

# Throughbolt – PTB

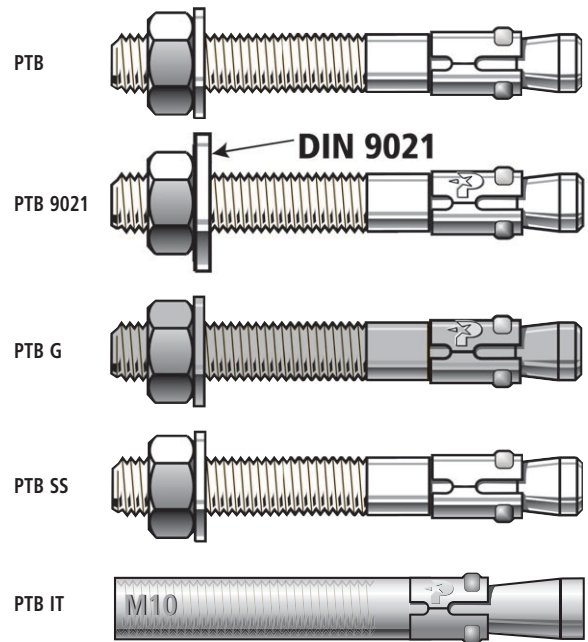
PTB Throughbolt zinc plated – PTB

PTB Throughbolt zinc plated, with big washer (Ø 24mm) – PTB 9021

PTB Throughbolt galvanised – PTB G

PTB Throughbolt Stainless steel A4 – PTB SS

PTB Throughbolt with inner thread – PTB IT



## Approvals and test reports



zinc plated



PENDING

## Product description

### 1. General applications

- For approved fixings in uncracked concrete
- ETA-7 European approval for uncracked concrete
- For medium and heavy loading
- For installation in uncracked concrete ( $\geq B15$  en  $\leq B65$ ) and compressive resistant stonehigh
- For static or almost static loading
- Not suitable for the use in soft basematerials
- Suitable for fixing for example: steel profiles, cable systems, structural wood, (hand)rails, beams, columns, footplates
- Zinc plated throughbolts are for indoor (dry) environments only
- Stainless steel throughbolts are suitable for industrial and marine environments
- Through fixing

### 2. Benefits

- Very high approved loads for tension and shear
- Immediate, high strength loading
- Safe, controlled installation by torquing the anchor up to the given approved installation torque
- Identification mark on head of bolt represents the anchorlength
- Long threaded part for variability in thickness of fixtures

### 3. Properties

- Available in different types; regular throughbolt, stainless steel throughbolt, throughbolt with inner thread and throughbolt with big washer (DIN 9021)
- Available in zinc plated, hot dip galvanised and stainless steel
- Wide range of lengths and diameters, from M6 to M20



# Throughbolt – PTB

## Base materials



Uncracked Concrete

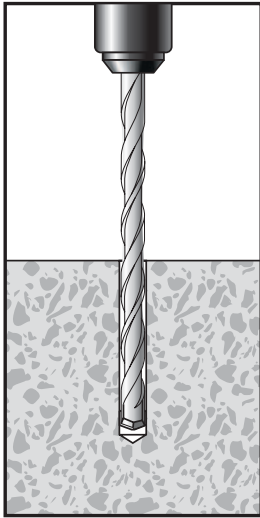


Stone

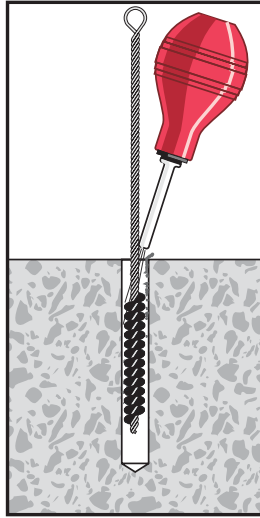
## Specifications

Anchor components	Carbon Steel	Hot Dipped Galvanised	Stainless steel
Anchor body			
M6 -M16	Grade 5.8	Grade 5.8	316/A4
M20	Grade 4.6	Grade 4.6	316/A4
Expander sleeve	Grade 430 stainless steel	Grade 430 stainless steel	316/A4
Washer	Hardened carbon steel	Hardened carbon steel	316/A4
Nut	Carbon steel property class 8	Carbon steel property class 8	316/A4
Plating	Electroplated zinc Coating thickness 5 microns min	Hot Dipped Galvanised Coating thickness 42 microns min	

