# Throughbolt
## Stainless Steel A2/304


## INFORMATION

The torque controlled Throughbolt is a stainless steel grade A2/304 through fixing for use in non-cracked concrete and normal applications such as:

- Barriers
- Guard rails
- Fences
- Hand rails
- Signs and posts

## BASE MATERIAL

- Concrete C20/25 to C50/60
- Non-Cracked Concrete

## FEATURES

- Medium Duty
- Corrosion Resistance
- Wide Range Of Sizes
- Fast And Secure Installation
- Through Fixing
- Three way Expansion Sleeve
- Stainless Steel A2/304
- Reaction To Fire Class A1

## SOFTWARE

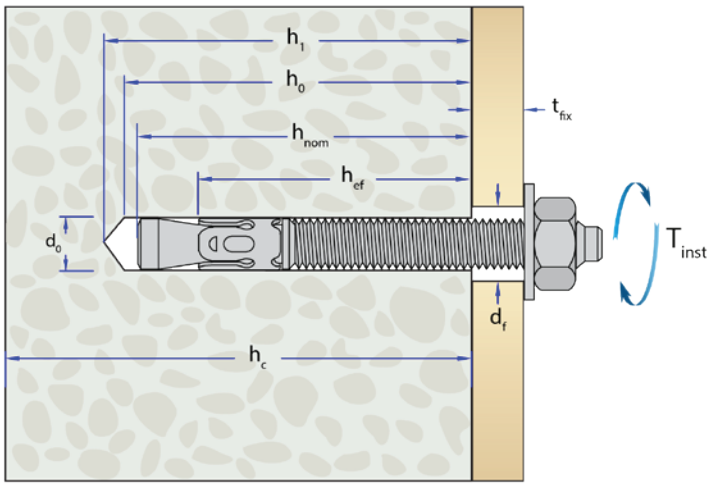
Click here to download the software

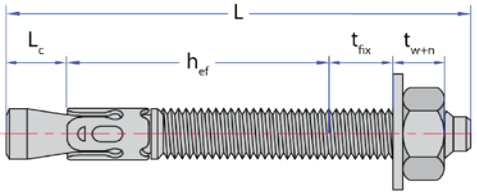
## RELATED PRODUCTS

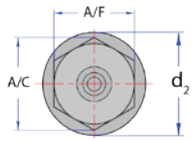
SDS+ Drill Bits

Hole Cleaning Pump

## RANGE AND LOAD DATA




For combined loads, variations in structure thickness, reduced spacing and edge calculations download the free **A**nchor **C**alculation **P**rogram from www.jcpfixings.co.uk

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Technical Data Sheet

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## RANGE AND LOAD DATA

| RANGE DATA | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Part Number | Size of Thread | Min. Structure Thickness | Drill Hole Diameter | Min Hole Depth | Fixture Clearance Hole | Cone Length | Effective Embedment Depth | Minimum Spacing | Minimum Edge Distance | Max Fixture Thickness | Washer and Nut Thickness | Total Length | Thread Length | Width Across Flats | Washer Outer Diameter | Tightening Torque |
| | - | ($h_c$) | ($d_0$) | ($h_1$) | ($d_f$) | ($L_c$) | ($h_{ef}$) | ($S_{min}$) | ($C_{min}$) | ($t_{fix}$) | ($t_{w+n}$) | (L) | ($L_{th}$) | (A/F) | ($d_2$) | ($T_{inst}$) |
| | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | Nm |
| STANDARD EMBEDMENT DEPTH | | | | | | | | | | | | | | | | |
| TSSA206045 | M6 | 100 | 6 | 35 | 7 | 7 | 23 | 35 | 35 | 5 | 6 | 45 | 18 | 10 | 12.5 | 5 |
| TSSA206065 | | | | | | | | | | 25 | | 65 | 28 | | | |
| TSSA208050 | M8 | 100 | 8 | 40* | 9 | 9 | 26 | 50 | 50 | 5 | 8 | 50 | 14 | 13 | 17 | 15 |
| TSSA208075 | | | | 45 | | | 31 | | | 22 | | 75 | 39 | | | |
| TSSA208095 | | | | | | | | | | 42 | | 95 | 59 | | | |
| TSSA208120 | | | | | | | | | | 67 | | 120 | 62 | | | |
| TSSA210060 | M10 | 125 | 10 | 45* | 12 | 12 | 28 | 60 | 60 | 5 | 10 | 60 | 18 | 17 | 21 | 25 |
| TSSA210080 | | | | 55 | | | 38 | | | 15 | | 80 | 38 | | | |
| TSSA210100 | | | | | | | | | | 35 | | 100 | 57 | | | |
| TSSA210125 | | | | | | | | | | 60 | | 125 | 82 | | | |
| TSSA210150 | | | | | | | | | | 85 | | 150 | 76 | | | |
| TSSA210175 | | | | | | | | | | 110 | | 175 | 86 | | | |
| TSSA212085 | M12 | 170 | 12 | 65 | 14 | 15 | 45 | 70 | 70 | 5 | 13 | 85 | 38 | 19 | 24 | 45 |
| TSSA212100 | | | | | | | | | | 20 | | 100 | 58 | | | |
| TSSA212115 | | | | | | | | | | 35 | | 115 | 57 | | | |
| TSSA212145 | | | | | | | | | | 65 | | 145 | 78 | | | |
| TSSA212200 | | | | | | | | | | 120 | | 200 | 84 | | | |
| TSSA216110 | M16 | 200 | 16 | 85 | 18 | 17 | 58 | 90 | 90 | 12 | 16 | 110 | 47 | 24 | 30 | 90 |
| TSSA216125 | | | | | | | | | | 27 | | 125 | 60 | | | |
| TSSA216150 | | | | | | | | | | 52 | | 150 | 87 | | | |
| TSSA216175 | | | | | | | | | | 77 | | 175 | 80 | | | |
| TSSA220170 | M20 | 240 | 20 | 100 | 22 | 19 | 66 | 100 | 100 | 58 | 19 | 170 | 80 | 30 | 37 | 160 |
| TSSA220220 | | | | | | | | | | 108 | | 220 | 113 | | | |

