



PRODUCT CATALOGUE

HARDROCK

MISSION STATEMENT

VISION

To be the safest and most innovative Australian manufacturer relentless in the pursuit of employee and customer excellence.

MISSION

To be a responsible employer and leading innovator of sustainably manufactured high quality products for mining, industrial and infrastructure markets. Accountable to our stakeholders by creating employee and customer excellence, and positive outcomes for all.



Contacts

Anthony Dodds

National Manager – Hardrock
E-mail: adodds@jennmar.com.au
Mobile: 0427 488 442

Anthony Bennett

Mine Services Manager - WA
E-mail: abennett@jennmar.com.au
Mobile: 0427 415 057

Steve Pisarskis

WA Mine Service Representative
E-mail: spisarskis@jennmar.com.au
Mobile: 0429 362 363

Mark Gratzner

WA Mine Service Supervisor
E-mail: mgratzner@jennmar.com.au
Mobile: 0438 101 011

Charlie Kenny

Cobar Mine Service Representative
E-mail: ckenny@jennmar.com.au
Mobile: 0427 775 133

Max Wallace

Broken Hill Mine Service Representative
E-mail: mwallace@jennmar.com.au
Mobile: 0439 315 647

Peter Gilby

VIC/NSW Mine Service Supervisor
E-mail: pgilby@jennmar.com.au
Mobile: 0409 033 680

Paul Horne

VIC/NSW Mine Service Representative
E-mail: phorne@jennmar.com.au
Mobile: 0408 859 007

Bill Kingdom

QLD Mine Service Representative
E-mail: bkingdom@jennmar.com.au
Mobile: 0457 101 080

Contacts

Administration

Head Office and Plant

40-44 Anzac Avenue
Smeaton Grange NSW 2567
Phone: 02 4648 7537
Fax: 02 4648 7555

Matthew Berry

Commercial Manager
E-mail: mberry@jennmar.com.au
Mobile: 0408 269 658

Armand du Plessis

National Quality Manager
E-mail: aduplessis@jennmar.com.au
Mobile: 0417 905 046

Blair Moses

National Safety & Environmental Manager
E-mail: bmoses@jennmar.com.au
Mobile: 0455 612 821



Accreditations

JENNMAR Australia is certified as compliant with the following standards:



OHS
ISO 45001



Quality
ISO 9001



Environment
ISO 14001



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ROCK BOLTS & ACCESSORIES



Rock Bolts

Yield Lok® Bolt 23mm



Features:

- The Yield Lok Bolt is designed for high seismic demand conditions utilizing its simple patented engineered polymer ploughing design to dissipate over 50kJ of energy
- Dynamically tested at multiple dynamic test facilities with complete independent test and installation data available on request
- Yielding not effected by resin / grout properties, hole diameter or encapsulation length
- Softer energy absorption system than compared to steel stretch options
- Consistent and repeatable results
- Bolt performance can be changed to suit varying geotechnical domains
- High shear stiffness and strength
- No rig changes required for Jumbo installation and also suitable for handheld methods
- Available with a range of shear pins to suit required break out torque

| Property | Unit | Minimum Value | Typical Value |
|-------------------------------|-----------------|---------------|---------------|
| Bar Yield strength | kN | 200 | 245 |
| | MPa | 517 | 633 |
| Bar Ultimate tensile strength | kN | 267 | 328 |
| | MPa | 688 | 844 |
| Cross sectional area | mm ² | - | 405 |
| Elongation | % | 7 | 9 |
| Mass/meter | kg/m | - | 3.2 |
| Recommended hole size | mm | 36-40 | |

Rock Bolts

J-Tech® 25mm Bolt



Features:

- Left hand continuously threaded bar, with 6mm pitch allowing higher tension for a given torque
- Available as debonded version, or plain bar with a number of possible configurations of accessories
- Dynamic testing conducted without bolt failure to 47kJ absorbed energy
- Suitable for use with either resin capsules or cementitious grout
- Resin shredder actively promotes shredding of the capsule film and mixing of the resin components while centralizing the bolt in boreholes up to 40mm
- Alternative paddle resin mixing device also available for smaller hole diameters
- Available with a range of shear pins to suit required break out torque
- Range of dollies and accessories including couplers and 3T Hanger Nuts available
- Supplied with Kanga Plate which collapses when the bolt goes into yield
- Available in plain or hot dipped galvanised corrosion protection

| Property | Unit | Minimum Value | Typical Value |
|-------------------------------|-----------------|---------------|---------------|
| Bar Yield strength | kN | 215 | 245 |
| | MPa | 500 | 565 |
| Bar Ultimate tensile strength | kN | 260 | 294 |
| | MPa | 600 | 685 |
| Cross sectional area | mm ² | | 433 |
| Elongation | % | 15 | 20 |
| Mass/meter | kg/m | - | 3.4 |
| Recommended hole size | mm | 33.5 - 40 | |

Rock Bolts

Eye Nuts



Features:

- Readily threaded onto the tail of rock bolts for use as a hanger
- Recommended for holding static loads
- Not recommended for lifting or pulling

| Length (mm) | Width (mm) | Working Load Limit - WLL (tonnes) |
|-------------|------------|-----------------------------------|
| 92 | 56 | 3 |

Rock Bolts

Hawkeye Bolt



Features:

- Patented system for the elimination of protruding bolt tails minimizes tyre, bolt damage, and improves mine safety. Installed height is 39mm from rock surface
- Significant overall operational cost savings possible
- Debonded version available
- Nut designed to fit J-Tech bolt with its range of fittings shredders and paddles
- Full pre-tension achieved which clamps damaged rock mass together on walls and gradeline
- Reduces fibrecrete requirements to cover exposed bolts on gradeline
- Full column resin encapsulated
- Easily installed from standard bolting machine
- Provision for in-situ proof load testing
- Available with a range of shear pins to suit required break out torque
- Available in black or galvanised

| Property | Unit | Minimum Value | Typical Value |
|----------------------|------|---------------|---------------|
| Nut Yield strength | kN | 263 | - |
| | MPa | 655 | - |
| Nut Tensile strength | kN | 343 | - |
| | MPa | 850 | - |
| Bar Yield strength | kN | 215 | 245 |
| | MPa | 500 | 565 |
| Bar Tensile strength | kN | 260 | 294 |
| | MPa | 600 | 685 |
| Elongation | % | 15 | 20 |

Rock Bolts

Hawkeye Bolt Dolly



Features:

- Hardened Hawkeye bolt dolly, length to suit customer requirements
- T38 or R38 threads available

| Drive (mm) | Length (mm) | Socket |
|------------|-------------|--------|
| 30 square | 120 | T38 |
| 30 square | 750 | T38 |

