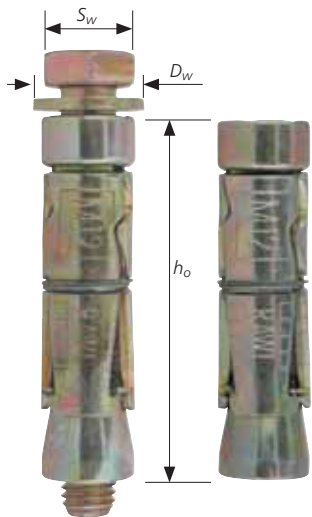


Product Information



DESCRIPTION

World's most popular expanding shield anchor. Easy to use with good load carrying capacity. Ideal general purpose anchor bolt with excellent tolerance to variation in hole size. The collapsible ferrule ensures positive clamping force is transmitted to the fixture.

SUITABLE FOR USE IN:

Concrete
Brickwork
Stone.

TYPICAL APPLICATIONS

- Roller shutter doors
- Fire doors
- Steelwork
- Security grills
- Machinery
- Pipework/duct work supports.

FEATURES

1. Bolt lengths suitable for fixture thickness up to 150mm.
2. Ferrule marked with hole diameter for correct installation.
3. Pressed steel segments ensure consistent dimensional accuracy.
4. Optimum taper nut angle for maximum expansion in all substrates.
5. Shield available separately.



RAWLBOLT® Shield Anchor Loose Bolt

REFERENCE	BOLT SIZE (d)	BOLT LENGTH (mm) (l)	BOLT HEAD DIAMETER (mm) (AF) (S _w)	WASHER DIAMETER (mm) (D _w)	SHIELD LENGTH (mm) (s)	FIXTURE THICKNESS (mm)		HOLE DIAMETER (mm)		MINIMUM HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT DEPTH (mm) (h _{ef})	MINIMUM SUBSTRATE THICKNESS (mm) (h _{min})	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
						MAX. (mm) (T _{fix})	MIN. (mm) (T _{fix})	IN FIXTURE (mm) (d _f)	IN STRUCT. (mm) (d _o)				30N/mm ² CONCRETE (T _{inst})	20.5N/mm ² BRICKWORK (T _{inst})		
M6 10L	M6	55	10	12.5	45	10	0	6.5	12	50	35	70	6.5	5.0	44-015	RBL-M06/10
M6 25L		70				25									44-020	RBL-M06/25
M6 40L		85				40									44-025	RBL-M06/40
M8 10L	M8	65	13	17	50	10	0	9.0	14	55	40	80	15	7.5	44-055	RBL-M08/10
M8 25L		80				25									44-060	RBL-M08/25
M8 40L		95				40									44-065	RBL-M08/40
M10 10L	M10	75	17	21	60	10	0	11	16	65	50	100	27	13	44-105	RBL-M10/10
M10 25L		90				25									44-110	RBL-M10/25
M10 50L		115				50									44-115	RBL-M10/50
M10 75L		140				75									44-120	RBL-M10/75
M12 10L	M12	90	19	24	75	10	0	13	20	85	60	120	50	23	44-155	RBL-M12/10
M12 25L		105				25									44-160	RBL-M12/25
M12 40L		120				40									44-165	RBL-M12/40
M12 60L		140				60									44-170	RBL-M12/60
M16 15L	M16	125	24	30	115	15	0	17	25	125	95	190	120	–	44-205	RBL-M16/15
M16 30L		150				30	10								44-210	RBL-M16/30
M16 60L		180				60	30								44-215	RBL-M16/60
M20 60L	M20	195	30	37	130	60	25	22	32	140	115	220	230	–	44-255	RBL-M20/60
M20 100L		235				100	60								44-260	RBL-M20/100
M24 100L	M24	255	36	50	150	100	25	26	38	160	125	240	400	–	44-305	RBL-M24/100
M24 150L		300				150	100								44-310	RBL-M24/150

RAWLBOLT® Shield



REFERENCE	SHIELD LENGTH (mm) (s)	HOLE DIAMETER IN STRUCTURE (mm) (d _o)	MINIMUM HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT DEPTH (mm) (h _{ef})	MINIMUM SUBSTRATE THICKNESS (mm) (h _{min})	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
						30N/mm ² CONCRETE (T _{inst})	20.5N/mm ² BRICKWORK (T _{inst})		
M6S	45	12	50	35	70	6.5	5.0	44-010	RB-M06
M8S	50	14	55	40	80	15	7.5	44-050	RB-M08
M10S	60	16	65	50	100	27	13	44-100	RB-M10
M12S	75	20	85	60	120	50	23	44-150	RB-M12
M16S	115	25	125	95	190	120	–	44-200	RB-M16
M20S	130	32	140	115	220	230	–	44-250	RB-M20
M24S	150	38	160	125	240	400	–	44-300	RB-M24

