

## R-RBL-PF Rawlbolt® - Loose bolt with plastic ferrule

World's most popular all-purpose expanding shield anchor - loose bolt with plastic ferrule version



### Product information

#### Features and benefits

- For use in concrete, hollowcore slabs, flooring blocks and ceramics
- Plastic ferrule simplifies installation in hollow substrates
- Wide range of diameters (M6 to M16)
- Three-pieces expanding sleeve of maximum expansion provides optimal load and safety of use in any substrate

#### Applications

- Roller shutter doors
- Fire doors
- Steelwork
- Security grills
- Heavy machinery
- Pipework/ductwork supports

#### Base materials

##### Approved for use in:

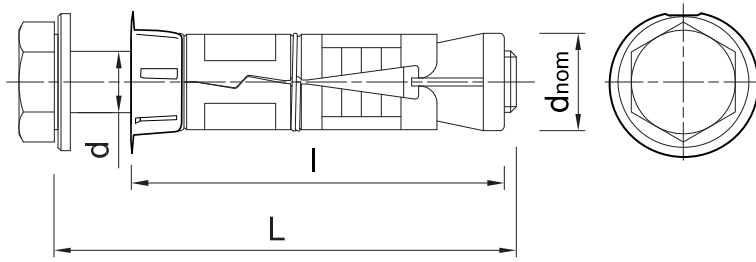
- Solid clay brick  $\geq 20\text{MPa}$
- Hollow Lightweight Concrete Block LAC 5  $\geq 5\text{MPa}$
- Hollow Sand-lime Brick  $\geq 15\text{MPa}$
- Concrete hollow floor block (eg. Teriva)
- Hollow-core Slab C20/25
- Hollow-core Slab C30/37-C50/60

### Installation guide



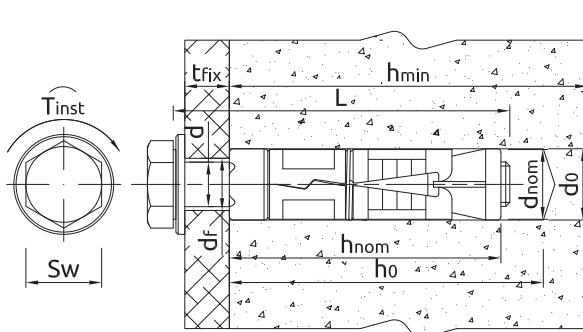
1. Drill a hole of required diameter and depth
2. Remove pre-assembled bolt and washer. Insert shield into hole and tap home with hammer until flush with surface
3. Insert bolt with washer through fixture into the shield
4. Tighten to the recommended torque

## Product information

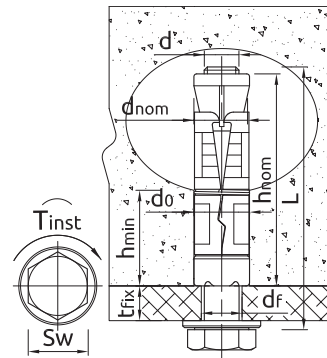


Size	Product Code	Approval type	Anchor			Fixture	
			Diameter	External diameter	Length	Max. thickness	Hole diameter
			d	d <sub>nom</sub>	L	t <sub>fix</sub>	d <sub>f</sub>
		-	[mm]	[mm]	[mm]	[mm]	[mm]
M6	R-RBL-PF-M06/10W	AT-15-7280/14	6	12	55	10	6.5
	R-RBL-PF-M06/25W	AT-15-7280/14	6	12	70	25	6.5
	R-RBL-PF-M06/40W	AT-15-7280/14	6	12	85	40	6.5
M8	R-RBL-PF-M08/10W	AT-15-7280/14	8	14	65	10	9
	R-RBL-PF-M08/25W	AT-15-7280/14	8	14	80	25	9
	R-RBL-PF-M08/40W	AT-15-7280/14	8	14	95	40	9
M10	R-RBL-PF-M10/10W	AT-15-7280/14	10	16	75	10	11
	R-RBL-PF-M10/25W	AT-15-7280/14	10	16	90	25	11
	R-RBL-PF-M10/50W	AT-15-7280/14	10	16	115	50	11
	R-RBL-PF-M10/75W	AT-15-7280/14	10	16	140	75	11
M12	R-RBL-PF-M12/10W	AT-15-7280/14	12	20	90	10	13
	R-RBL-PF-M12/25W	AT-15-7280/14	12	20	105	25	13
	R-RBL-PF-M12/40W	AT-15-7280/14	12	20	120	40	13
	R-RBL-PF-M12/60W	AT-15-7280/14	12	20	140	60	13
M16	R-RBL-PF-M16/15W	AT-15-7280/14	16	25	135	15	17
	R-RBL-PF-M16/30W	AT-15-7280/14	16	25	150	30	17
	R-RBL-PF-M16/60W	AT-15-7280/14	16	25	180	60	17