Rock Bolts

Hawkeye Nut Driver



Features:

- Unique driver to fit 36AF hex socket
- Hand held installation option

| Drive (mm) | Socket (mm) |
|------------|-------------|
| 30 square | 36 hex |

Rock Bolts

J-Tech® 20mm Bolt



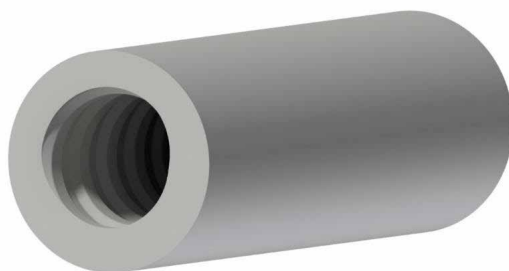
Features:

- 20mm left hand fully thread bar for wide range of applications and equipment
- Debonded version available for dynamic conditions with independent test reports available
- Dynamic testing conducted without bolt failure <20kJ of absorbed energy
- Can be purchased as plain bar or fitted with range of accessories including, shear pin torque nuts and resin shredders
- Patented resin shredder promotes mixing and installation in up to 38mm holes
- Versatile range of accessories and dollies for handheld and mechanical application
- Utilizing standard 36mm A.F socket or spanner, the 20mm J-Tech design allows for retorquing and tensioning along the entire length of the bolt assisting applications such as paste pipe hanging
- Rated couplers for multiple lengths and up to 2 tonne load rated hanger nuts available
- Suitable for use with either resin capsules or cementitious grout
- Available in plain or hot dipped galvanised

| Property | Unit | Minimum Value | Typical Value |
|-------------------------------|-----------------|---------------|---------------|
| Bar Yield strength | kN | 160 | 170 |
| | MPa | 500 | 550 |
| Bar Ultimate tensile strength | kN | 185 | 200 |
| | MPa | 600 | 650 |
| Cross sectional area | mm ² | - | 300 |
| Elongation | % | 15 | 19 |
| Mass/meter | kg/m | - | 3.8 |
| Recommended hole size | mm | 32-38 | |

Rock Bolts

J-Tech Coupler



Features:

- Allows for versatility in support options.
- Multiple bar lengths can be joined together to maximize reinforcement length as required
- Load tested for capacity compatibility with the J-Tech bar
- All accessories available plain or hot dip galvanised for corrosion protection

| Length (mm) | Outer Diameter (mm) |
|-------------|---------------------|
| 110 | 35 |

Rock Bolts

20mm J-Tech Nut



Features:

- Allows centralization of the bolt onto the surface support maximizing load transfer in non-axial conditions

| Dome Diameter (mm) | Hex Diameter (mm) | Unit Mass (kg) |
|--------------------|-------------------|----------------|
| 25 | 54 | 0.35 |
| 48 | 36 | 0.35 |

Rock Bolts

J-Tech Shredder

**Features:**

- Resin shredder actively promotes shredding of the capsule film and mixing of the resin components
- Allows hole sizes up to 38mm to be used
- 20mm J-Tech Shredder - Options for upto 38mm hole size
- 25mm J-Tech Shredder - Options for upto 45mm hole size

Rock Bolts

J-Tech Hanger Nuts



Features:

- 10mm diameter "U" hanger
- Available in all thread types
- Readily threaded onto the tail of rock bolts for use as a hanger
- Recommended for carrying static loads
- Not recommended for lifting or pulling
- Avoid side loading of the "U" hanger

| Length (mm) | Width (mm) | Mass (kg) | Load Rating (tonnes) |
|-------------|------------|-----------|----------------------|
| 92 | 56 | 0.28 | 2 |

Rock Bolts

M24 Torque Tension Bolts



Features:

- Jenmar has a range of support options in its M24 torque tension bolt range
- Options include, mild steel "JBS bolts" to "JX bolts" using "X" grade steel providing superior toughness and ductility
- The Jenmar "X" grade bolts provide better performance in mines where Stress Corrosion Cracking is evident and also in areas of high localized horizontal stresses
- Compatible plates and shear-pin with varying ranges of torque break-out strength are available for all bolt options
- Suitable for use with Resin or Cementitious Grout
- Mechanical anchors may be supplied fitted to the bar
- Available with Right or Left Hand Thread and a full range of M24 accessories and tools to suit requirements and installation equipment from hand held to mechanized
- Available plain or with galvanized corrosion protection options

| Property | M24 JX - 'X' Grade Bolt | | M24 JBS Mild Steel Bolt | |
|---|-------------------------|---------------|-------------------------|---------------|
| | Minimum Value | Typical Value | Minimum Value | Typical Value |
| Yield strength (kN) | 218 | 246 | 109 | 129 |
| Ultimate Tensile strength (kN) | 305 | 348 | 160 | 185 |
| Shear Strength (kN) | 213 | 243 | 112 | 130 |
| Elongation % | 15 | 19 | 22 | 27 |
| Bar core diameter (mm) | 21.5 | 21.7 | 21.5 | 21.7 |
| Cross sectional area (mm ²) | 363 | 378 | 363 | 378 |
| Rib height (mm) | 1.1 | 1.5 | 0.5 | 1 |
| Rib Spacing (mm) | 23 | 30 | 9 | 13 |
| Mass/meter (kg/m) | 2.8 | 3.0 | 2.8 | 3.0 |

Rock Bolts

SR Bolt



Features:

- The SR Bolt rock bolt is a mechanical point anchored, pre tensioned, post groutable rock bolt with a grout injection head connection
- Typical applications include high corrosion and life-of-project infrastructure in the mining industry
- Fully automated or manual installation
- M24 "X" grade steel bar Gr. 650/890MPa, supplied by Jennmar has superior toughness and ductility through the use of grain refining alloys. The Jennmar "X" grade bolts should provide better performance in mines where Stress Corrosion Cracking is evident and also in areas of high localized horizontal stresses
- The expansion shell capable of pre-tensioning bolt to 50kN prior to grouting
- Fully encapsulated in high-strength thixotropic grout
- Durable, high-density polyethylene (HDPE), corrugated sheath provides superior corrosion protection achieving a 100 year design life
- Corrugations in sheathing provide excellent load transference between inner and outer grout annuli
- Recommended for drill hole size 45mm diameter
- Screw on adaptor available for grouting through the head connection
- Bolt can be supplied black or galvanised. Face plate and grout bell available in Gr. 316 stainless steel and are electrically isolated from dissimilar metals to prevent galvanic corrosion
- Low profile Hawkeye version also available
- All standard lengths are available and any length can be produced upon request
- Also available in black

