

POLYESTER RESIN



EN15048-1
Cert No:
0038/CPR/4006773/C



EN14399-1
Cert No:
0038/CPR/4006773/B

BAPP

Group of Companies

Information

Polyester Resin is a two part grey resin (10:1) suitable for use in the vast majority of base materials. It can be used for installing threaded studs, rebar or internal threaded sockets for structural applications such as:

- Columns
- Guard rails
- Façades
- Staircases
- Cantilever beams



Base Material

- Concrete C20/25 To C50/60
- Non-Cracked Concrete
- Dry/Wet/Flooded Holes
- Solid Brickwork
- Concrete Block
- Hollow Base Materials
- Natural Stone



European Technical Assessment
Option 7 Non-Cracked Concrete



ETA13/0781

Features

- Expansion Free
- High Performance
- Close Spacing And Edge Distance

Injection Resin Gun

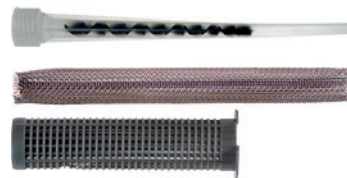


JTOOL380
(410ml Tube)

Hole Cleaning Brushes and Pump



Injection Accessories



Mixer Nozzle JMN130

Wire Mesh Sleeve

Nylon Sleeve

WORKING/ LOADING TIME

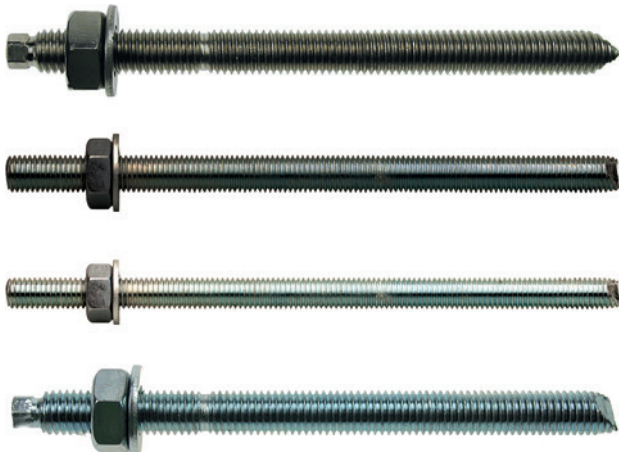
Note:

T_{work} = The highest temperature in the range

T_{load} = The lowest temperature in the range

| Cartridge & Base Material Temperature °C | Usable Time T_{work} (mins) | Load Time T_{load} (mins) |
|--|-------------------------------|-----------------------------|
| Min. +5°C | 18 | 120 |
| +5°C to +10°C | 12 | 120 |
| +10°C to +20°C | 6 | 80 |
| +20°C to +25°C | 4 | 40 |
| +25°C to +30°C | 3 | 30 |
| +30°C to +35°C | 2 | 20 |
| +35°C to +40°C | 1.5 | 15 |
| +40°C | 1.5 | 10 |