## Installation data



Installation in solid substrate



Installation in hollow substrate

Size			M6	M8	M10	M12	M16
Thread diameter	d	[mm]	6	8	10	12	16
Hole diameter in substrate	d <sub>0</sub>	[mm]	12	14	16	20	25
Min. installation depth	h <sub>nom</sub>	[mm]	45	50	60	80	120
Min. hole depth in substrate	h <sub>0</sub>	[mm]	50	55	65	85	125
Wrench size	Sw	[mm]	10	13	17	19	24

## Installation data

Size			M6	M8	M10	M12	M16
<b>SOLID SUBSTRATES</b>							
Installation torque	$T_{inst}$	[Nm]	6.5	15	27	50	120
Min. substrate thickness	$h_{min}$	[mm]	100	100	100	100	142
Min. spacing	$s_{min}$	[mm]	35	40	50	60	95
Min. edge distance	$c_{min}$	[mm]	53	60	75	90	143
<b>CERAMIC AND HOLLOW SUBSTRATES</b>							
Installation torque	$T_{inst}$	[Nm]	3	5	8	10	15
Min. spacing	$s_{min}$	[mm]	100	100	100	100	100
Min. edge distance	$c_{min}$	[mm]	100	100	100	100	143

## Mechanical properties

Size			M6	M8	M10	M12	M16
Nominal ultimate tensile strength - tension	$f_{uk}$	[N/mm <sup>2</sup> ]	500	500	500	500	500
Nominal yield strength - tension	$f_{yk}$	[N/mm <sup>2</sup> ]	400	400	400	400	400
Cross sectional area - tension	$A_s$	[mm <sup>2</sup> ]	20.1	36.6	58	84.3	157
Elastic section modulus	$W_{el}$	[mm <sup>3</sup> ]	21.21	50.27	98.17	169.65	402.12
Characteristic bending resistance	$M^o_{Rk,s}$	[Nm]	12.72	30.16	58.9	101.79	241.27
Design bending resistance	M	[Nm]	10.18	24.13	47.12	81.43	193.02

## Basic performance data

Performance data for single anchor without influence of edge distance and spacing

Size			M6	M8	M10	M12	M16
<b>CHARACTERISTIC LOAD</b>							
<b>TENSION LOAD <math>N_{rk}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	4.00	4.50	-	-	-
	C35/45	[kN]	2.00	4.50	-	-	-
	C45/55	[kN]	2.00	4.50	-	-	-
	C50/60	[kN]	2.00	4.50	-	-	-
35	C30/37	[kN]	6.50	11.00	16.00	-	-
	C35/45	[kN]	7.00	12.00	17.00	-	-
	C45/55	[kN]	8.00	14.00	19.00	-	-
	C50/60	[kN]	8.50	15.00	20.00	-	-
40	C30/37	[kN]	7.00	16.00	19.00	24.00	-
	C35/45	[kN]	8.00	18.00	20.00	28.00	-
	C45/55	[kN]	8.50	20.00	22.00	30.00	-
	C50/60	[kN]	9.50	22.00	24.00	32.00	-
50	C20/25	[kN]	8.00	8.50	8.50	8.50	8.50
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	1.20	2.00	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	5.50	5.50	5.50	5.50	-
<b>Solid clay brick class 20</b>		[kN]	6.00	6.00	6.00	6.00	-
<b>Silicate hollow block class 15</b>		[kN]	1.50	-	-	-	-
<b>SHEAR LOAD <math>V_{rk}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	4.00	4.50	-	-	-
	C35/45	[kN]	2.00	4.50	-	-	-
	C45/55	[kN]	2.00	4.50	-	-	-
	C50/60	[kN]	2.00	4.50	-	-	-
35	C30/37	[kN]	5.00	9.00	14.00	-	-
	C35/45	[kN]	5.00	9.00	14.00	-	-
	C45/55	[kN]	5.00	9.00	14.00	-	-
	C50/60	[kN]	5.00	9.00	14.00	-	-
40	C30/37	[kN]	5.00	9.00	14.00	20.00	-
	C35/45	[kN]	5.00	9.00	14.00	20.00	-
	C45/55	[kN]	5.00	9.00	14.00	20.00	-
	C50/60	[kN]	5.00	9.00	14.00	20.00	-
50	C20/25	[kN]	5.00	8.50	8.50	8.50	8.50
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	1.20	2.00	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	5.00	5.50	5.50	5.50	-
<b>Solid clay brick class 20</b>		[kN]	5.00	6.00	6.00	6.00	-
<b>Silicate hollow block class 15</b>		[kN]	1.50	-	-	-	-

