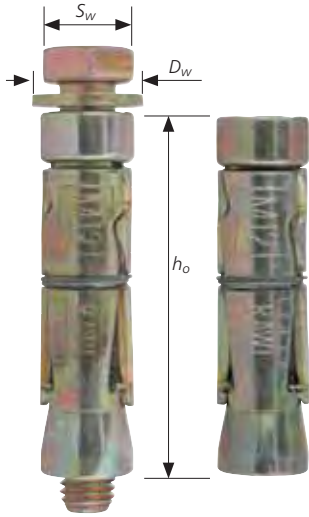


Product Information



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) (Sw)	WASHER DIAMETER (mm) (Dw)	SHIELD LENGTH (mm) (s)	FIXTURE THICKNESS (mm)		HOLE DIAMETER (mm)		MINIMUM HOLE DEPTH (mm) (ho)	EFFECTIVE EMBEDMENT DEPTH (mm) (hef)	MINIMUM SUBSTRATE THICKNESS (mm) (hmin)	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
						MAX. (mm) (Tfix)	MIN. (mm) (Tfix)	IN FIXTURE (mm) (df)	IN STRUCT. (mm) (do)				30N/mm² CONCRETE (Tinst)	20.5N/mm² BRICKWORK (Tinst)		
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				44-020									RBL-M06/25	
M6 40L		85				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				44-060									RBL-M08/25	
M8 40L		95				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				44-110									RBL-M10/25	
M10 50L		115				44-115									RBL-M10/50	
M10 75L		140				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				44-160									RBL-M12/25	
M12 40L		120				44-165									RBL-M12/40	
M12 60L		140				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				44-210									RBL-M16/30	
M16 60L		180				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				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				44-310									RBL-M24/150	

RAWLBOLT® Shield



REFERENCE	SHIELD LENGTH (mm) (s)	HOLE DIAMETER IN STRUCTURE (mm) (do)	MINIMUM HOLE DEPTH (mm) (ho)	EFFECTIVE EMBEDMENT DEPTH (mm) (hef)	MINIMUM SUBSTRATE THICKNESS (mm) (hmin)	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
						30N/mm² CONCRETE (Tinst)	20.5N/mm² BRICKWORK (Tinst)		
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	300						1.00	0.75
280								350							1.00

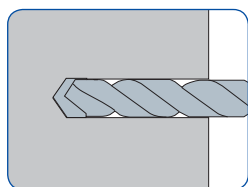
Spacing (Concrete Only)

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

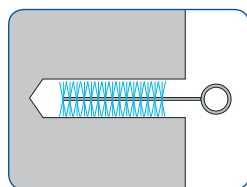
Brickwork Application

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

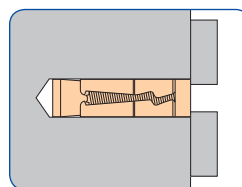
Installation



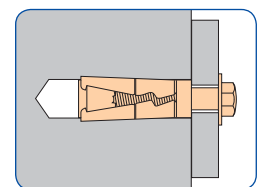
1. Drill a hole of required diameter and depth.
Note: When fixing into brickwork, mortar joints should be avoided.



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

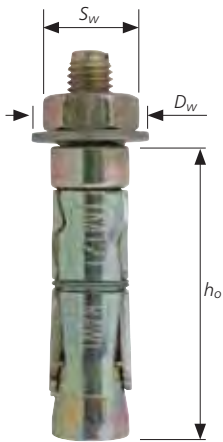


3. Remove bolt and washer. Insert shield and place fixture over the hole.



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

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.

TYPICAL APPLICATIONS

- Roller shutter doors
- Fire doors
- Wall plates
- Security grills
- Machinery
- Signs
- Fencing.

SUITABLE FOR USE IN:

- Concrete
- Brickwork
- Stone.

FEATURES

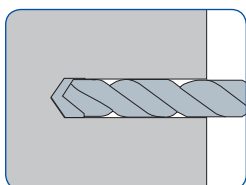
1. Provides a projecting stud to support fixture during installation and removal.
2. Ferrule marked with hole diameter for correct installation.
3. Pressed steel segments ensure consistent dimensional accuracy.
4. Optimum taper nut angle for maximum expansion in all substrates.