* Reduced embedment depth for non-structural applications.

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## NON-CRACKED CONCRETE

### STANDARD EMBEDMENT

| Performance Data* (C20/25 non-cracked concrete) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size Of Thread | Effective Embedment Depth | Minimum Concrete Thickness | Characteristic Resistance | | Design Resistance | | Recommended Resistance | |
| | ($h_{ef}$) | ($h_{min}$) | Tensile ($N_{Rk}$) | Shear ($V_{Rk}$) | Tensile ($N_{Rd}$) | Shear ($V_{Rd}$) | Tensile ($N_{Rrec}$) | Shear ($V_{Rrec}$) |
| - | mm | mm | kN | kN | kN | kN | kN | kN |
| M6 | 23 | 100 | 2.5 | 5.6 | 1.4 | 3.7 | 0.9 | 2.6 |
| M8 | 31 | 100 | 5.1 | 8.7 | 2.8 | 5.8 | 2.0 | 4.1 |
| M10 | 38 | 125 | 9.5 | 11.8 | 5.3 | 7.8 | 3.7 | 5.5 |
| M12 | 45 | 170 | 11.7 | 15.2 | 6.5 | 10.1 | 4.6 | 7.2 |
| M16 | 58 | 200 | 24.2 | 22.3 | 13.4 | 14.8 | 9.6 | 10.5 |
| M20 | 66 | 240 | 34.4 | 54.2 | 19.1 | 36.1 | 13.6 | 25.7 |

* Important notes:

- Fasteners subject to static and quasi-static loads.
- Performance data stated for a single anchor, without the effect of spacing and edge distances. The influence of these parameters must be verified where applicable.
- Minimum concrete thickness, hole diameter, and embedment depth shall correspond to the dimensions stated in this document.
- Concrete strength class C20/25 is assumed.
- Drill holes produced using rotary hammer drilling, unless otherwise noted.
- Installation carried out strictly in accordance with the product's Installation Instructions and performed by a trained operator.
- Characteristic and design resistances derived from JCP internal technical data.
- Design resistances are calculated from characteristic values using the appropriate partial safety factors corresponding to the decisive failure mode.
- The Recommended Resistance is calculated using an additional safety factor ($\gamma_{Add}$) equal to 1.4.
- Performance data is valid for shear loading without a lever arm; installations involving a lever arm require additional verifications.
- Performance data is not valid for combined tensile and shear loading; where combined loading occurs, further checks shall be performed.
- When concrete-related strength factors are applied, ensure that the resulting resistance value does not exceed the steel design resistance.
- For project-specific assessments or conditions not explicitly covered, download the JCP Anchor Calculation Program.

For combined loads, variations in structure thickness, reduced spacing and edge calculations download the free **A**nchor **C**alculation **P**rogram from www.jcpfixings.co.uk

## SUPPLEMENTARY DATA

| Influence Of Concrete Strength (Non-cracked Concrete) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Concrete Grade | Cylinder Strength | Cube Strength | M6 | M8 | M10 | M12 | M16 | M20 |
| | N/mm2 | | Increasing Factor ($\psi_c$) | | | | | |
| C20/25 | 20 | 25 | 1.0 | | | | | |
| C30/37 | 30 | 37 | 1.0 | 1.08 | | | | |
| C40/50 | 40 | 50 | 1.0 | 1.15 | | | | |
| C50/60 | 50 | 60 | 1.0 | 1.19 | | | | |

Important Note:
When using concrete factors ensure that loads do not exceed Steel Design Resistance.