## Basic performance data

Size			M6	M8	M10	M12	M16
<b>DESIGN LOAD</b>							
<b>TENSION LOAD <math>N_{Rd}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	2.20	2.50	-	-	-
	C35/45	[kN]	1.10	2.50	-	-	-
	C45/55	[kN]	1.10	2.50	-	-	-
	C50/60	[kN]	1.10	2.50	-	-	-
35	C30/37	[kN]	3.60	6.10	8.90	-	-
	C35/45	[kN]	3.90	6.70	9.40	-	-
	C45/55	[kN]	4.40	7.80	10.60	-	-
	C50/60	[kN]	4.70	8.30	11.10	-	-
40	C30/37	[kN]	3.90	8.90	10.60	13.30	-
	C35/45	[kN]	4.40	10.00	11.10	15.60	-
	C45/55	[kN]	4.70	11.10	12.20	16.70	-
	C50/60	[kN]	5.30	12.20	13.30	17.80	-
50	C20/25	[kN]	4.40	4.70	4.70	4.70	4.70
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	0.70	1.10	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	2.00	2.20	2.20	2.20	-
<b>[English]: Cegła ceramiczna pełna 20MPa</b>		[kN]	2.00	2.40	2.40	2.40	-
<b>Silicate hollow block class 15</b>		[kN]	0.60	-	-	-	-
<b>SHEAR LOAD <math>V_{Rd}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	3.20	3.60	-	-	-
	C35/45	[kN]	1.60	3.60	-	-	-
	C45/55	[kN]	1.60	3.60	-	-	-
	C50/60	[kN]	1.60	3.60	-	-	-
35	C30/37	[kN]	4.00	7.20	11.20	-	-
	C35/45	[kN]	4.00	7.20	11.20	-	-
	C45/55	[kN]	4.00	7.20	11.20	-	-
	C50/60	[kN]	4.00	7.20	11.20	-	-
40	C30/37	[kN]	4.00	7.20	11.20	16.00	-
	C35/45	[kN]	4.00	7.20	11.20	16.00	-
	C45/55	[kN]	4.00	7.20	11.20	16.00	-
	C50/60	[kN]	4.00	7.20	11.20	16.00	-
50	C20/25	[kN]	4.00	6.80	6.80	6.80	6.80
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	1.00	1.60	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	4.00	4.40	4.40	4.40	-
<b>[English]: Cegła ceramiczna pełna 20MPa</b>		[kN]	4.00	4.80	4.80	4.80	-
<b>Silicate hollow block class 15</b>		[kN]	1.20	-	-	-	-

