

Technical data sheet

SIMPSON

Strong-Tie

WA-RL

Wedge anchor bolt with large washer

The expansion mechanical anchor WA-RL has a large washer that enhances the head pull-through capacity compared to standard version.

Features

Material

Carbon Steel, Zinc Plated and Passivated

Benefits

-

Applications

Header member

- non-cracked concrete

For Use With

Connector fastening: hangers

Metallic profile fastening: railings, cable tray...

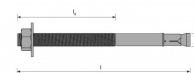
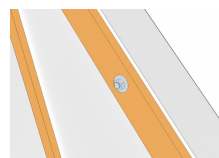
For static or quasi-static loading



Zoom de la pointe



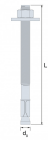
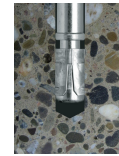
Fixation de structure métallique



WA-RL
Wedge anchor bolt with large washer

Technical Data

Product Dimensions



Zoom de la pointe

References	Item Code	Thread diameter [mm]	Total Length [L] [mm]	Washer diameter [mm]	Washer thickness [mm]	Max. Fixture Thickness [tfix] [mm]	Thread length [F] [mm]	Ø Fixture Hole [df] [mm]	Embedment depth [hef] [mm]	Ø drilling hole [d0] [mm]	Min. drill depth [h1] [mm]	Packaging [pce]
WA10123RL	WA10123	10	123	34	3	50	60	12	50	10	70	50
WA10173RL	WA10173	10	173	34	3	100	80	12	50	10	70	50
WA12149RL	WA12149	12	149	44	4	50	100	14	65	12	90	25
WA12199RL	WA12199	12	199	44	4	100	110	14	65	12	90	25

Design capacities - single anchor - no edge distances

References	Design capacity - Non-cracked concrete ⁽³⁾								
	Tension - $N_{Rd}^{(1)}$ [kN]				Shear - $V_{Rd}^{(1-2)}$ [kN]				Bending moment M_{Rd} [Nm]
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60	
WA10123RL	10.7	13	15	16.5	11.9	13.6	13.6	13.6	38
WA10173RL	10.7	13	15	16.5	11.9	13.6	13.6	13.6	38
WA12149RL	17.6	21.5	24.9	27.3	20	20	20	20	66
WA12199RL	17.6	21.5	24.9	27.3	20	20	20	20	66

- 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.
- The figures for shear are based on a single anchor without influence of concrete edges. For anchorages close to edges ($c \leq \max [10 \text{ hef}; 60d]$) the concrete edge failure shall be checked per ETAG 001, Annex C, design method A.
- 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 $\sigma_R = 3 \text{ N/mm}^2$ can be assumed (σ_L equals the tensile stress within the concrete induced by external loads, anchors loads included).

WA-RL
Wedge anchor bolt with large washer

Recommended capacities - single anchor - no edge distances

References	Recommended capacity - Non-cracked concrete								Bending moment $M_{rec}^{(1-6)}$ [Nm]
	Tension - $N_{rec}^{(1-2)}$ [kN]				Shear - $V_{rec}^{(1-3)}$ [kN]				
	C20/25	C30/37	C40/50	C50/60	C20/25	C30/37	C40/50	C50/60	
WA10123RL	7.6	9.3	10.7	11.8	8.8	9.7	9.7	9.7	27.1
WA10173RL	7.6	9.3	10.7	11.8	8.8	9.7	9.7	9.7	27.1
WA12149RL	12.6	15.4	17.8	19.5	14.3	14.3	14.3	14.3	47.1
WA12199RL	12.6	15.4	17.8	19.5	14.3	14.3	14.3	14.3	47.1

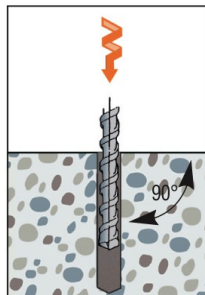
1. The recommended loads have been calculated using the partial safety factors for resistances stated in ETA-approval(s) and with a partial safety factor for actions of $\gamma_F=1.4$. The loading figures are valid for unreinforced concrete and reinforced concrete with a rebar spacing $s \geq 15$ cm (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 ($c \leq \max [10 \text{ hef}; 60d]$) 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 $\sigma_R = 3 \text{ N/mm}^2$ can be assumed (σ_L equals the tensile stress within the concrete induced by external loads, anchors loads included).

WA-RL
Wedge anchor bolt with large washer

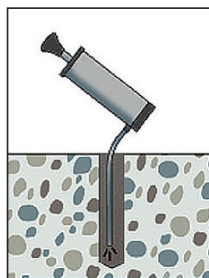
Installation

Installation

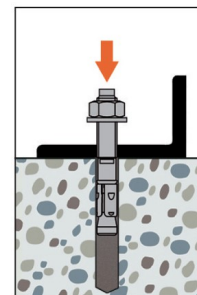
.-



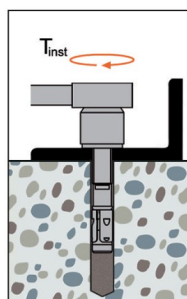
Drill the hole



Dusting off the hole



Set the anchor through the fixture



Apply installation torque

Spacing, Edge distance and member thickness

References	Ø drilling hole [d0] [mm]	Min. drill depth [h1] [mm]	Ø mash drilling fixture [df] [mm]	Wrench size [SW] [mm]	Installation torque [Tinst] [Nm]	Embedment depth [hef] [mm]	Min. support thickness [hmin] [mm]	Characteristic spacing ⁽⁵⁾ - S _{cr,N} [scr.N] [mm]	Characteristic edge distance [ccr.N] [mm]
WA10123RL	10	70	12	17	30	50	100	150	75
WA10173RL	10	70	12	17	30	50	100	150	75
WA12149RL	12	90	14	19	50	65	130	195	98
WA12199RL	12	90	14	19	50	65	130	195	98

Installation data

References	Min. edge distance [c min] [mm]	Minimum spacing [smin] [mm]	Characteristic spacing ⁽⁵⁾ - S _{cr,N} [scr.N] [mm]	Characteristic edge distance [ccr.N] [mm]
WA10123RL	50	50	150	75
WA10173RL	50	50	150	75
WA12149RL	70	70	195	98
WA12199RL	70	70	195	98

WA-RL

Wedge anchor bolt with large washer

Winchester Road Cardinal Point Tamworth
Staffordshire B78 3HG
tel: +44 1827 255600
fax: +44 1827 255616

Copyright by Simpson Strong-Tie®

Information presented on this document is the exclusive property of Simpson Strong-Tie®
It is valid only when associated with products supplied by Simpson Strong-Tie®

WA-RL

**Wedge anchor bolt with large
washer**



www.strongtie.co.uk