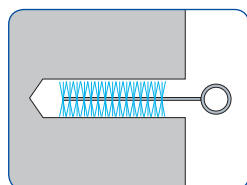
RAWLBOLT® Shield Anchor Bolt Projecting

REFERENCE	BOLT SIZE (d)	BOLT LENGTH (mm) (l)	NUT 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_eβ)	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_β)	IN STRUCT. (mm) (d_o)				30N/mm² CONCRETE (T_inst)	20.5N/mm² BRICKWORK (T_inst)		
M6 10P	M6	65	10	12.5	45	10	0	6.5	12	50	35	70	6.5	5.0	44-505	RBP-M06/10
M6 25P		80				44-510									RBP-M06/25	
M6 60P		15				44-515									RBP-M06/60	
M8 10P	M8	75	13	17	50	10	0	9.0	14	55	40	80	15	7.5	44-555	RBP-M08/10
M8 25P		90				44-560									RBP-M08/25	
M8 60P		125				44-565									RBP-M08/60	
M10 15P	M10	90	17	21	60	15	0	11	16	65	50	100	27	13	44-605	RBP-M10/15
M10 30P		105				44-610									RBP-M10/30	
M10 60P		135				44-615									RBP-M10/60	
M12 15P	M12	110	19	24	75	15	0	13	20	85	60	120	50	23	44-655	RBP-M12/15
M12 30P		125				44-660									RBP-M12/30	
M12 75P		170				44-665									RBP-M12/75	
M16 15P	M16	150	24	30	115	15	0	17	25	125	95	190	120	-	44-705	RBP-M16/15
M16 35P		170				35	10								44-710	RBP-M16/35
M16 75P		210				75	35								44-715	RBP-M16/75
M20 15P	M20	170	30	37	130	15	0	22	32	140	115	220	230	-	44-755	RBP-M20/15
M20 30P		185				30	10								44-760	RBP-M20/30
M20 100P		255				100	30								44-765	RBP-M20/100
M24 75P	M24	255	36	50	150	75	0	26	38	160	125	240	400	-	44-805	RBP-M24/75
M24 120P		300				120	75								44-810	RBP-M24/150

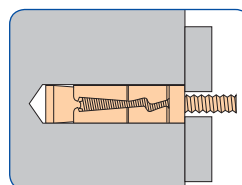
Installation



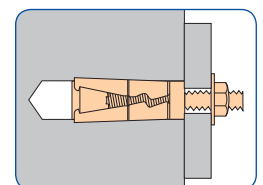
1. Drill a hole of required diameter and depth.
Note: When fixing into brickwork, mortar joints should be avoided.



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



3. Remove nut and washer and insert anchor into hole. Position fixture over the thread.



4. Add washer and nut and tighten to recommended torque.

Specification Data

RAWLBOLT® Shield Anchor Bolt Projecting Performance Data

SIZE	CONCRETE, $f_{ck,cube} = 30N/mm^2$ (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 Bolt Projecting

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

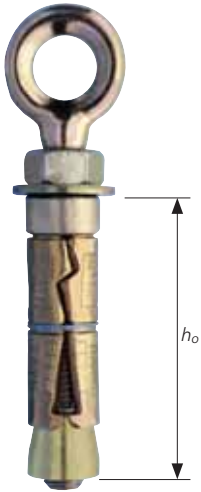
Spacing (Concrete Only)

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.

Product Information



DESCRIPTION

Suitable for temporary or permanent anchorage. Supplied complete with shield, washer and hex nut. Must not be used for safety harness applications or for lifting where shock load could be applied.

SUITABLE FOR USE IN:

Concrete
Brickwork
Stone.

TYPICAL APPLICATIONS

- Supporting guy ropes, stays & cables.
- Supporting ladder restraints.

FEATURES

1. Eye designed & manufactured for maximum performance.
2. Ferrule marked with hole diameter to ensure correct installation.
3. Pressed steel segments ensure consistent dimensional accuracy.
4. Optimum geometry taper angle for maximum expansion in all substrates.

RAWLBOLT® Shield Anchor Eye Bolt

REFERENCE	BOLT SIZE (d)	SHIELD LENGTH (mm) (s)	OVERALL LENGTH (mm) (l)	HOLE DIAMETER IN STRUCTURE (mm) (d _o)	MINIMUM HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT DEPTH (mm) (h _{ef})	APPROXIMATE DIAMETER IN EYE (mm) (E)	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
								30N/mm ² CONCRETE (T _{inst})	20.5N/mm ² BRICKWORK (T _{inst})		
M6E	M6	45	73	12	50	35	10	6.5	5	44-432	RBL-06E
M8E	M8	50	87	14	55	40	12	15	7.5	44-437	RBL-08E
M10E	M10	60	108	16	65	50	14	27	13	44-442	RBL-10E
M12E	M12	75	130	20	85	60	17	50	23	44-447	RBL-12E

Specification Data (Concrete Only)

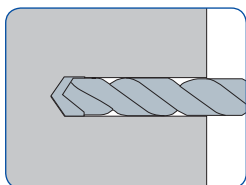
RAWLBOLT® Shield Anchor Eye Bolt Performance Data

SIZE	CONCRETE, $f_{ck,cube} = 30\text{N/mm}^2$ (C20/25)							
	CHARACTERISTIC RESISTANCE (kN)	DESIGN RESISTANCE (Factored) (kN)	RECOMMENDED LOAD (Unfactored) (kN)	CHARACTERISTIC EDGE DISTANCE (mm)	CHARACTERISTIC SPACING (mm)	RECOMMENDED LOAD (Unfactored) (kN)	CHARACTERISTIC EDGE DISTANCE (mm)	CHARACTERISTIC SPACING (mm)
	TENSION (N _{Rk})	TENSION (N _{Rd})	TENSION (N _{rec})	TENSION (C _{cr,N})	TENSION (S _{cr,N})	OBLIQUE 45° (F _{rec})	SHEAR (C _{cr,V})	SHEAR (S _{cr,V})
M6	5.3	2.4	2.0	80	120	0.57	70	80
M8	9.6	4.5	3.8	100	150	1.67	85	100
M10	15.2	7.0	5.8	120	180	2.31	100	120
M12	22.1	10.2	8.5	160	250	3.23	130	160

