

Ficha técnica

SIMPSON

Strong-Tie

FM 753 evo-LW

Perno de ancoragem opção 7 com anilhas largas

Os pernos de ancoragem FM 753 LW são fixações por expansão sobre elemento de betão. São entregues com anilhas largas pré-montadas, ideais para as ligações de madeira com betão.

Características

Materia

- Aço eletro galvanizado.

Vantagens

- Distâncias ao bordo e entre-eixos mínimas,
- Instalação rápida e fácil: porca e anilha pré-montadas e profundidade de ancoragem reduzida;
- \varnothing da rosca = \varnothing de perfuração,
- Rosca protegida durante a instalação: ponto de pressão reforçado.
- Marcação na cabeça: identificação das dimensões do perno após a instalação
- Anilha larga pré-montada

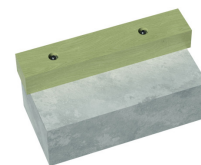
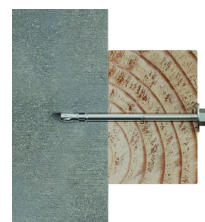
Aplicações

Applications

- Timber sill to concrete
- Timber wall plate to concrete

Areas de utilização

- Betão não fissurado



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Dados técnicos

Dimensions

Referência	Type size [d x L] [mm]	ID ¹⁾	Fixture thickness [t _{fix}] [mm]	Hole diameter [d _o] [mm]	Min. hole depth [h ₁] [mm]	Min. depth of anchorage [h _{ef}] [mm]	Nominal embedment depth [h _{nom}] [mm]	Hole diameter of fixing element [d _f] [mm]	Min. support thickness [h _{min}] [mm]	Torque [t _{inst}] [Nm]	Wre [S] [S]
75345B1012300	M10x123	G	50	10	70	50	60	12	100	30	1
75345B1017300	M10x173	I	100	10	70	50	60	12	100	30	1
75345B1214900	M12x149	G	50	12	90	65	78	14	130	50	1
75345B1219900	M12x199	I	100	12	90	65	78	14	130	50	1

* Short series with reduced embedment depth

** Not covered by CE certification

¹⁾ Ident. mark, product length

Design capacities - single anchor - no edge distances

Referência	Type size [d x L] [mm]	Design capacity - Non-cracked concrete ⁽³⁾ [kN]								Bending moment MRd [Nm]
		Tension - NRd ⁽¹⁾				Shear - VRd ⁽¹⁻²⁾ [kN]				
		C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60	
75345B1012300	M10x123	11.6	14.2	16.4	18.3	11.6	11.6	11.6	11.6	37.3
75345B1017300	M10x173	11.6	14.2	16.4	18.3	11.6	11.6	11.6	11.6	37.3
75345B1214900	M12x149	17.2	20.8	23.9	26.7	20.1	20.1	20.1	20.1	65.3
75345B1219900	M12x199	17.2	20.8	23.9	26.7	20.1	20.1	20.1	20.1	65.3

1. The design loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s). The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing $s \geq 15$ cm (any diameter) or with a rebar spacing $s \geq 10$ cm, if the rebar diameter is 10mm or smaller.

2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges ($c \leq \max [10 h_{ef}; 60d]$) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.

3. Concrete is considered non-cracked when the tensile stress within the concrete is $\sigma_L + \sigma_R \leq 0$. In the absence of detailed verification $\sigma_R = 3$ N/mm² can be assumed (σ_L equals the tensile stress within the concrete induced by external loads, anchors loads included).

