	68,8	137,5	48,1	96,3
	SLPT28200	M20 x 200 Ø28	✓				
	SLPT28240	M20 x 240 Ø28	✓				
FM-PC	SLPC10070	M6 x 70 Ø10	✓	<u>16,1</u>	17,4	12,2	12,2
	SLPC10080	M6 x 80 Ø10	✓				
	SLPC10100	M6 x 100 Ø10	✓				
	SLPC12100	M8 x 100 Ø12	✓	22,9	<u>33,0</u>	16,0	32,0
	SLPC16100	M10 x 100 Ø16	✓	28,8	57,6	20,2	40,3
	SLPC16120	M10 x 120 Ø16	✓				
	SLPC18120	M12 x 120 Ø18	✓	38,6	77,1	27,0	54,0

1 kN ≈ 100 kg

Underlined and cursive values mean Steel failure, bolded values mean failure in concrete, and others mean failure in pullout.

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5.2 DESIGN RESISTANCES [kN]							
General parameters				Non cracked concrete		Cracked concrete	
Family	Code	Size	Approved	Tension	Shear	Tension	Shear
				N _{Rd}	V _{Rd}	N _{Rd}	V _{Rd}
FM-PT	SLPT10070	M6 x 70 Ø10	✓	<u>10,7</u>	11,6	8,1	8,1
	SLPT10080	M6 x 80 Ø10	✓				
	SLPT10100	M6 x 100 Ø10	✓				
	SLPT10110	M6 x 110 Ø10	✓				
	SLPT12080	M8 x 80 Ø12	✓	15,2	<u>26,4</u>	10,6	21,3
	SLPT12090	M8 x 90 Ø12	✓				
	SLPT12100	M8 x 100 Ø12	✓				
	SLPT12120	M8 x 120 Ø12	✓				
	SLPT16100	M10 x 100 Ø16	✓	19,2	38,4	13,4	26,8
	SLPT16120	M10 x 120 Ø16	✓				
	SLPT16140	M10 x 140 Ø16	✓				
	SLPT16160	M10 x 160 Ø16	✓				
	SLPT18110	M12 x 110 Ø18	✓	25,7	51,4	17,9	35,9
	SLPT18120	M12 x 120 Ø18	✓				
	SLPT18140	M12 x 140 Ø18	✓				
	SLPT18150	M12 x 150 Ø18	✓				
	SLPT18170	M12 x 170 Ø18	✓	27,3	65,5	19,1	45,9
	SLPT18200	M12 x 200 Ø18	✓				
	SLPT24140	M16 x 140 Ø24	✓				
	SLPT24170	M16 x 170 Ø24	✓				
	SLPT24200	M16 x 200 Ø24	✓	38,1	91,6	26,7	64,1
	SLPT24220	M16 x 220 Ø24	✓				
	SLPT28170	M20 x 170 Ø28	✓				
	SLPT28200	M20 x 200 Ø28	✓				
	SLPT28240	M20 x 240 Ø28	✓				
FM-PC	SLPC10070	M6 x 70 Ø10	✓	<u>10,7</u>	11,6	8,1	8,1
	SLPC10080	M6 x 80 Ø10	✓				
	SLPC10100	M6 x 100 Ø10	✓				
	SLPC12100	M8 x 100 Ø12	✓	15,2	<u>26,4</u>	10,6	21,3
	SLPC16100	M10 x 100 Ø16	✓	19,2	38,4	13,4	26,8
	SLPC16120	M10 x 120 Ø16	✓				
	SLPC18120	M12 x 120 Ø18	✓	25,7	51,4	17,9	35,9

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5.3 RECOMMENDED MAXIMUM LOADS [kN]

Characteristic values				Non cracked concrete		Cracked concrete	
Family	Code	Size	Approved	Tension	Shear	Tension	Shear
				N _{rec}	V _{rec}	N _{rec}	V _{rec}
SL-PT	SLPT10070	M6 x 70 Ø10	✓	<u>7,6</u>	8,2	5,8	5,8
	SLPT10080	M6 x 80 Ø10	✓				
	SLPT10100	M6 x 100 Ø10	✓				
	SLPT10110	M6 x 110 Ø10	✓				
	SLPT12080	M8 x 80 Ø12	✓	10,8	<u>18,8</u>	7,6	15,2
	SLPT12090	M8 x 90 Ø12	✓				
	SLPT12100	M8 x 100 Ø12	✓				
	SLPT12120	M8 x 120 Ø12	✓				
	SLPT16100	M10 x 100 Ø16	✓	13,7	27,4	9,6	19,2
	SLPT16120	M10 x 120 Ø16	✓				
	SLPT16140	M10 x 140 Ø16	✓				
	SLPT16160	M10 x 160 Ø16	✓				
	SLPT18110	M12 x 110 Ø18	✓	18,3	36,7	12,8	25,7
	SLPT18120	M12 x 120 Ø18	✓				
	SLPT18140	M12 x 140 Ø18	✓				
	SLPT18150	M12 x 150 Ø18	✓				
	SLPT18170	M12 x 170 Ø18	✓	19,5	46,8	13,6	32,8
	SLPT18200	M12 x 200 Ø18	✓				
	SLPT24140	M16 x 140 Ø24	✓				
	SLPT24170	M16 x 170 Ø24	✓				
	SLPT24200	M16 x 200 Ø24	✓	27,2	65,4	19,1	45,8
	SLPT24220	M16 x 220 Ø24	✓				
	SLPT28170	M20 x 170 Ø28	✓				
	SLPT28200	M20 x 200 Ø28	✓				
	SLPT28240	M20 x 240 Ø28	✓				
SL-PC	SLPC10070	M6 x 70 Ø10	✓	<u>7,6</u>	8,2	5,8	5,8
	SLPC10080	M6 x 80 Ø10	✓				
	SLPC10100	M6 x 100 Ø10	✓				
	SLPC12100	M8 x 100 Ø12	✓	10,8	<u>18,8</u>	7,6	15,2
	SLPC16100	M10 x 100 Ø16	✓	13,7	27,4	9,6	19,2
	SLPC16120	M10 x 120 Ø16	✓				
	SLPC18120	M12 x 120 Ø18	✓	18,3	36,7	12,8	25,7

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SAFETY COEFFICIENTS IN PULLOUT FOR TENSION LOAD IN HIGH RESISTANCE CONCRETE

CONCRETE FACTOR		C30/37	C40/50	C50/60
Ψ _c (Cracked and non-cracked)	M6	1,22	1,41	1,58
	M8	1,22	1,41	1,58
	M10	1,22	1,41	1,58
	M12	1,22	1,41	1,58
	M16	1,08	1,15	1,20
	M20	1,08	1,15	1,20