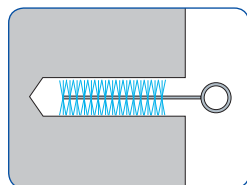
For further explanations on calculations please see pages 10 and 11

For brickwork data in tension only, refer to standard Rawlbolt brickwork table on preceding pages

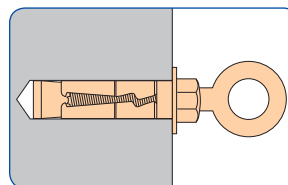
Installation



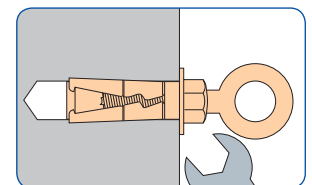
1. Drill a hole of required diameter and depth.
Note: When fixing into brickwork, mortar joints should be avoided.



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

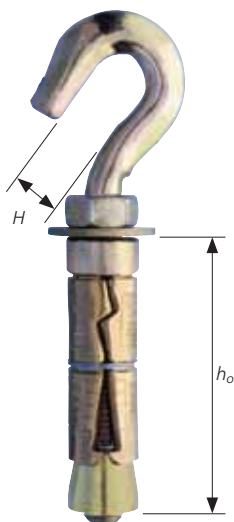


3. Insert the Eye Bolt and position accordingly.



4. Tighten to recommended torque, using the nut (not the eye).

Product Information



DESCRIPTION

Suitable for temporary or permanent anchorage. Supplied complete with shield, washer and hex nut. Must not be used for safety harness applications or for lifting where shock load could be applied.

SUITABLE FOR USE IN:

Concrete
Brickwork
Stone.

TYPICAL APPLICATIONS

- Supporting guy ropes, stays & cables.
- Supporting ladder restraints.

FEATURES

1. Eye designed & manufactured for maximum performance.
2. Ferrule marked with hole diameter to ensure correct installation.
3. Pressed steel segments ensure consistent dimensional accuracy.
4. Optimum geometry taper angle for maximum expansion in all substrates.

RAWLBOLT® Shield Anchor Hook Bolt

REFERENCE	BOLT SIZE (d)	SHIELD LENGTH (mm) (s)	OVERALL LENGTH (mm) (l)	HOLE DIAMETER IN STRUCTURE (mm) (d _o)	MINIMUM HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT DEPTH (mm) (h _e)	APPROXIMATE DIAMETER IN HOOK (mm) (H)	RECOMMENDED TORQUE (Nm)		PRODUCT CODE	NEW CODE
								30N/mm ² CONCRETE (T _{inst})	20.5N/mm ² BRICKWORK (T _{inst})		
M6H	M6	45	83	12	50	35	8	6.5	5	44-401	RBL-06H
M8H	M8	50	98	14	55	40	10	15	7.5	44-406	RBL-08H
M10H	M10	60	120	16	65	50	12	27	13	44-411	RBL-10H
M12H	M12	75	145	20	85	60	16	50	23	44-416	RBL-12H

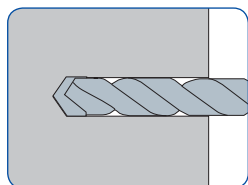
Specification Data

RAWLBOLT® Shield Anchor Hook Bolt Performance Data

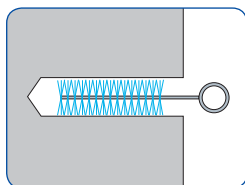
SIZE	BRICKWORK AND CONCRETE, $f_{ck,cube} = 30N/mm^2$ (C20/25)				
	CHARACTERISTIC RESISTANCE (kN)	DESIGN RESISTANCE (Factored) (kN)	RECOMMENDED LOAD (Unfactored) (kN)	CHARACTERISTIC EDGE DISTANCE (mm)	CHARACTERISTIC SPACING (mm)
	Tension (N_{Rk})	Tension (N_{Rd})	Tension (N_{re})	Tension ($C_{cr,N}$)	Tension ($S_{cr,N}$)
M6	2.2	1.0	0.8	70	80
M8	4.2	1.9	1.6	85	100
M10	6.5	3.0	2.5	100	120
M12	9.4	4.3	3.6	120	140

For further explanations on calculations please see pages 10 and 11

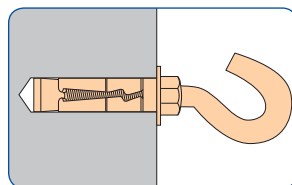
Installation



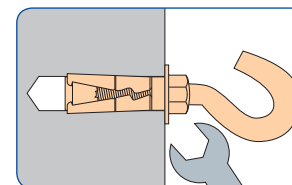
1. Drill a hole of required diameter and depth.
Note: When fixing into brickwork, mortar joints should be avoided.



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



3. Insert the Hook Bolt and position accordingly.



4. Tighten to recommended torque, using the nut (not the hook).