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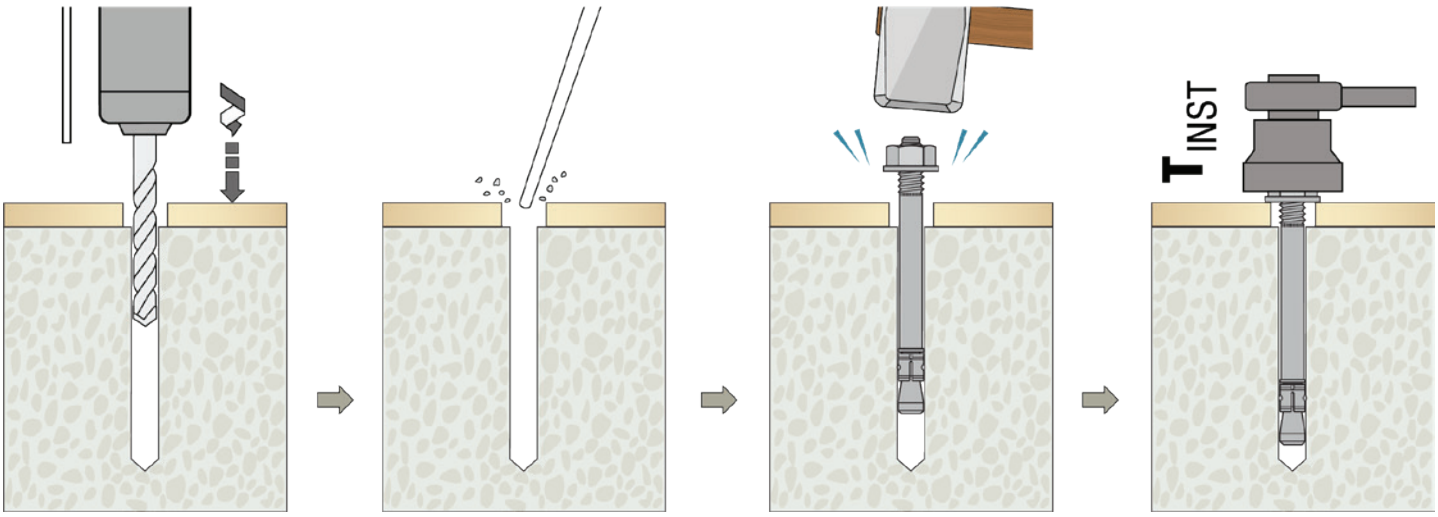
## SUPPLEMENTARY DATA

| Steel Failure | | | | | | |
|---|---|---|---|---|---|---|
| Size Of Thread | Tensile Resistance | | | Shear Resistance | | |
| | Characteristic Resistance | Design Resistance * | Recommended Resistance*** | Characteristic Resistance | Design Resistance** | Recommended Resistance*** |
| | ($N_{Rk,s}$) | ($N_{Rd,s}$) | ($N_{Rrec,s}$) | ($V_{Rk,s}$) | ($V_{Rd,s}$) | ($V_{Rrec,s}$) |
| - | kN | kN | kN | kN | kN | kN |
| M6 | 11.8 | 7.8 | 5.5 | 5.9 | 4.7 | 3.3 |
| M8 | 21.5 | 14.3 | 10.2 | 10.7 | 8.5 | 6.0 |
| M10 | 34.0 | 22.6 | 16.1 | 17.0 | 13.5 | 9.6 |
| M12 | 49.4 | 32.9 | 23.5 | 24.7 | 19.7 | 14.0 |
| M16 | 91.8 | 61.2 | 43.7 | 45.9 | 36.7 | 26.2 |
| M20 | 143.4 | 95.6 | 68.2 | 71.7 | 57.3 | 40.9 |

* A partial safety factor ($\gamma_{MS}$) equal to 1.5 is included.
** A partial safety factor ($\gamma_{MS}$) equal to 1.25 is included.
*** An additional safety factor ($\gamma_{Add}$) equal to 1.4 is included.

## INSTALLATION INSTRUCTIONS

Click on the QR code or scan it to watch the video




-Position fixture and drill correct diameter hole to corresponding depth

-Clean hole by blowing to remove drilling debris and dust

-Insert anchor through fixture into concrete and lightly hammer into concrete

-Tighten with torque wrench to recommended torque

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