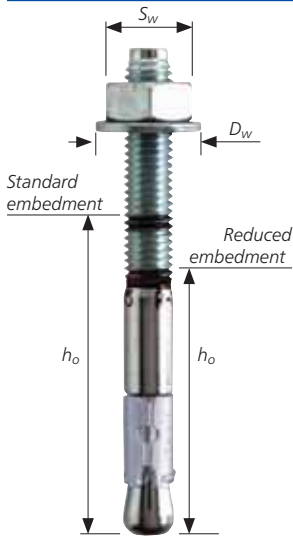


Product Information



DESCRIPTION

The RAWL® Throughbolt range has been developed to meet the changing demands of the market in terms of product approval levels, ease of fixing and product quality.

The versatile through fixing for use in a wide range of applications in concrete of 20N/mm² and over.

Available in: Zinc plated steel.

For European Approvals

see p 6/7.

SUITABLE FOR USE IN:

Cracked or Uncracked Concrete

FEATURES

1. Standard and limited embedment depth markings to ensure correct installation.
2. Cold formed body ensures constant dimensional accuracy.
3. Stainless steel expander provides an enhanced performance in cracked concrete.
4. Optimum cone angle for controlled expansion.
5. Tested and approved by the independent UK and international approval bodies.

TYPICAL APPLICATIONS

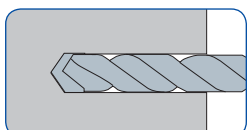
- Cladding restraints
- Barriers
- Structural steel
- Curtain walling
- Hand rails
- Heavy plant
- Balustrading
- Passenger lifts



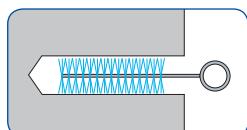
RAWL® R-HPT Throughbolt

BOLT SIZE/HOLE IN CONCRETE (mm) (d)/(d _o)	BOLT LENGTH (mm) (l)	NUT DIAMETER (mm) (AF) (S _w)	WASHER DIAMETER (mm) (D _w)	THREAD LENGTH (mm) (l _G)	HOLE DIAMETER IN FIXTURE (mm) (l _G)	STANDARD EMBEDMENT			REDUCED EMBEDMENT			MINIMUM SUBSTRATES THICKNESS (mm) (h _{min})	RECOMMENDED TORQUE (mm) (T _{inst})	ZINC PLATED	
						MIN. HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT (mm) (h _{ef})	MAX. FIXTURE THICKNESS (mm) (T _{fix})	MIN. HOLE DEPTH (mm) (h _o)	EFFECTIVE EMBEDMENT (mm) (h _{ef})	MAX. FIXTURE THICKNESS (mm) (T _{fix})			PRODUCT CODE	NEW CODE
M8 8 mm	50	13	17	14	9	—	—	—	40	26	5	100	15	56-314	R-HPT-08050/5
	65			—		—	—	33		15	56-316			R-HPT-08065/15	
	80			55		48	15	33		30	56-320			R-HPT-08080/15	
	115			55		48	50	33		65	56-325			R-HPT-08115/50	
M10 10 mm	65	07	21	22	11	—	—	—	50	37	5	100	25	56-328	R-HPT-10065/5
	80			60		53	7	40		16	56-330			R-HPT-10080/7	
	95			60		53	22	40		32	56-332			R-HPT-10095/22	
	115			60		53	42	40		52	56-334			R-HPT-10115/42	
	130			60		53	57	40		67	56-336			R-HPT-10130/57	
M12 12 mm	80	19	24	30	13	—	—	—	60	48	5	10	60	56-338	R-HPT-12080/5
	100			80		74	4	48		24	56-340			R-HPT-12100/4	
	120			80		74	24	48		44	56-342			R-HPT-12120/24	
	135			80		74	39	48		58	56-344			R-HPT-12135/39	
	150			80		74	54	48		73	56-346			R-HPT-12150/54	
M16 16 mm	105	24	30	55	18	—	—	—	80	65	5	130	110	56-350	R-HPT-16105/5
	140			100		89	20	67		40	56-352			R-HPT-16140/20	
	180			100		89	60	67		80	56-354			R-HPT-16180/60	
	220			100		89	100	67		120	56-356			R-HPT-16220/100	
M20 20 mm	125	30	37	65	22	—	—	—	100	80	5	160	180	56-360	R-HPT-20125/5
	160			120		105	20	85		40	56-362			R-HPT-20160/20	
	200			120		105	60	85		80	56-364			R-HPT-20200/60	
	300			120		105	160	85		180	56-366			R-HPT-20300/160	

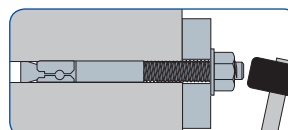
Installation



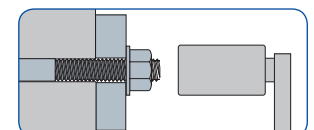
1. Drill a hole of required diameter and depth.