EMBEDDED THREADED RODS



- Stainless Steel Grade A4/316
- Chisel End Studs
- Setting Tool Included

- Stainless Steel Grade A4/316
- Chisel End Studs
- Plain Ended

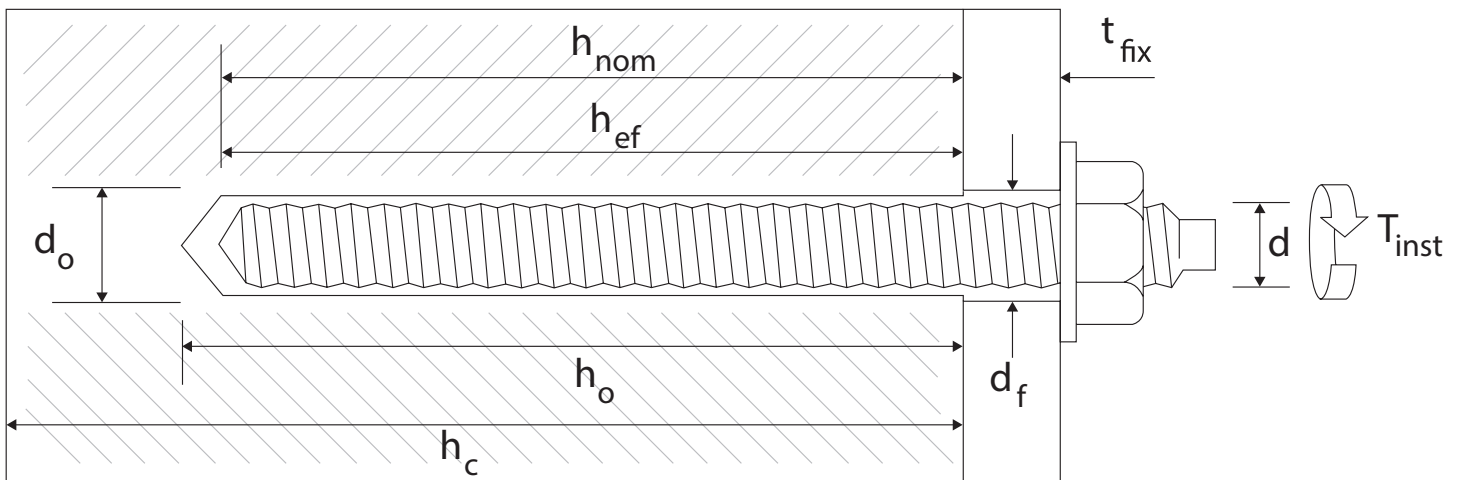
- Zinc Plated and Clear Passivated (Min 5µm)
- Chisel End Studs
- Plain Ended

- Zinc Plated and Clear Passivated (Min 5µm)
- Chisel End Studs
- Setting Tool Included

| RANGE DATA | | | | | | | | | | | |
|---|-----------------------|-----------------------------|--|---|---|--|---|--------------------------------------|---|--------------------------------------|---|
| Part Number | Thread Diameter (d)mm | Stud Length Diameter (L) mm | Drill Hole Diameter (d ₀) mm | Fixture Clearance Hole (d _i) mm | Standard Embedment | | Shallow Embedment | | Deep Embedment | | Tightening Torque (T _{inst}) Nm |
| | | | | | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm** | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm | |
| Stainless Steel Grade A4/316 Chisel End Studs | | | | | | | | | | | |
| JSTUD08110SSA4 | M8 | 110 | 10 | 10 | 18 | 80 | 38 | 64 | 6 | 96 | 10 |
| JSTUD10130SSA4 | M10 | 130 | 12 | 12 | 25 | 90 | 40 | 80 | * | 120 | 20 |
| JSTUD12160SSA4 | M12 | 160 | 14 | 14 | 34 | 110 | 51 | 96 | 3 | 144 | 40 |
| JSTUD16190SSA4 | M16 | 190 | 18 | 18 | 42 | 128 | 44 | 128 | * | 192 | 80 |
| JSTUD20260SSA4 | M20 | 260 | 22 | 22 | 55 | 170 | 79 | 160 | * | 240 | 150 |
| JSTUD24300SSA4 | M24 | 300 | 26 | 26 | 55 | 210 | 82 | 192 | * | 288 | 200 |
| Stainless Steel Grade A4/316 Plain Ended and Chisel End Studs | | | | | | | | | | | |
| JSTUD08150PESS | M8 | 150 | 10 | 10 | 62 | 80 | 78 | 64 | 46 | 96 | 10 |
| JSTUD10105PESS | M10 | 105 | 12 | 12 | 5 | 90 | 15 | 80 | * | 120 | 20 |
| JSTUD10150PESS | | 150 | | | 50 | | 60 | | 20 | | |
| JSTUD10200PESS | | 200 | | | 100 | | 110 | | 70 | | |
| JSTUD12110PESS | M12 | 110 | 14 | 14 | * | 110 | 1 | 96 | * | 144 | 40 |
| JSTUD12150PESS | | 150 | | | 27 | | 41 | | * | | |
| JSTUD12200PESS | | 200 | | | 77 | | 91 | | 43 | | |
| JSTUD16110PESS | M16 | 110 | 18 | 18 | * | 128 | * | 128 | * | 192 | 80 |
| JSTUD16250PESS | | 250 | | | 104 | | 104 | | 40 | | |
| JSTUD16350PESS | | 350 | | | 204 | | 204 | | 140 | | |
| JSTUD20200PESS | M20 | 200 | 22 | 22 | 9 | 170 | 19 | 160 | * | 240 | 150 |
| JSTUD20400PESS | | 400 | | | 209 | | 219 | | 139 | | |

* Deep Embedment Depth can be achieved by using suitable threaded rod cut to length: $L = h_0 + (t_{fix} + t_{Nut+Washer})$