SR Rock Bolt

| Property | Minimum Value | Typical Value |
|---|---------------|---------------|
| Yield strength (kN) | 228 | 246 |
| Ultimate Tensile strength (kN) | 310 | 348 |
| Shear Strength (kN) | 213 | 243 |
| Elongation % | 15 | 19 |
| Bar core diameter (mm) | 21.5 | 21.7 |
| Cross sectional area (mm ²) | 363 | 378 |
| Mass/meter (kg/m) | 2.8 | 3.0 |
| Drill Hole size (mm) | 45 | |

Rock Bolts

Python Bolt



Features:

- The Python bolt is specifically designed with the percussion dollie and python eye for installation and inflation in very poor ground and collapsed drill holes
- Specifically developed water injection dollie to fit Jumbo machines to allow percussion installation in collapsed holes and the ability to slide through centralisers
- Suitable for common civil and hard rock drill hole diameters with bolt inflation diameter up to 54mm
- Complete range of face plates and accessories including pull rings to suit
- Modern high flow and pressure injection pumps and accessories available
- Corrosion protection available

| Property | Unit | Minimum Value | Typical Value |
|---------------------------|------|---------------|---------------|
| Bar | kN | 220 | 240 |
| Ultimate tensile strength | kN | 220 | 240 |
| Elongation | % | - | 25% |
| Mass/meter | kg/m | - | 3.8 |
| Recommended hole size | mm | 45 - 51 | |
| Inflated bolt diameter | mm | Up to 54 | |
| Inflation Pressure | Bar | 300 | |

Rock Bolts

Python Dollie and Centraliser



Features:

- Full Jennmar installation kit allows Python bolts to be installed using percussion in poor ground utilizing the drill bushing and Jumbo Percussion Python Dollie (Patent Pending)
- Enables mine mesh to be firmly pressed against the rock surface profile
- Used in conjunction with the Python EYE (ball) for maximum performance
- T45 and T38 thread available to suit drifter shanks
- Spare part kits available for easy maintenance

| Drive (mm) | Socket |
|------------|--------|
| T38 or T45 | Python |

Rock Bolt Accesories

Python Pull Ring



Features:

- The Python Pull Ring allows insitu pull testing of the Python bolt
- Can be supplied plain or with hot dip galvanization corrosion protection

| Diameter (mm) | Galvanised option available |
|---------------|-----------------------------|
| 70 | Yes |

Rock Bolts

Mech Lok Bolt



Features:

- The Mech Lok Bolt is designed for easy installation in poor and difficult ground conditions such as squeezing and quazi-static ground conditions
- Increased system capacity utilizes a combination of mechanisms working together
- The resistance of the Friction Lok along the length of the bolt along with a unique expansion shell assembly on a solid internal bolt increasing load bearing capacity and shear resistance
- Energy absorbing ring retains internal bolt
- No changes required to existing Jumbo drill rigs for installation
- Pull Rings and installation accessories available

| Property | Unit | Minimum Value | Typical Value |
|-------------------------------|-----------------|---------------|---------------|
| Bar Yield strength | kN | 171 | 190 |
| | MPa | 500 | 550 |
| Bar Ultimate tensile strength | kN | 250 | 265 |
| | MPa | 660 | 700 |
| Shear Strength (0.7 x UTS) | kN | 185 | 223 |
| Cross sectional area | mm ² | - | 355 |
| Mass/meter | kg/m | - | 6 |
| Recommended hole size | mm | 43 - 45 | |

Rock Bolts

Friction Lok



Features:

- The radial compression of the slotted steel tube inside a borehole provide both radial and axial restraint to rock movement
- Extensive quality control processes including testing and traceability throughout the manufacturing process
- Can be post grouted for extra corrosion protection and support capacity along with being available in black or hot dipped galvanised
- Oversized ring on 39mm Friction Lok to allow use with 47mm Friction Lok plates, requiring the use of one plate on site
- A range of installation dollies and testing accessories available
- Bolt lengths up to 4m available

33mm Friction Lok

| Property | Unit | Minimum Value | Typical Value |
|---------------------------|-----------------|---------------|---------------|
| Yield strength | kN | 80 | 100 |
| | MPa | 415 | 510 |
| Ultimate tensile strength | kN | 100 | 120 |
| | MPa | 510 | 610 |
| Cross sectional area | mm ² | - | 204 |
| Mass/meter | kg/m | - | 1.53 |
| Recommended hole size | mm | 28 - 31 | |

39mm Friction Lok

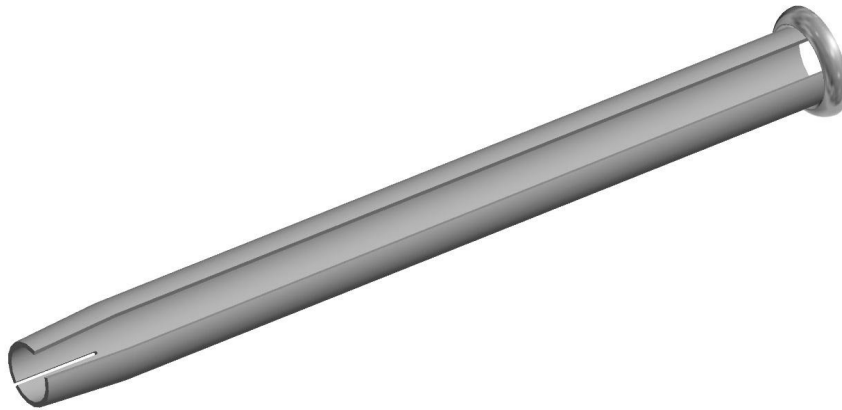
| Property | Unit | Minimum Value | Typical Value |
|---------------------------|-----------------|---------------|---------------|
| Yield strength | kN | 90 | 115 |
| | MPa | 415 | 510 |
| Ultimate tensile strength | kN | 115 | 135 |
| | MPa | 510 | 610 |
| Cross sectional area | mm ² | - | 225 |
| Mass/meter | kg/m | - | 1.77 |
| Recommended hole size | mm | 35 - 38 | |

47mm Friction Lok

| Property | Unit | Minimum Value | Typical Value |
|---------------------------|-----------------|---------------|---------------|
| Yield strength | kN | 120 | 160 |
| | MPa | 345 | 460 |
| Ultimate tensile strength | kN | 165 | 180 |
| | MPa | 445 | 510 |
| Cross sectional area | mm ² | - | 355 |
| Mass/meter | kg/m | - | 2.79 |
| Recommended hole size | mm | 43.5 - 45 | |

Rock Bolts

47mm Domed Friction Lok



The Domed Friction Lok is designed to be easily installed in poor ground conditions, providing maximum load capacity across a wider range of installation angles. The uniquely designed and tested domed ring reduces point loading and resultant premature peeling.