Specification Data

RAWLBOLT® Shield Anchor Loose Bolt Performance Data

SIZE	CONCRETE, $f_{ck,cube} = 30\text{N/mm}^2$ (C20/25)									Brickwork = 20.5 N/mm ²
	CHARACTERISTIC RESISTANCE (kN)		DESIGN RESISTANCE (Factored) (kN)		RECOMMENDED LOAD (Unfactored) (kN)		CHARACTERISTIC EDGE DISTANCE (mm)		CHARACTERISTIC SPACING (mm)	RECOMMENDED LOAD (Unfactored) (kN)
	TENSION (N_{Rk})	SHEAR (V_{Rk})	TENSION (N_{Rd})	SHEAR (V_{Rd})	TENSION (N_{rec})	SHEAR (V_{rec})	TENSION ($C_{cr,N}$)	SHEAR ($C_{cr,V}$)	TENSION & SHEAR ($S_{cr,N}$) ($S_{cr,V}$)	TENSION & SHEAR (N_{rec}) (V_{rec})
M6	9.6	8.2	4.5	4.5	3.8	3.8	80	100	120	1.8
M8	12.1	12.8	5.6	7.1	4.7	5.9	100	120	150	2.3
M10	16.7	20.9	7.7	11.6	6.4	9.7	120	160	180	2.9
M12	24.6	30.5	11.4	16.9	9.5	14.1	160	180	250	4.3
M16	57.4	55.3	26.6	30.7	22.2	25.6	190	260	290	Bolts above M12 are not recommended in brickwork. When calculating loads in brickwork, apply the published edge distance and spacing for concrete and assume these figures to be the absolute minimums. Concrete reduction factors must NOT be applied.
M20	79.4	88.1	36.8	48.9	30.7	40.8	250	300	330	
M24	99.0	122.8	45.8	68.2	38.2	56.8	280	350	420	

For further explanations on calculations please see pages 10 and 11

Reduction Factors - Edge and Spacing Distances for Rawlbolt Shield Anchor Loose Bolt

The full characteristic edge and spacing distances shown in the table above are the minimum allowable for the quoted DESIGN RESISTANCE or RECOMMENDED LOAD, depending on your design method.

Where these dimensions are not achievable, the appropriate reduction factor/s from the tables below must be applied to the DESIGN RESISTANCE or RECOMMENDED LOAD. Choose the required bolt diameter across the top of the appropriate table and read down the left hand column until actual edge or spacing distance is found.

Read off the reduction factor where the two lines intersect (interpolate as required). Multiply this factor by the DESIGN RESISTANCE or RECOMMENDED LOAD quoted in the table. On the occasion that multiple close edge and/or spacing distances occur, the appropriate reduction factors must be applied.

Edge Distance (Concrete Only)

EDGE (mm)	TENSILE: EDGE REDUCTION FACTORS							EDGE (mm)	SHEAR: EDGE REDUCTION FACTORS						
	M6	M8	M10	M12	M16	M20	M24		M6	M8	M10	M12	M16	M20	M24
50	0.70							60	0.50						
60	0.80	0.70						70	0.64						
70	0.90	0.80	0.70					80	0.76	0.50					
80	1.00	0.90	0.80	0.70				100	1.00	0.75	0.50				
100		1.00	0.90	0.78	0.70			120		1.00	0.69	0.50			
120			1.00	0.85	0.78	0.70		160			1.00	0.85			
140				0.93	0.85	0.76	0.70	170				0.93	0.50		
160				1.00	0.93	0.82	0.76	180				1.00	0.55		
190					1.00	0.88	0.82	220					0.76	0.50	
220						0.94	0.88	260					1.00	0.75	0.50
250						1.00	0.94	300						1.00	0.75
280							1.00	350							1.00

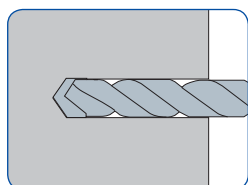
Spacing (Concrete Only)

SPACING (mm)	TENSILE & SHEAR REDUCTION FACTORS						
	M6	M8	M10	M12	M16	M20	M24
60	0.70						
80	0.80	0.70					
100	0.90	0.80	0.70				
120	1.00	0.90	0.80	0.70			
150		1.00	0.90	0.78	0.70		
180			1.00	0.85	0.78	0.70	
210				0.93	0.85	0.78	0.70
250				1.00	0.93	0.85	0.76
290					1.00	0.93	0.82
330						1.00	0.88
370							0.94
420							1.00

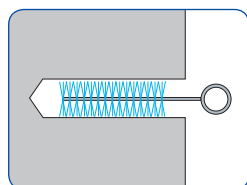
Brickwork Application

When installing into brickwork and there is a combined load in tension and shear, the resultant load must not exceed the quoted performance figure.

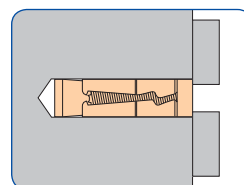
Installation



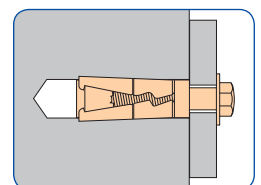
1. Drill a hole of required diameter and depth.
Note: When fixing into brickwork, mortar joints should be avoided.



2. Remove debris and thoroughly clean hole with brush and pump.



3. Remove bolt and washer. Insert shield and place fixture over the hole.



4. Insert bolt with washer through the fixture and tighten to the recommended torque.