** For the Polyester Resin: $h_0 = h_{ef}$

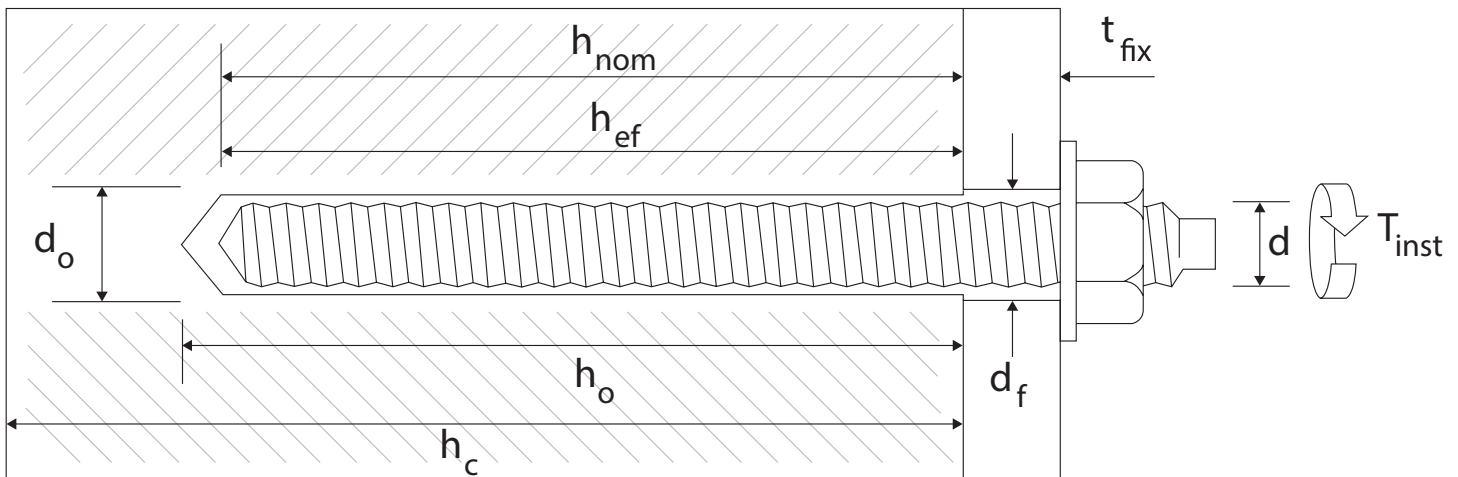


Range & Load Data - Zinc Plated

| RANGE DATA | | | | | | | | | | | |
|---|-----------------------|-----------------------------|--|---|---|--|---|--------------------------------------|---|--------------------------------------|---|
| Part Number | Thread Diameter (d)mm | Stud Length Diameter (L) mm | Drill Hole Diameter (d ₀) mm | Fixture Clearance Hole (d _i) mm | Standard Embedment | | Shallow Embedment | | Deep Embedment | | Tightening Torque (T _{inst}) Nm |
| | | | | | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm** | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm | Max. Fix. Thickness (t _{fix})mm | Min. Hole Depth (h ₀) mm | |
| Zinc Plated Steel Grade 5.8 - Clear Passivated Plain Ended and Chisel End Studs | | | | | | | | | | | |
| JSTUD08150PE | M8 | 150 | 10 | 10 | 62 | 80 | 78 | 64 | 46 | 96 | 10 |
| JSTUD10105PE | M10 | 105 | 12 | 12 | 5 | 90 | 15 | 80 | * | 120 | 20 |
| JSTUD10150PE | | 150 | | | 50 | | 60 | | 20 | | |
| JSTUD10200PE | | 200 | | | 100 | | 110 | | 70 | | |
| JSTUD12110PE | M12 | 110 | 14 | 14 | * | 110 | 1 | 96 | * | 144 | 40 |
| JSTUD12150PE | | 150 | | | 27 | | 41 | | * | | |
| JSTUD12200PE | | 200 | | | 77 | | 91 | | 43 | | |
| JSTUD16110PE | M16 | 110 | 18 | 18 | * | 128 | * | 128 | * | 192 | 80 |
| JSTUD16250PE | | 250 | | | 104 | | 104 | | 40 | | |
| JSTUD16350PE | | 350 | | | 204 | | 204 | | 140 | | |
| JSTUD20200PE | M20 | 200 | 22 | 22 | 9 | 170 | 19 | 160 | * | 240 | 150 |
| JSTUD20400PE | | 400 | | | 209 | | 219 | | 139 | | |
| Zinc Plated Steel Grade 5.8 - Clear Passivated and Chisel End Studs | | | | | | | | | | | |
| JSTUD08110 | M8 | 110 | 10 | 10 | 18 | 80 | 38 | 64 | 6 | 96 | 10 |
| JSTUD10130 | M10 | 130 | 12 | 12 | 25 | 90 | 40 | 80 | * | 120 | 20 |
| JSTUD12160 | M12 | 160 | 14 | 14 | 34 | 110 | 51 | 96 | 3 | 144 | 40 |
| JSTUD16190 | M16 | 190 | 18 | 18 | 42 | 128 | 44 | 128 | * | 192 | 80 |
| JSTUD20260 | M20 | 260 | 22 | 22 | 55 | 170 | 79 | 160 | * | 240 | 150 |
| JSTUD24300 | M24 | 300 | 26 | 26 | 55 | 210 | 82 | 192 | * | 288 | 200 |
| JSTUD30380 | M30 | 380 | 35 | 32 | 55 | 280 | 110 | 240 | * | 360 | 275 |