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



3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached.



4. Tighten to the recommended torque.

Specification Data

RAWL® R-HPT Throughbolt Projecting Performance Data

Non-Cracked Concrete Performance Data

SIZE	CONCRETE, $f_{ck,cube} = 30N/mm^2$ (C20/25)														
	STANDARD EMBEDMENT DEPTH						REDUCED EMBEDMENT DEPTH						CHARACTERISTIC EDGE DISTANCE (mm)		CHARACTERISTIC SPACING (mm)
	CHARACTERISTIC LOAD (kN)		DESIGN LOAD (kN)		RECOMMENDED LOAD (kN)		CHARACTERISTIC LOAD (kN)		DESIGN LOAD (kN)		RECOMMENDED LOAD (kN)		TENSION ($C_{cr,N}$)	SHEAR ($C_{cr,V}$)	TENSION & SHEAR ($S_{cr,N}$) ($S_{cr,V}$)
	TENSION (N_{Rk})	SHEAR (V_{Rk})	TENSION (N_{Rd})	SHEAR (V_{Rd})	TENSION (N_{rec})	SHEAR (V_{rec})	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 ($S_{cr,N}$) ($S_{cr,V}$)
M8	11.1	16.8	5.1	9.3	4.3	7.8	9.2	9.6	4.3	5.3	3.6	4.4	80	80	100
M10	17.5	19.3	8.1	10.7	6.8	8.9	11.1	15.3	5.2	8.5	4.3	7.1	100	100	120
M12	26.3	32.2	12.2	17.9	10.2	14.9	17.2	23.3	8.0	12.9	6.7	10.8	120	120	150
M16	42.6	48.8	19.7	27.1	16.4	22.6	25.6	44.0	11.9	24.2	9.9	20.2	160	160	180
M20	60.3	75.9	27.9	42.1	23.3	35.1	47.1	65.6	21.8	36.5	18.2	30.4	190	190	260

For further explanations on calculations please see pages 10 and 11

Cracked Concrete Performance Data

SIZE	CONCRETE, $f_{ck,cube} = 30N/mm^2$ (C20/25)														
	STANDARD EMBEDMENT DEPTH						REDUCED EMBEDMENT DEPTH						CHARACTERISTIC EDGE DISTANCE (mm)		CHARACTERISTIC SPACING (mm)
	CHARACTERISTIC LOAD (kN)		DESIGN LOAD (kN)		RECOMMENDED LOAD (kN)		CHARACTERISTIC LOAD (kN)		DESIGN LOAD (kN)		RECOMMENDED LOAD (kN)		TENSION ($C_{cr,N}$)	SHEAR ($C_{cr,V}$)	TENSION & SHEAR ($S_{cr,N}$) ($S_{cr,V}$)
	TENSION (N_{Rk})	SHEAR (V_{Rk})	TENSION (N_{Rd})	SHEAR (V_{Rd})	TENSION (N_{rec})	SHEAR (V_{rec})	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 ($S_{cr,N}$) ($S_{cr,V}$)
M8	6.7	15.1	3.1	8.4	2.6	7.0	5.5	8.6	2.6	4.8	2.2	4.0	80	80	100
M10	10.9	17.6	5.0	9.7	4.2	8.1	6.9	13.9	3.2	7.7	2.7	6.4	100	100	120
M12	16.8	29.6	7.8	16.5	6.5	13.7	11.0	21.4	5.1	11.9	4.3	9.9	120	120	150
M16	28.1	45.4	13.0	25.2	10.8	21.0	16.9	40.9	7.9	22.5	6.5	18.8	160	160	180
M20	41.0	71.3	19.0	39.6	15.8	33.0	32.0	61.7	14.8	34.3	12.4	28.6	190	190	260

Reduction Factors - Edge and Spacing Distances for Rawl® R-HPT.

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					SHEAR: EDGE REDUCTION FACTORS				
	M8	M10	M12	M16	M20	M8	M10	M12	M16	M20
40	0.60									
50	0.73					0.62				
60	0.87	0.65				0.74	0.60			
80	1.00	0.83	0.65			1.00	0.80	0.67		
100		1.00	0.83	0.65			1.00	0.84	0.62	
120			1.00	0.77	0.65			1.00	0.74	0.58
140				0.88	0.77				0.87	0.73
160				1.00	0.88				1.00	0.82
190					1.00					1.00

Spacing (Concrete Only)

SPACING (mm)	TENSILE & SHEAR REDUCTION FACTORS				
	M8	M10	M12	M16	M20
40					
50	0.65				
60	0.77	0.65			
80	0.88	0.77	0.65		
100	1.00	0.88	0.77	0.65	
120		1.00	0.88	0.77	
150			1.00	0.88	0.74
180				1.00	0.83
220					0.91
260					1.00