Features:

- Improved design and performance on the standard Friction Lok with the same quality
- Unique domed ring design for improved performance in quasi-static and dynamic conditions
- Improved system performance matched to plate performance reducing rehab requirements
- Operationally beneficially to typical site conditions through a wider tolerance to installation angle
- 30% improvement in point load strength and increased resistance to ring peeling and plate “pop off”
- Available in black or hot dip galvanized
- Installed with larger 73mm centraliser bush and standard Jennmar installation dollies and pull rings

| Property | Unit | Minimum Value | Typical Value |
|---------------------------|-----------------|---------------|---------------|
| Yield strength | kN | 120 | 160 |
| | MPa | 345 | 460 |
| Ultimate tensile strength | kN | 165 | 180 |
| | MPa | 445 | 510 |
| Cross sectional area | mm ² | - | 355 |
| Mass/meter | kg/m | - | 2.79 |
| Recommended hole size | mm | 43.5 - 45 | |

Rock Bolts

47mm Friction Lok Paste



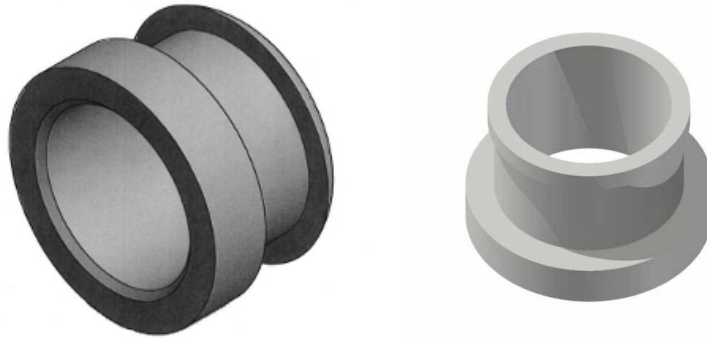
Features:

- Taperless Friction Lok designed for application with paste and backfill operation with contact along both the internal and external bolt surfaces
- Available in range of lengths up to 4m
- Available as plain or with hot dip galvanised corrosion protection

| Property | Unit | Minimum Value | Typical Value |
|---------------------------|-----------------|---------------|---------------|
| Yield strength | kN | 120 | 160 |
| | MPa | 345 | 460 |
| Ultimate tensile strength | kN | 165 | 180 |
| | MPa | 445 | 510 |
| Cross sectional area | mm ² | - | 355 |
| Mass/meter | kg/m | - | 2.79 |
| Recommended hole size | mm | 43.5 - 45 | |

Rock Bolt Accesories

Friction Bolt Pull Ring



Features:

- Jennmar have pull rings to fit;
 - Friction Lok Bolts
 - Mech Lok Bolts
 - Python Bolts
- Can be supplied plain or with hot dip galvanization corrosion protection
- Domed versions also available

| Friction Lok Size (mm) | Mass (kg) | Galvanised option available |
|------------------------|-----------|-----------------------------|
| 33 | 0.41 | Yes |
| 39 | 0.42 | Yes |
| 47 | 0.43 | Yes |

Rock Bolt Accesories

Friction Lok Airleg Dolly



Features:

- Designed for the installation of Friction Lok bolts with a range of hand held drills

| Drive Shank (mm) | Length (mm) | Drive (mm) |
|------------------|-------------|------------|
| 22 * 108 | 337 | 28 |

Rock Bolt Accesories

Friction Lok Combination Dolly



Features:

- Combination dolly used to install 39 and 47mm Friction Lok Bolts
- Available with a T38 or R38 thread

| Drive | Length (mm) | Drive (mm) |
|------------|-------------|------------|
| T38 or R38 | 175 | 30 |

Rock Bolt Accesories

Airleg Dolly 36AF



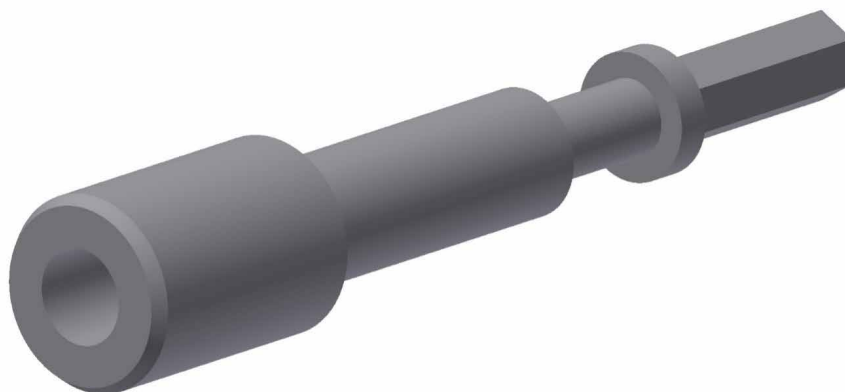
Features:

- Airleg dolly for installation of Jennmar bolts and nuts utilizing 36AF socket

| Drive | Length (mm) | Drive (mm) |
|----------|-------------|------------|
| 22mm hex | 300 | 36 hex |

Rock Bolt Accesories

Airleg Dolly To Suit J-Tech



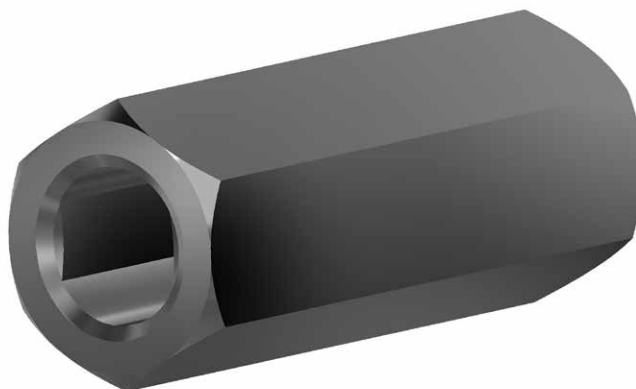
Features:

- Airleg Dolly with Oval socket designed for installation of 20mm J-Tech Bolts
- 25mm version also available

| Drive | Length (mm) | Drive (mm) |
|----------|-------------|------------|
| 22mm hex | 300 | 20 oval |
| 25mm hex | 300 | 23 oval |

Rock Bolt Accesories

J-Tech Airleg Spin Adaptor



Features:

- Airleg Dolly with Female 22mm extension socket for installation of 20mm J-Tech Bolts using the oval socket

| Socket (mm) | Length (mm) | Socket (mm) |
|-------------|-------------|-------------|
| 22 Hex | 100 | 20mm Oval |

Rock Bolt Accesories

Speed Rod



Features:

- Hardened steel, high quality for use with hex socket bolt adapters

| Drive (mm) | Length (mm) | Drive (mm) |
|------------|-------------|------------|
| T38 | 600 | T38 |

| Drive (mm) | Length (mm) | Drive (mm) |
|------------|-------------|------------|
| T45 Female | 600 | T38 Male |

Rock Bolt Accesories

Mech Lok Dolly



Features:

- 36AF dolly to suit T38 or R38 threads
- Compatible for use with speed rod

| Drive (mm) | Length (mm) | Socket (mm) |
|------------|-------------|-------------|
| T38 | 240 | 36 Hex |

Rock Bolt Accesories

Resin Bolt Dolly



Features:

- High quality, hardened, long lasting resin bolt 36AF driver
- Available for either "T" or "R" thread systems
- other lengths available on request

| Drive (mm) | Length (mm) | Socket (mm) |
|------------|-------------|-------------|
| T38 | 300 | 36 Hex |
| T38 | 750 | 36 Hex |
| T38 | 900 | 36 Hex |

Rock Bolt Accesories

Shear Pin Nuts



Features:

- Shear pin are designed to hold the nut onto the bolt and during installation prior to breaking out at a torque strength range allowing bolt tensioning
- Shear pins suitable for majority of bolts and thread types in Jennmar range with single and 2 piece washer-nuts
- Suitable for use with corrosion protection options
- Low torque options suitable for hand held installation
- Typical breakout torque dependent on thread type, further information and options available

| Colour | Typical Breakout Torque (ft/lb) | Typical Breakout Torque (Nm) |
|-----------|------------------------------------|---------------------------------|
| Red | 70 | 95 |
| Green | 110 | 150 |
| Black "C" | 180 | 245 |

Self Drilling Hollow Bolts And Accessories

Self Drilling Hollow Bolt



Features:

- Installation using J-Lok P resin, PUR and grout
- Installation suited for very poor and unstable ground
- Corrosion resistant coatings available
- Reliable self-drilling installation with single pass drilling and grouting installation
- Wide range of drill bit types and diameters to suit ground conditions and design requirements
- Wide range of hollow bar diameters and capacities
- Available in a range of standard lengths with variations available on request
- Ability to couple to required bolt lengths based on ground conditions and limited drilling area
- Continuous thread profile to enhance the ability of achieving better load transfer in varying ground conditions

Applications:

- Ground Anchor
- Slope Stabilisation
- Micropile
- Roof and Rib Bolts
- Tie Backs
- Injection Bolts
- Foundation
- Ground Stabilisation
- Forepoling

| Property | R25 | R32N | R32S | R38N | R38S | R51N | R51S |
|---|--------------------|------|------|------|------|------|------|
| Ultimate Tensile strength \geq (kN) | 200 | 280 | 360 | 500 | 550 | 550 | 800 |
| Yield strength \geq (kN) | 150 | 230 | 280 | 400 | 430 | 430 | 630 |
| Elongation \geq (%) | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| Average Outside Diameter (mm) | 25 | 32 | 32 | 38 | 38 | 51 | 51 |
| Hollow Bar Internal diameter (mm) | 12 | 19 | 17 | 22 | 18 | 36 | 31 |
| Cross sectional area (mm ²) | 299 | 376 | 446 | 631 | 764 | 783 | 1045 |
| Mass/meter (kg/m) | 2.35 | 2.95 | 3.5 | 4.95 | 6 | 6.15 | 8.2 |
| Thread Handing | LH | LH | LH | LH | LH | LH | LH |
| Available Lengths | 1m, 2m, 3m, 4m, 6m | | | | | | |

*Common sizes and capacities shown with other options available on request

Project based lengths available on request

*Available in Black or Galvanised

* Duplex Coating HDG and Epoxy available on request

*Other Lengths are available on Request

*"T" Thread Self Drilling Hollow bolts available on request

Self Drilling Hollow Bolts And Accessories

MPA Bolt



Features:

- The MPA Bolt is a high dynamic capacity hollow “self drilling bolt” for squeezing, dynamic, and quazi-static broken ground conditions
- The hollow bolt design with sacrificial anchoring drill bit allows in cycle rapid development or post grouting making it ideal for broken ground and speeding up rehabilitation jobs
- Smooth annealed sections allow for deformation and energy absorption of up to 40kJ with independent test reports available
- Range of drill bits available
- Compatible with cementitious and pumpable resin systems. Dynamic test results available with J-Lok P pumpable resin system
- Galvanised and PE corrosion protection coatings available

| Property | MPA R32 |
|-----------------------------------|-----------|
| Ultimate Tensile strength (kN) | 300 |
| Yield strength (kN) | 250 |
| Annealed Elongation (%) | 20 |
| Average Outside Diameter (mm) | 32 |
| Hollow Bar Internal diameter (mm) | 17 |
| Standard Lengths (m) | 2.4 & 3.0 |

Self Drilling Hollow Bolts And Accessories

Self Drilling Hollow Bolt Accessories

| DB SIZE | Drill Dia (mm) | Description/Application |
|---------|----------------|---|
| EX | | Hardened Cross Bit / Sands, Fills, Gravel |
| R25/42 | 42 | |
| R25/51 | 51 | |
| EXXC | | TC Cross Bit / Softer Sedimentary Rocks, Marls, Mudstone, Siltstone |
| R25/42 | 42 | |
| R25/51 | 51 | |
| ES | | Hardened Button Bit / Gravel, Soft Rock |
| R25/42 | 42 | |
| R25/51 | 51 | |
| ESSC | | TC Button Bit / Weathered Rock, Stone Walls, Rubble |
| R25/42 | 42 | |
| R25/51 | 51 | |
| EX | | Hardened Cross Bit / Sands, Fills, Gravel |
| R32/42 | 42 | |
| R32/51 | 51 | |
| R32/76 | 76 | |
| EXXC | | TC Cross Bit / Softer Sedimentary Rocks, Marls, Mudstone, Siltstone |
| R32/42 | 42 | |
| R32/51 | 51 | |
| R32/64 | 64 | |
| R32/76 | 76 | |
| ES | | Hardened Button Bit / Gravel, Soft Rock |
| R32/42 | 42 | |
| R32/51 | 51 | |
| R32/64 | 64 | |
| R32/76 | 76 | |
| ESSC | | TC Button Bit / Weathered Rock, Stone Walls, Rubble |
| R32/51 | 51 | |
| R32/64 | 64 | |
| R32/76 | 76 | |
| EX | | Hardened Cross Bit / Sands, Fills, Gravel |
| R38/76 | 76 | |
| R38/90 | 90 | |
| R38/100 | 100 | |
| EXXC | | TC Cross Bit / Softer Sedimentary Rocks, Marls, Mudstone, Siltstone |
| R38/76 | 76 | |
| R38/90 | 90 | |
| R38/100 | 100 | |
| R38/115 | 115 | |