* Deep Embedment Depth can be achieved by using suitable threaded rod cut to length: $L = h_0 + (t_{fix} + t_{Nut+Washer})$

** For the Polyester Resin: $h_0 = h_{ef}$



Non-Cracked Concrete - **Shallow Embedment**

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)

| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 64 | 100 | 15.3 | 13.0 | 8.4 | 8.3 | 6.0 | 5.9 | 180 | 40 | 90 | 90 |
| 10 | 80 | 110 | 22.6 | 20.0 | 12.5 | 12.8 | 8.9 | 9.1 | 220 | 40 | 110 | 120 |
| 12 | 96 | 130 | 30.8 | 30.0 | 17.0 | 19.2 | 12.1 | 13.7 | 260 | 50 | 130 | 170 |
| 16 | 128 | 170 | 51.5 | 55.0 | 28.5 | 35.2 | 20.3 | 25.1 | 330 | 70 | 170 | 260 |
| 20 | 160 | 210 | 75.4 | 86.0 | 41.8 | 55.1 | 29.8 | 39.3 | 400 | 80 | 200 | 370 |
| 24 | 192 | 250 | 101.3 | 124.0 | 56.2 | 79.4 | 40.1 | 56.7 | 470 | 100 | 240 | 480 |

Non-Cracked Concrete - **Standard Embedment**

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)

| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 80 | 110 | 19.1 | 13.0 | 10.6 | 8.3 | 7.5 | 5.9 | 180 | 40 | 90 | 80 |
| 10 | 90 | 120 | 25.4 | 20.0 | 14.1 | 12.8 | 10.0 | 9.1 | 220 | 50 | 110 | 110 |
| 12 | 110 | 140 | 35.2 | 30.0 | 19.5 | 19.2 | 13.9 | 13.7 | 260 | 60 | 130 | 160 |
| 16 | 128 | 170 | 51.5 | 55.0 | 28.5 | 35.2 | 20.3 | 25.1 | 330 | 70 | 170 | 260 |
| 20 | 170 | 220 | 80.1 | 86.0 | 44.5 | 55.1 | 31.7 | 39.3 | 400 | 90 | 200 | 350 |
| 24 | 210 | 270 | 110.8 | 124.0 | 61.5 | 79.4 | 43.9 | 56.7 | 470 | 110 | 240 | 450 |

Non-Cracked Concrete - **Deep Embedment**

Grade A4-70 Stainless Steel Studs Performance Data (C20/25 non-cracked concrete)

| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 96 | 130 | 22.9 | 13.0 | 12.7 | 8.3 | 9.0 | 5.9 | 180 | 50 | 90 | 80 |
| 10 | 120 | 150 | 33.9 | 20.0 | 18.8 | 12.8 | 13.4 | 9.1 | 220 | 60 | 110 | 100 |
| 12 | 144 | 175 | 46.1 | 30.0 | 25.6 | 19.2 | 18.2 | 13.7 | 260 | 80 | 130 | 130 |
| 16 | 192 | 230 | 77.2 | 55.0 | 42.8 | 35.2 | 30.5 | 25.1 | 330 | 100 | 170 | 200 |
| 20 | 240 | 290 | 113.1 | 86.0 | 62.8 | 55.1 | 44.8 | 39.3 | 400 | 120 | 200 | 280 |
| 24 | 288 | 350 | 152.0 | 124.0 | 84.4 | 79.4 | 60.2 | 56.7 | 470 | 150 | 240 | 360 |