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Perno de ancoragem opção 7 com anilhas largas

Recommended capacities - single anchor - no edge distances

Referência	Type size [d x L] [mm]	Recommended capacity - Non-cracked concrete								Bending moment Mrec ⁽¹⁻⁶⁾ [Nm]
		Tension - Nrec ⁽¹⁻²⁾ [kN]				Shear - Vrec ⁽¹⁻³⁾ [kN]				
		C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60	
75345B1012300	M10x123	8.3	10.1	11.7	13.1	8.3	8.3	8.3	8.3	26.6
75345B1017300	M10x173	8.3	10.1	11.7	13.1	8.3	8.3	8.3	8.3	26.6
75345B1214900	M12x149	12.3	14.9	17.1	19.1	14.4	14.4	14.4	14.4	46.6
75345B1219900	M12x199	12.3	14.9	17.1	19.1	14.4	14.4	14.4	14.4	46.6

1. The recommended loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s) and with a partial safety factor for actions of $\gamma_F=1.4$. The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing $s \geq 15$ cm (any diameter) or with a rebar spacing $s \geq 10$ cm, if the rebar diameter is 10 mm or smaller.

2. The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges ($c \leq \max [10 h_{ef,r}; 60d]$) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.

3. Concrete is considered non-cracked when the tensile stress within the concrete is $\sigma_L + \sigma_R \leq 0$. In the absence of detailed verification $\sigma_R = 3$ N/mm² can be assumed (σ_L equals the tensile stress within the concrete induced by external loads, anchors loads included).

Design capacities - single anchor - no edge distances - reduced embedment depth

Referência	Type size [d x L] [mm]	Reduced embedment depth [h _{ef,r}]	Characteristic spacing for h _{ef,r} ⁽⁵⁾ [S _{cr,red}] [mm]	Characteristic edge distance for h _{ef,r} [C _{cr,red}] [mm]	Min. spacing for h _{ef,r} [S _{min,red}] [mm]	Min. edge distance for h _{ef,r} [C _{min,red}]	Design loads - Tension & Shear - N _{Rd} [kN]
75345B1012300	M10x123	35	105	55	50	50	4.7
75345B1017300	M10x173	35	105	55	50	50	4.7
75345B1214900	M12x149	50	150	75	70	70	7.2
75345B1219900	M12x199	50	150	75	70	70	7.2

Shear value valid with distance from the edge $c > 10 \times h_{ef,r}$

Recommended capacities - single anchor - no edge distances - reduced embedment depth

Referência	Type size [d x L] [mm]	Reduced embedment depth [h _{ef,r}]	Characteristic spacing for h _{ef,r} ⁽⁵⁾ [S _{cr,red}] [mm]	Characteristic edge distance for h _{ef,r} [C _{cr,red}] [mm]	Min. spacing for h _{ef,r} [S _{min,red}] [mm]	Min. edge distance for h _{ef,r} [C _{min,red}]	Recommended loads - Tension & Shear - N _{rec} [kN]
75345B1012300	M10x123	35	105	55	50	50	3.4
75345B1017300	M10x173	35	105	55	50	50	3.4
75345B1214900	M12x149	50	150	75	70	70	5.2
75345B1219900	M12x199	50	150	75	70	70	5.2

The recommended loads N, V and F derive from the mean ultimate loads and are inclusive of the total safety factor $\gamma=4$ (shear $\gamma=3$).

Shear value valid with distance from the edge $c > 10 \times h_{ef,r}$

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Execução

Spacing, Edge Distance and Member Thickness

Referência	Type size [d x L] [mm]	Hole diameter [d _o] [mm]	Min. hole depth [h ₁] [mm]	Hole diameter of fixing element [d _f] [mm]	Wrench [SW] [SW]	Torque [t _{inst}] [Nm]	Embedment depth [h _{ef}]	Min. support thickness [h _{min}]	Characteristic spacing ⁽⁵⁾ [scr,N] [mm]	Characteristic edge distance [ccr,N] [mm]	N _{sp} [N]
75345B1012300	M10x123	10	70	12	17	30	50	100	150	75	!
75345B1017300	M10x173	10	70	12	17	30	50	100	150	75	!
75345B1214900	M12x149	12	90	14	19	50	65	130	195	98	!
75345B1219900	M12x199	12	90	14	19	50	65	130	195	98	!