## Basic performance data

Size			M6	M8	M10	M12	M16
<b>RECOMMENDED LOAD</b>							
<b>TENSION LOAD <math>N_{rec}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	1.60	1.80	-	-	-
	C35/45	[kN]	0.80	1.80	-	-	-
	C45/55	[kN]	1.60	1.80	-	-	-
	C50/60	[kN]	0.80	1.80	-	-	-
35	C30/37	[kN]	2.60	4.40	6.30	-	-
	C35/45	[kN]	2.80	4.80	6.70	-	-
	C45/55	[kN]	3.20	5.60	7.50	-	-
	C50/60	[kN]	3.40	6.00	7.90	-	-
40	C30/37	[kN]	2.80	6.30	7.50	9.50	-
	C35/45	[kN]	3.20	7.10	7.90	11.10	-
	C45/55	[kN]	3.40	7.90	8.70	11.90	-
	C50/60	[kN]	3.80	8.70	9.50	12.70	-
50	C20/25	[kN]	3.20	3.40	3.40	3.40	3.40
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	0.50	0.80	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	1.40	1.60	1.60	1.60	-
<b>[English]: Cegła ceramiczna pełna 20MPa</b>		[kN]	1.40	1.70	1.70	1.70	-
<b>Silicate hollow block class 15</b>		[kN]	0.40	-	-	-	-
<b>SHEAR LOAD <math>V_{rec}</math></b>							
<b>Hollow core slab min. C20/25</b>							
Wall thickness	Material class						
23	C30/37	[kN]	2.30	2.60	-	-	-
	C35/45	[kN]	1.10	2.60	-	-	-
	C45/55	[kN]	1.10	2.60	-	-	-
	C50/60	[kN]	1.10	2.60	-	-	-
35	C30/37	[kN]	2.90	5.10	8.00	-	-
	C35/45	[kN]	2.90	5.10	8.00	-	-
	C45/55	[kN]	2.90	5.10	8.00	-	-
	C50/60	[kN]	2.90	5.10	8.00	-	-
40	C30/37	[kN]	2.90	5.10	8.00	11.40	-
	C35/45	[kN]	2.90	5.10	8.00	11.40	-
	C45/55	[kN]	2.90	5.10	8.00	11.40	-
	C50/60	[kN]	2.90	5.10	8.00	11.40	-
50	C20/25	[kN]	2.90	4.90	4.90	4.90	4.90
<b>Beam-and-block floor (eg.Terriva 4.0/2), min. 25mm wall thickness</b>		[kN]	0.70	1.10	-	-	-
<b>Lightweight concrete LAC class 5</b>		[kN]	2.90	3.10	3.10	3.10	-
<b>[English]: Cegła ceramiczna pełna 20MPa</b>		[kN]	2.90	3.40	3.40	3.40	-
<b>Silicate hollow block class 15</b>		[kN]	0.90	-	-	-	-

## Product commercial data

Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Codes
	Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
R-RBL-PF-M06/10W	6	55	50	400	16000	1.56	12.5	530.0	5906675380582
R-RBL-PF-M06/25W	6	70	50	400	16000	1.61	12.9	546.0	5906675380599
R-RBL-PF-M06/40W	6	85	50	50	8000	1.86	1.86	328.0	5906675380605
R-RBL-PF-M08/10W	8	65	50	400	16000	2.7	21.7	898.0	5906675380612
R-RBL-PF-M08/25W	8	80	50	50	8000	3.0	3.0	509.2	5906675375915
R-RBL-PF-M08/40W	8	95	50	50	8000	3.3	3.3	560.0	5906675380629
R-RBL-PF-M10/10W	10	75	50	50	8000	4.6	4.6	768.0	5906675375908
R-RBL-PF-M10/25W	10	90	50	50	8000	5.0	5.0	832.0	5906675330068
R-RBL-PF-M10/50W	10	115	50	50	6000	5.7	5.7	715.5	5906675380636
R-RBL-PF-M10/75W	10	140	50	50	6000	6.4	6.4	799.5	5906675380643
R-RBL-PF-M12/10W	12	90	25	25	4000	4.2	4.2	700.9	5906675380650
R-RBL-PF-M12/25W	12	105	25	25	4000	4.6	4.6	758.5	5906675380667
R-RBL-PF-M12/40W	12	120	25	25	3000	4.6	4.6	579.4	5906675380674
R-RBL-PF-M12/60W	12	140	25	25	4000	5.2	5.2	862.5	5906675380681
R-RBL-PF-M16/15W	16	135	10	10	1600	4.1	4.1	690.9	5906675380698
R-RBL-PF-M16/30W	16	150	10	10	1600	4.4	4.4	726.1	5906675380704
R-RBL-PF-M16/60W	16	180	10	10	1200	4.8	4.8	604.9	5906675380711