Self Drilling Hollow Bolts And Accessories

Self Drilling Hollow Bolt Accessories

| DB SIZE | Drill Dia (mm) | Description/Application |
|---------|----------------|---|
| ES | | Hardened Button Bit / Gravel, Soft Rock |
| R38/76 | 76 | |
| R38/90 | 90 | |
| R38/115 | 115 | |
| ESSC | | TC Button Bit / Weathered Rock, Stone Walls, Rubble |
| R38/76 | 76 | |
| R38/90 | 90 | |
| R38/115 | 115 | |
| EX | | Hardened Cross Bit / Sands, Fills, Gravel |
| R51/90 | 90 | |
| R51/100 | 100 | |
| R51/115 | 115 | |
| R51/130 | 130 | |
| R51/150 | 150 | |
| EXXC | | TC Cross Bit / Softer Sedimentary Rocks, Marls, Mudstone, Siltstone |
| R51/90 | 90 | |
| R51/100 | 100 | |
| R51/115 | 115 | |
| R51/130 | 130 | |
| R51/150 | 150 | |
| ES | | Hardened Button Bit / Gravel, Soft Rock |
| R51/76 | 76 | |
| R51/100 | 100 | |
| R51/115 | 115 | |
| R51/130 | 130 | |
| ESSC | | TC Button Bit / Weathered Rock, Stone Walls, Rubble |
| R51/76 | 76 | |
| R51/100 | 100 | |
| R51/115 | 115 | |
| R51/130 | 130 | |
| R51/150 | 150 | |

*Common Drill bit types and sizes shown with alternative drill bits and sizes available on request to suit the application



Self Drilling Hollow Bolts And Accessories

Self Drilling Hollow Bolt Accessories

| Item | Hex Size (mm) | Length (mm) | Outside Diameter (mm) | Suit Plate Hole Size (mm) | Weight (kg) | Thread Handing |
|-------------------------|---------------|-------------|-----------------------|---------------------------|-------------|----------------|
| R25 Hex Nut | 41 | 35 | - | 30 | 0.23 | LH |
| R25 Dome Nut | 41 | 40 | - | 30 | 0.31 | LH |
| R25 Coupler | - | 150 | 36 | - | 0.68 | LH |
| R25 Centralizer (Steel) | - | 20 | 48 | - | 0.11 | - |
| R32 Hex Nut | 46 | 43 | - | 36 | 0.37 | LH |
| R32 Dome Nut | 46 | 45 | - | 36 | 0.38 | LH |
| R32N Coupler | - | 160 | 42 | - | 0.84 | LH |
| R32S Coupler | - | 190 | 42 | - | 1.0 | LH |
| R32 Centralizer (Steel) | - | 30 | 72 | - | 0.27 | - |
| R38 Hex Nut | 50 | 60 | - | 42 | 0.47 | LH |
| R38 Dome Nut | 52 | 60 | - | 42 | 0.61 | LH |
| R38N Coupler | - | 180 | 51 | - | 1.38 | LH |
| R38S Coupler | - | 200 | 51 | - | 1.55 | LH |
| R38 Centralizer (Steel) | - | 30 | 78 | - | 0.28 | - |
| R51 Hex Nut | 75 | 80 | - | 56 | 1.84 | LH |
| R51 Dome Nut | 75 | 80 | - | 56 | 1.82 | LH |
| R51N Coupler | - | 200 | 63 | - | 1.84 | LH |
| R51S Coupler | - | 220 | 63 | - | 2.0 | LH |
| R51 Centralizer (Steel) | - | 30 | 91 | - | 0.30 | - |

*The Mechanical Properties of the nuts and couplers shown are designed to meet the ultimate load of the SDHB

*Available in Black or Galvanised

* Duplex Coating HDG and Epoxy available on request

*PVC Centralizers available on request

Conformance Certificates provided for all products



CABLE BOLTS & ACCESSORIES



Cable Bolts

15.2mm Cable Reels & Bolts



Features:

- Lowest cost to capacity cable bolt configurations for the hard rock mining industry
- Multiple options and configurations can be manufactured with the stress relieved, low relaxation 7 strand cable to suit ground conditions and support requirements
 - Cut to length
 - Premade with fish-hooks, grout and breather tube
 - Mechanized reels for cable bolting rigs
- Cables are coiled for transport efficiency
- Bulbing configurations up to 6 bulbs per metre available for maximum bond strength with the grout and rock
- Number of tails protruding can vary for each configuration
- Can be used in either top-down or bottom-up cementitious grouting applications

| Property | Unit | Minimum Value per strand | Typical Value per strand |
|---------------------------|-----------------|--------------------------|--------------------------|
| Strand diameter | mm | - | 15.2 |
| Yield strength | kN | 212 | 250 |
| Ultimate tensile strength | kN | 250 | 265 |
| Elongation | % | 3.5% | 6.5% |
| Cross sectional area | mm ² | - | 143 |
| Mass/meter | kg/m | - | 1.13 |

| Bulbed Option | | | |
|----------------------|----|---|-------|
| Bulb diameter | mm | - | 23-27 |
| Minimum Bulb Spacing | mm | - | 180 |

Cable Bolts

Secta® Dynamic Cable Reel & Bolt



Features:

- Manufactured from high strength, stress relieved, low relation 7 strand wire, the Secta Dynamic cable is available in a number of configurations from reels to precut lengths
- Dynamic testing with varying grout quality up to 40kJ input energy
- Available as plain or hot dip galvanised for corrosion protection
- Compatible with yield tube device to increase displacement capacity and domed barrel and wedge

| Property | Unit | Minimum Value per strand | Typical Value per strand |
|---------------------------|-----------------|--------------------------|--------------------------|
| Strand diameter | mm | - | 17.8 |
| Yield strength | kN | 280 | 330 |
| Ultimate tensile strength | kN | 350 | 370 |
| Elongation | % | 3.5% | 6% |
| Cross sectional area | mm ² | - | 208.4 |
| Mass/meter | kg/m | - | 1.65 |

| Bulbed Option | | | |
|----------------------|----|---|-------|
| Bulb diameter | mm | - | 32-38 |
| Minimum Bulb Spacing | mm | - | 180 |

Cable Bolts

Superstrand Cable Bolt



Features:

- Flexible and easy to handle even around the tight working areas of bolting rigs
- Plain SuperStrand of any length can be readily installed with hand bolters as point anchored, pre-tensioned support
- The 4m SuperStrand can be “fully encapsulated” with resin installed alongside primary support at the face. Installation time between 6 – 8 minutes
- Special “through-the-chuck” drill motors allow full resin encapsulation of SuperStrands up to 8m in length

| Property | Minimum Value |
|--|---------------|
| Strand diameter (mm) | 21.8 |
| Number wires | 19 |
| Wire type | smooth |
| Steel area (mm ²) | 313 |
| Mass (kg/m) | 2.5 |
| Typical yield strength (kN) | 525 |
| Typical Ultimate tensile strength (kN) | 590 |
| Breaking load with barrel & wedge/ ToTo (kN) | 510 |
| Elongation % | 5 - 7 |

ToTo Device

| Diameter (mm) | Length (mm) | Torque:Tension Ratio (Nm: tonnes) |
|---------------|-------------|-----------------------------------|
| 70 | 150 | 40:1 |

Cable Bolts

70T 10 Wire Hollow Cable Bolt



Features:

- 70 tonne capacity, 10 wires
- Smooth wires for improved strength against shearing
- Standard 31mm diameter and hex drive to suit existing cable bolt accessories i.e. dollies, tensioners and grout lances
- Birdcaged along entire length for maximum load transfer
- Point anchored with J-LOK "Post-Grout" resin capsules, specifically designed for mixing in larger drill holes
- Top-down grouted using thixotropic grout
- Plated with new higher capacity 12mm thick volcano plates with grout indicator slots. Available in 200x200mm and 300x300mm sizes.
- Plates available for trussing
- Lengths available up to 10m

| Property | Min Value |
|--|-----------|
| Strand diameter (mm) | 31 |
| Number wires | 10 |
| Wire type | smooth |
| Bulb diameter (mm) | 36 |
| Bulb spacing (mm) | 500 |
| Steel area (mm ²) | 385 |
| Mass (kg/m) | 3.5 |
| Typical yield strength (kN) | 640 |
| Typical Ultimate tensile strength (kN) | 705 |
| Breaking load with barrel & wedge (kN) | 640 |
| Elongation % | 5 - 7 |

Cable Bolts Accessories

Yield Tube



The patented Yield Tube provides proven dynamic and quazi-static capacity when used with cable and rockbolts. High and consistent collapse loads and easy installation, make the Yield Tube a great "simple go to" solution.

Features:

- Yield Tube available for 15.2mm, 17.8mm and 21.8mm cables and JENNMAR cable bolts
- Dynamic tested with cables, confirmed to increase dynamic capacity by 10kJ
- Supplied separately and easily installed, without changing current installation processes
- Allows improved application in squeezing ground
- Anti-corrosion coating available on request

Cable Bolts Accessories

Cable Bolt Barrel & Wedges



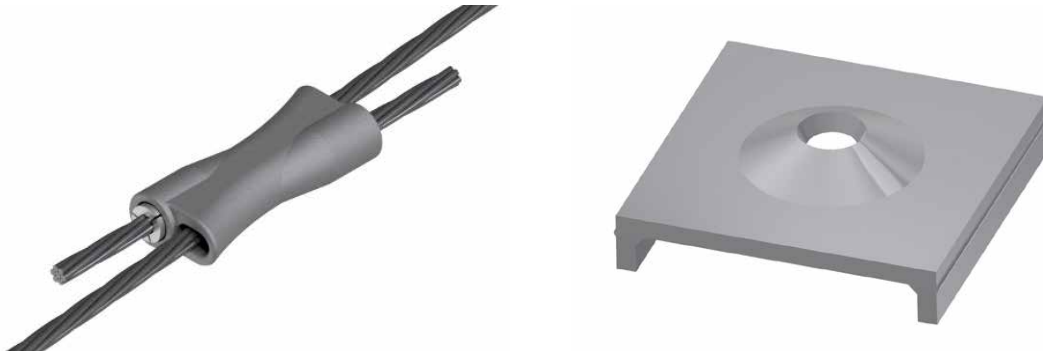
Features:

- Designed for Jennmar 15.2mm to 31mm cable range including twin, triple strand tendons and trusses,
- Flat barrels & wedges are used with flat plates
- Dome barrels & wedges are used with volcano plates
- All barrels & wedges to be pretensioned to a minimum 8 tonnes to ensure the wedge teeth penetrate the strand to achieve maximum load capacity
- All barrels & wedges have an oil film coating and are pre-packaged in strong 4 litre buckets for corrosion protection
- Other corrosion protection options available

| Type | Cable Diameter (mm) | Length (mm) | Diameter (mm) | Qty/Bucket |
|-------|---------------------|-------------|---------------|------------|
| Flat | 15.2 | 44 | 42 | 20 |
| Domed | 15.2 | 44 | 42 | 20 |
| Flat | 17.8 | 57 | 50 | 10 |
| Domed | 22 | 60 | 58 | 10 |
| Domed | 31 | 74 | 70 | 5 |

Cable Bolts Accessories

15.2mm Cable Truss With Splice Tube



Features:

- Designed for ease of use joining truss tails
- All barrels & wedges to be pretensioned to a minimum 8 tonnes to ensure the wedge teeth penetrate the strand to achieve maximum load capacity
- Suit 15.2mm or 18mm Twin and Triple Strand Trusses
- Curvature of the outlet minimizes stress concentration of the cable at the bend
- Less wastage compared to traditional tension blocks

| Length (mm) | Width (mm) | Unit Weight (kg) | Qty/Bucket |
|-------------|------------|------------------|------------|
| 200 | 95 | 3.8 | 5 |

Cable Bolts Accessories

Grout Guns



Features:

- Pressure rated quick connection to poly grouting hose
- Easy to use even with heavy rubber grouting gloves
- Colour coded to suit the grout hose colour

| Suit Tube Diameter (mm) | Colour code | Rated Working Pressure (Bar) | Length (mm) | Unit Mass (kg) |
|-------------------------|-------------|------------------------------|-------------|----------------|
| 16 | Red | 34.5 | 340 | 1.4 |
| 20 | Yellow | 34.5 | 340 | 1.4 |

Cable Bolts Accessories

Grout And Breather Tube



Features:

- Pressure rated
- Available in rolls or cut to length
- Colour coded diameters for easy identification

| Part Number | Tube O.D. (mm) | Tube I.D. (mm) | Pressure rating | Mass (kg/m) | Length per roll |
|-------------|----------------|----------------|-----------------|-------------|-----------------|
| TUBE16GR | 16 | 12.5 | PN16 | 0.07 | 300 |
| TUBE20GR | 20 | 16 | PN16 | 0.11 | 300 |