Non-Cracked Concrete - **Shallow Embedment**

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)

| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 64 | 100 | 15.3 | 9.0 | 8.4 | 7.2 | 6.0 | 5.1 | 180 | 40 | 90 | 70 |
| 10 | 80 | 110 | 22.6 | 15.0 | 12.5 | 12.0 | 8.9 | 8.5 | 220 | 40 | 110 | 110 |
| 12 | 96 | 130 | 30.8 | 21.0 | 17.0 | 16.8 | 12.1 | 12.0 | 260 | 50 | 130 | 140 |
| 16 | 128 | 170 | 51.5 | 39.0 | 28.5 | 31.2 | 20.3 | 22.2 | 330 | 70 | 170 | 230 |
| 20 | 160 | 210 | 75.4 | 61.0 | 41.8 | 48.8 | 29.8 | 34.8 | 400 | 80 | 200 | 320 |
| 24 | 192 | 250 | 101.3 | 88.0 | 56.2 | 70.4 | 40.1 | 50.2 | 470 | 100 | 240 | 420 |

Non-Cracked Concrete - **Standard Embedment**

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)

| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 80 | 110 | 19.1 | 9.0 | 10.6 | 7.2 | 7.5 | 5.1 | 180 | 40 | 90 | 70 |
| 10 | 90 | 120 | 25.4 | 15.0 | 14.1 | 12.0 | 10.0 | 8.5 | 220 | 50 | 110 | 110 |
| 12 | 110 | 140 | 35.2 | 21.0 | 19.5 | 16.8 | 13.9 | 12.0 | 260 | 60 | 130 | 130 |
| 16 | 128 | 170 | 51.5 | 39.0 | 28.5 | 31.2 | 20.3 | 22.2 | 330 | 70 | 170 | 230 |
| 20 | 170 | 220 | 80.1 | 61.0 | 44.5 | 48.8 | 31.7 | 34.8 | 400 | 90 | 200 | 310 |
| 24 | 210 | 270 | 110.8 | 88.0 | 61.5 | 70.4 | 43.9 | 50.2 | 470 | 110 | 240 | 390 |

Non-Cracked Concrete - **Deep Embedment**

Grade 5.8 Zinc Plated Studs Performance Data (C20/25 non-cracked concrete)

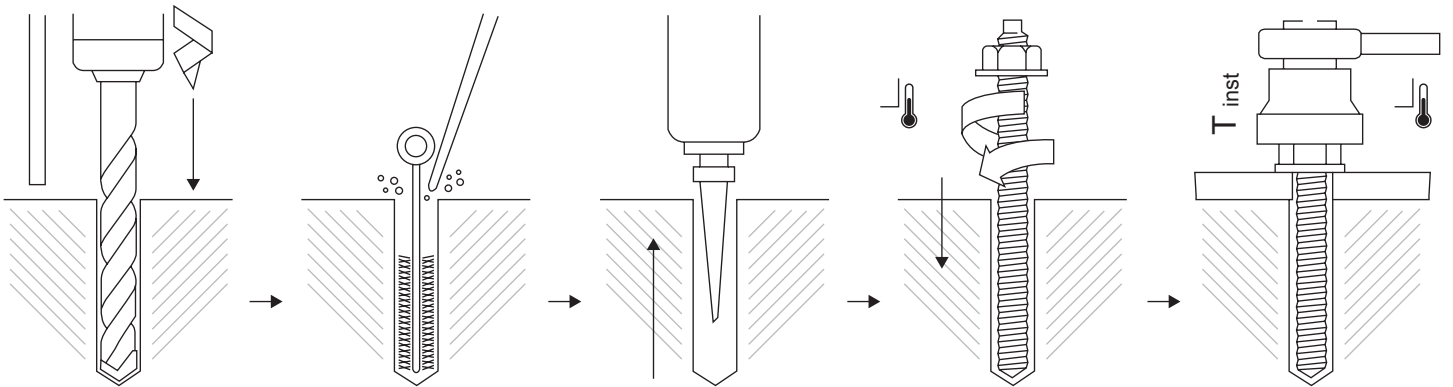
| Thread Diam (d) mm | Minimum Hole Depth (h ₀) mm | Minimum Concrete Thickness (h _{min}) mm | Characteristic Resistance kN | | Design Resistance kN | | Approved Resistance kN | | Design Spacing (S) mm | | Design Edge Distance (C) mm | |
|--------------------|---|---|------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|-----------------------|-------|-----------------------------|-------|
| | | | Tensile (N _{Rk}) | Shear (V _{Rk}) | Tensile (N _{Rd}) | Shear (V _{Rd}) | Tensile (N _{Ra}) | Shear (V _{Ra}) | Tensile | Shear | Tensile | Shear |
| 8 | 96 | 130 | 22.9 | 9.0 | 12.7 | 7.2 | 9.0 | 5.1 | 180 | 50 | 90 | 70 |
| 10 | 120 | 150 | 33.9 | 15.0 | 18.8 | 12.0 | 13.4 | 8.5 | 220 | 60 | 110 | 90 |
| 12 | 144 | 175 | 46.1 | 21.0 | 25.6 | 16.8 | 18.2 | 12.0 | 260 | 80 | 130 | 110 |
| 16 | 192 | 230 | 77.2 | 39.0 | 42.8 | 31.2 | 30.5 | 22.2 | 330 | 100 | 170 | 170 |
| 20 | 240 | 290 | 113.1 | 61.0 | 62.8 | 48.8 | 44.8 | 34.8 | 400 | 120 | 200 | 240 |
| 24 | 288 | 350 | 152.0 | 88.0 | 84.4 | 70.4 | 60.2 | 50.2 | 470 | 150 | 240 | 310 |