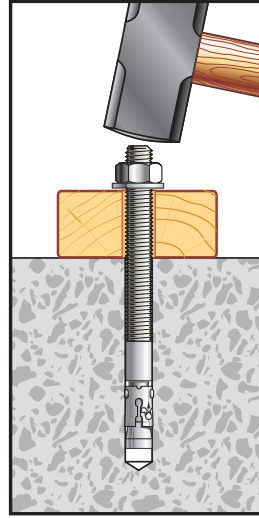
## Installation



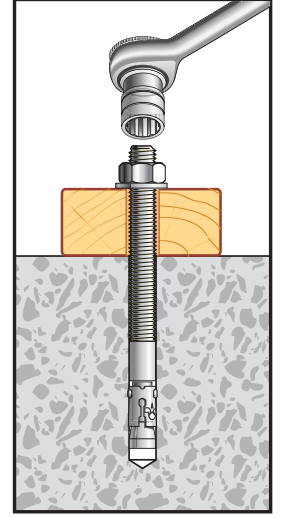
Using the proper diameter bit, drill a hole into the base material to a depth of one anchor diameter deeper than the embedment required.



Blow and brush the hole clean of dust and other material.



Drive the anchor through the fixture into the anchor hole until the nut and washer is firmly seated against the fixture. Be sure the anchor is driven to the required embedment depth.

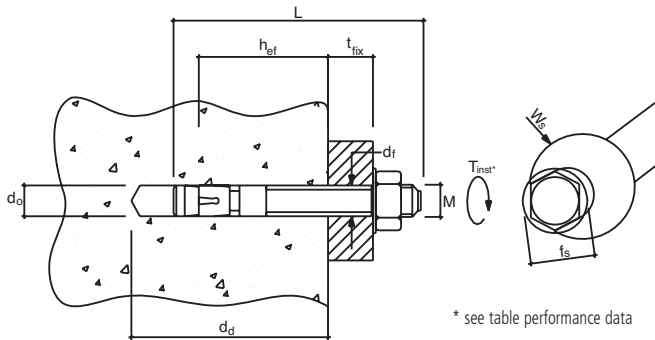


Tighten the anchor by applying the guide installation torque from the finger tight position.



# Throughbolt – PTB

## Sizes and packaging information



### PTB PTB Throughbolts zinc plated

Type	art.nr.	L [mm]	d0 [mm]	d_d [mm]	d_f [mm]	f_s [mm]	w_s [mm]	h_ef [mm]	t_fix [mm]	box	carton
PTB 6x45 *	07400	45	6	55	7	12.0	10	35	4	200	800
PTB 6x55 *	07402	50	6	60	7	12.0	10	40	4	200	800
PTB 6x85 *	07404	85	6	95	7	12.0	10	40	39	200	800
PTB 8x50 *	07410	50	8	60	9	16.0	13	40	2	200	800
PTB 8x65	07412	65	8	75	9	16.0	13	50	7	200	800
PTB 8x80	07413	80	8	90	9	16.0	13	50	22	100	400
PTB 8x90	07414	90	8	100	9	16.0	13	50	32	100	400
PTB 8x100	07415	100	8	110	9	16.0	13	50	42	100	400
PTB 8x115	07450	115	8	125	9	16.0	13	50	57	100	400
PTB 8x130	07416	130	8	140	9	16.0	13	50	72	50	200
PTB 8x160	07451	160	8	170	9	16.0	13	50	102	50	200
PTB 10x50 *	07409	50	10	60	12	19.9	17	40	2	100	400
PTB 10x65 *	07417	65	10	75	12	19.9	17	50	5	100	400
PTB 10x75	07420	75	10	85	12	19.9	17	60	5	50	200
PTB 10x90	07422	90	10	100	12	19.9	17	60	20	50	200
PTB 10x120	07423	120	10	130	12	19.9	17	60	50	50	200
PTB 10150	07489	150	10	160	12	19.9	17	60	80	50	200
PTB 12x80 *	07424	80	12	95	14	23.7	19	65	3	50	200
PTB 12x100	07426	100	12	115	14	23.7	19	70	18	50	200
PTB 12x120	07427	120	12	135	14	23.7	19	70	38	50	200
PTB 12x140	07430	140	12	155	14	23.7	19	70	58	25	100
PTB 12x180	07432	180	12	195	14	23.7	19	70	98	25	100
PTB 16x90	07433	90	16	105	18	30.0	24	70	4	25	100
PTB 16x100 *	07434	100	16	115	18	30.0	24	75	9	25	100
PTB 16x115	07452	115	16	130	18	30.0	24	85	14	25	100
PTB 16x125	07436	125	16	140	18	30.0	24	85	24	20	80
PTB 16x150	07438	150	16	165	18	30.0	24	85	49	20	80
PTB 16x175	07439	175	16	190	18	30.0	24	85	74	10	40
PTB 20x130	07444	130	20	150	23	36.8	30	100	10	10	40
PTB 20x160	07446	160	20	170	23	36.8	30	100	40	10	40
PTB 20x200	07448	200	20	220	23	36.8	30	100	80	10	40
PTB 20x215	07449	215	20	235	23	36.8	30	100	95	10	40