| Influence of Concrete Strength | | | | | |
|--------------------------------|-------------------|--------|--------|--------|--------|
| Concrete Strength | | C20/25 | C30/37 | C35/45 | C50/60 |
| Cylinder | N/mm ² | 20 | 30 | 40 | 50 |
| Cube | N/mm ² | 25 | 37 | 50 | 60 |
| Factor | | 1.0 | 1.12 | 1.19 | 1.30 |

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

| Steel Design Resistance For Single Anchor | | | | | | | |
|---|-----------------------------|-------------------|------|------|------|------|-------|
| Load Type | Steel Grade | Threaded Rod Size | | | | | |
| | | M8 | M10 | M12 | M16 | M20 | M24 |
| Tensile (kN) | Stainless Steel Grade A4-70 | 13.7 | 21.6 | 31.1 | 57.9 | 90.5 | 130 |
| | Grade 5.8 | 12.0 | 19.3 | 28.0 | 52.7 | 82.0 | 118.0 |
| Shear (kN) | Stainless Steel Grade A4-70 | 8.3 | 12.8 | 19.2 | 35.3 | 55.1 | 79.5 |
| | Grade 5.8 | 7.2 | 12.0 | 16.8 | 31.2 | 48.8 | 70.4 |

Installation Instructions



Drill correct diameter hole to corresponding depth

Clean hole by brushing, blowing to remove drilling debris and dust:

- 2×Blowing
- 2×Brushing
- 2×Blowing
- 2×Brushing
- 2×Blowing

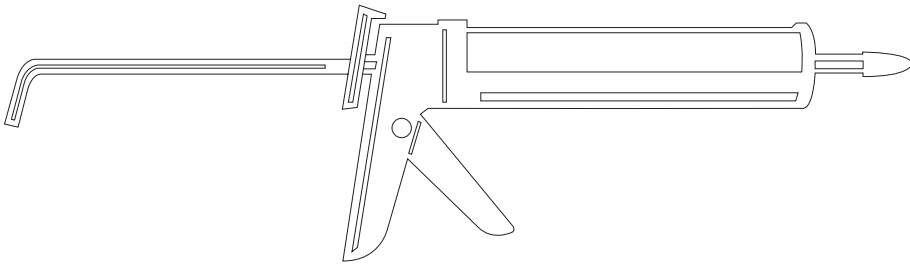
Attach nozzle to cartridge

Extrude first part to waste until an even colour is achieved

Fill hole 1/3 to 1/2 full starting from the bottom of the hole

Insert stud into base material by hand using a twisting motion

- Allow resin to cure
- Attach fixture
- Tighten with torque wrench to recommended torque



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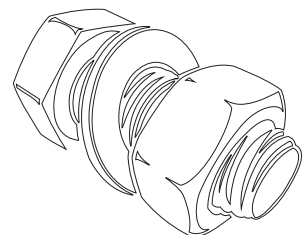
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