\* no approval



# Throughbolt – PTB

## Sizes and packaging information

PTBW PTB Throughbolts zinc plated, large washer DIN9021											
Type	art.nr.	L [mm]	d0 [mm]	dd [mm]	df [mm]	fs [mm]	ws [mm]	hef [mm]	tfix [mm]	box	carton
PTB 8x50/DIN9021*	07453	50	8	60	9	24	13	40	2	100	400
PTB 8x60/DIN9021	07454	60	8	70	9	24	13	50	2	100	400
PTB 8x80/DIN9021	07455	80	8	90	9	24	13	50	22	100	400
PTB 10x65/DIN9021*	07456	65	10	75	21	24	17	50	5	50	200
PTB 10x75/DIN9021	07457	75	10	85	12	24	17	60	5	50	200
PTB 10x90/DIN9021	07458	90	10	100	12	24	17	60	20	50	200

\* no approval

PTBG PTB Throughbolt galvanised											
Type	art.nr.	L [mm]	d0 [mm]	dd [mm]	df [mm]	fs [mm]	ws [mm]	hef [mm]	tfix [mm]	box	carton
PTB 8x65G	07720	65	8	75	9	16.0	13	50	7	100	400
PTB 8x75G	07723	75	8	85	9	16.0	13	50	17	100	400
PTB 8x115G	07724	115	8	125	9	16.0	13	50	57	100	400
PTB 10x80G	07726	80	10	90	12	19.9	17	60	10	50	200
PTB 10x100G	07730	100	10	110	12	19.9	17	60	30	50	200
PTB 10x125G	07734	125	10	135	12	19.9	17	60	55	50	200
PTB 12x80G	07741	80	12	95	14	23.7	19	65	3	50	200
PTB 12x100G	07742	100	12	115	14	23.7	19	70	18	50	200
PTB 12x120G	07748	120	12	135	14	23.7	19	70	38	50	200
PTB 12x140G	07750	140	12	155	14	23.7	19	70	58	25	100
PTB 16x100G	07752	100	16	115	18	30.0	24	80	4	25	100
PTB 16x125G	07763	125	16	140	18	30.0	24	85	24	20	80
PTB 16x140G	07765	140	16	155	18	30.0	24	85	39	20	80
PTB 16x175G	07767	175	16	190	18	30.0	24	85	74	10	40
PTB 16x220G	07769	220	16	235	18	30.0	30	85	119	10	40
PTB 20x120G	07771	120	20	140	23	36.8	30	90	10	10	40
PTB 20x170G	07773	170	20	190	23	36.8	30	100	50	10	40



# Throughbolt – PTB

PTB SS PTB Throughbolts Stainless steel A4											
Type	art.nr.	L [mm]	d0 [mm]	dd [mm]	df [mm]	fs [mm]	Ws [mm]	hef [mm]	tfix [mm]	box	carton
PTB 6x55 SS	07602	55	6	65	7	12.0	10	40	9	200	800
PTB 6x85 SS	07604	85	6	95	7	12.0	10	40	39	100	400
PTB 8x65 SS	07610	65	8	75	9	16.0	13	50	7	100	400
PTB 8x80 SS	07612	80	8	90	9	16.0	13	50	22	100	400
PTB 8x100 SS	07613	100	8	110	9	16.0	13	50	42	100	400
PTB 8x130 SS	07614	130	8	140	9	16.0	13	50	72	50	200
PTB 10x60 SS	07622	60	10	70	12	19.9	17	50	2	50	200
PTB 10x75 SS	07623	75	10	85	12	19.9	17	60	5	50	200
PTB 10x90 SS	07624	90	10	100	12	19.9	17	60	20	50	200
PTB 10x120 SS	07626	120	10	130	12	19.9	17	60	50	50	200
PTB 12x80 SS	07632	80	12	95	14	23.7	19	60	8	50	200
PTB 12x100 SS	07633	100	12	115	14	23.7	19	70	18	50	200
PTB 12x140 SS	07634	140	12	155	14	23.7	19	70	58	50	200
PTB 16x100 SS	07636	100	16	115	18	30.0	24	80	4	25	100
PTB 16x125 SS	07640	125	16	140	18	30.0	24	85	24	20	80
PTB 16x150 SS	07641	150	16	165	18	30.0	24	85	49	20	80
PTB 16x175 SS	07642	175	16	180	18	30.0	24	85	74	10	40
PTB 20x120 SS	07644	120	20	140	23	36.8	30	90	10	10	40
PTB 20x160 SS	07646	160	20	180	23	36.8	30	100	40	10	40
PTB 8x65 SS/DIN9021	07660	65	8	75	9	16.0	13	50	7	100	400
PTB 8x80 SS/DIN9021	07665	80	8	90	9	16.0	13	50	22	100	400

PTB IT PTB Throughbolt internally threaded							
Type	art.nr.	L [mm]	d0 [mm]	dd [mm]	hef [mm]	box	carton
PTB 8x55_M6	07459	55	8	65	50	200	800
PTB 10x60_M8	07460	60	10	70	60	100	400
PTB 12x65_M10	07461	65	12	80	70	50	200



# Throughbolt – PTB

## Performance data Powers Throughbolt in concrete

### Approved design loads Nrd and Vrd [kN]

Anchor dia. Ø	d <sub>0</sub> (mm)	h <sub>ef</sub> (mm)	d <sub>d</sub> (mm)	Concrete B25 (=C20/25) uncracked			Concrete B65 (=C50/60) uncracked		
				T <sub>inst</sub> (Nm)	Approved design load (kN) Tension V <sub>rd</sub>	Shear V <sub>rd</sub>	*T <sub>inst</sub> (Nm)	Approved design load (kN) Tension N <sub>rd</sub>	Shear V <sub>rd</sub>
M6*	6	40	50	5	3.0	2.9	6	4.7	2.9
M8	8	50	65	15	6.0	6.2	18	9.3	6.2
M10	10	60	80	25	6.0	11.1	30	9.3	11.1
M12	12	70	95	45	15.7	17.4	54	24.3	17.4
M16	16	85	115	110	21.1	31.9	132	32.7	31.9
M20	20	100	140	180	28.0	25.6	216	43.4	25.6

\* No approval on diameter M6

Values in these table are given in the ETA approval ETA/04-0060

If there are both tension loading and shear loading on the anchor, the loading should be checked by using the combined loading formula:

$$\left(\frac{T_S}{T_A}\right)^{5/3} + \left(\frac{S_S}{S_A}\right)^{5/3} \leq 1$$

T<sub>S</sub>= Applied Tension Load  
T<sub>A</sub>= Allowable Tension Load  
S<sub>S</sub>= Applied Shear Load  
S<sub>A</sub>= Allowable Shear Load

### Recommended Loads Nrec and Vrec [kN]

Anchor dia. Ø	d <sub>0</sub> (mm)	h <sub>ef</sub> (mm)	d <sub>d</sub> (mm)	Concrete B25 (=C20/25) uncracked			Concrete B65 (=C50/60) uncracked		
				T <sub>inst</sub> (Nm)	Recommended loads (kN) Tension N <sub>rec</sub>	Shear V <sub>rec</sub>	*T <sub>inst</sub> (Nm)	Recommended loads (kN) Tension N <sub>rec</sub>	Shear V <sub>rec</sub>
M6	6	40	50	5	2.1	2.1	6	3.3	2.1
M8	8	50	65	15	4.3	4.4	18	6.6	4.4
M10	10	60	80	25	4.3	7.9	30	6.6	7.9
M12	12	70	95	45	11.2	12.4	54	17.4	12.4
M16	16	85	115	110	15.1	22.8	132	23.4	22.8
M20	20	100	140	180	20.0	18.3	216	31.0	18.3

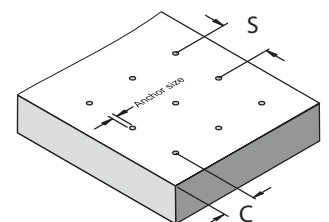
These values are destilated by dividing the approved design loads by 1.4

If there are both tension loading and shear loading on the anchor, the loading should be checked by using the combined loading formula, as published above

## Spacing and edge distance for anchor groups

Anchor dia. Ø	Characteristic spacing S <sub>cr</sub> (mm)	Minimum Spacing* S <sub>min</sub> (mm)	Reduction factor R <sub>s</sub> tension & shear	Characteristic edge distance C <sub>cr</sub> (mm)	Minimum edge distance* C <sub>min</sub> (mm)	Reduction factor R <sub>c</sub>	
						Tension	Shear
M6	60	30	0,5	72	30	0,8	0,5
M8	80	40	0,5	96	40	0,8	0,5
M10	100	50	0,5	120	50	0,8	0,5
M12	120	60	0,5	144	60	0,8	0,5
M16	160	80	0,5	192	80	0,8	0,5
M20	200	100	0,5	240	100	0,8	0,5

\* Apply a reduction factor



Changes without notice, Powers terms and conditions apply.

PTB - 3/07 - 4590

Mechanical Anchors



**Powers**  
FASTENERS®

www.powerseurope.nl info@powerseurope.nl +31 (0) 227 594740