Cable Bolts Accessories

Breather Tube



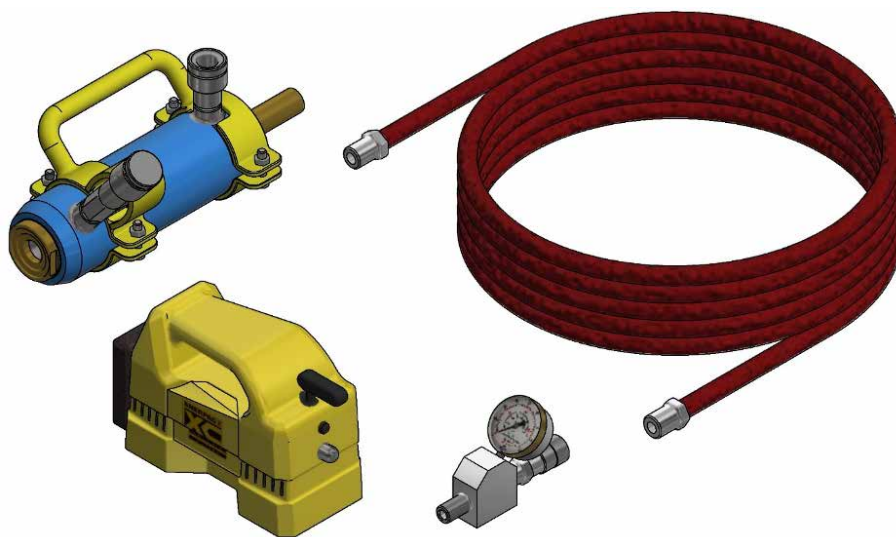
Features:

- Available in rolls or cut to length

| Tube O.D. (mm) | Tube I.D. (mm) | Length per roll | Colour |
|----------------|----------------|-----------------|--------|
| 5 | 3 | 200 | Yellow |
| 13 | 9 | 100 | White |

Cable Bolts Accessories

10T Tensioner – 15.2mm Cable



Features:

- Portable stand alone 10T Cable Tensioner for 15.2mm cable systems
- Changeable battery operation with no air hose required
- Customizable hose length

| Tensioning Capacity (kN) | Max. Operating Pressure (Bar) | Stroke (mm) | Mass (kg) | Min. strand length required (mm) |
|--------------------------|-------------------------------|-------------|-----------|----------------------------------|
| 98 | 550 | 150 | 10 | 150 |

Cable Bolts Accessories

30T Tensioners



Features:

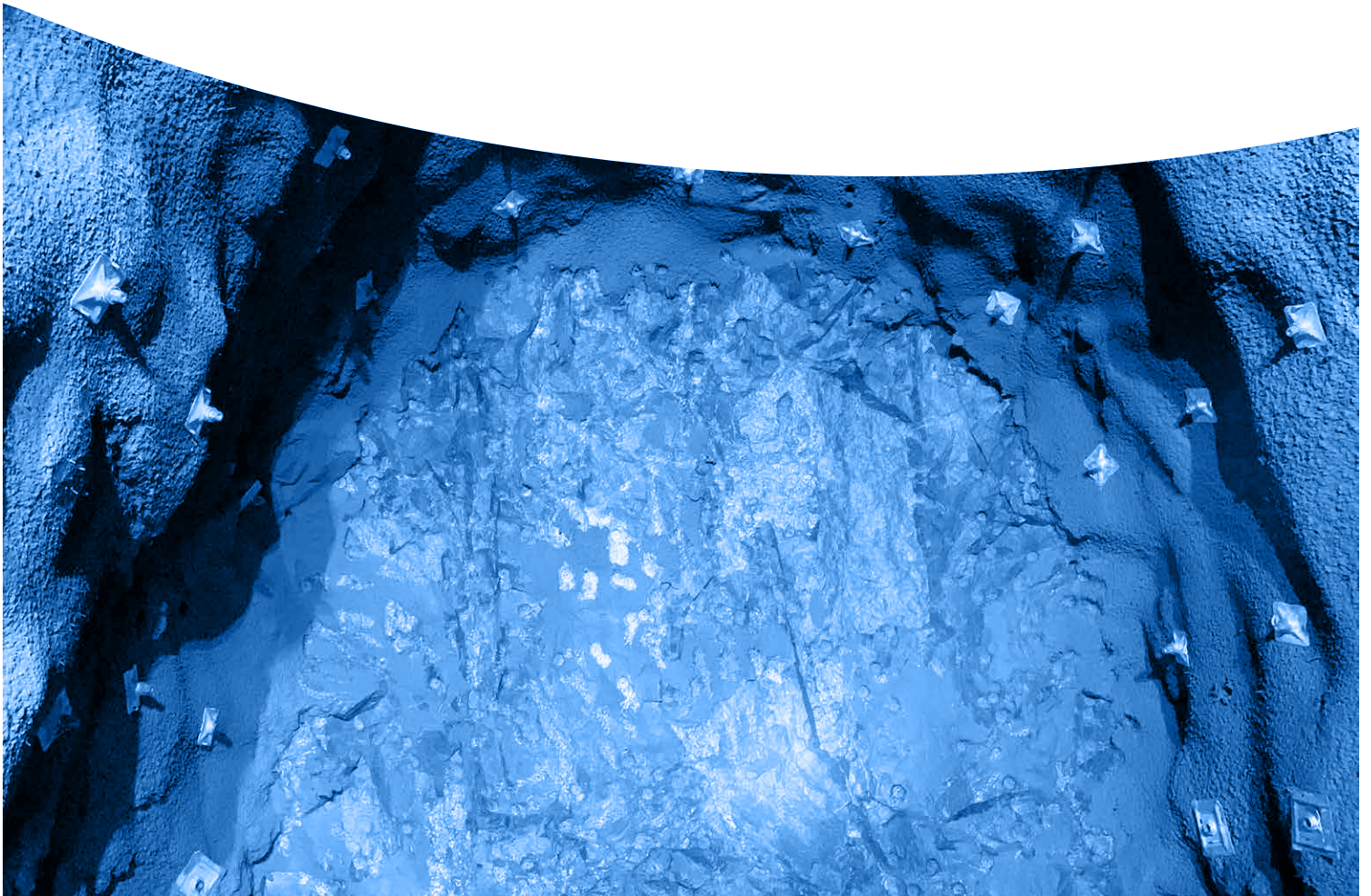
- 30 tonne cable bolt tensioner
- MDG41 specification
- Light weight
- Low operating pressure (370 Bar)
- Double acting to release tensioner off the cable under hydraulic power
- Patented design has engineered out possible pressure intensification within the double acting cylinder by having equal advance and retract ram areas
- Patented design used special high capacity wedge setting springs to minimize tensioning bleed-off while maintaining a short tail on the cable bolts

Features:

- Designed for 31mm Hollow, Goliath, Sumo, and SuperStrand Cables and can be used adapted for Secta and 15.2mm cables
- Can be connected to hydraulic equipment, air, or portable air /hydraulic power packs

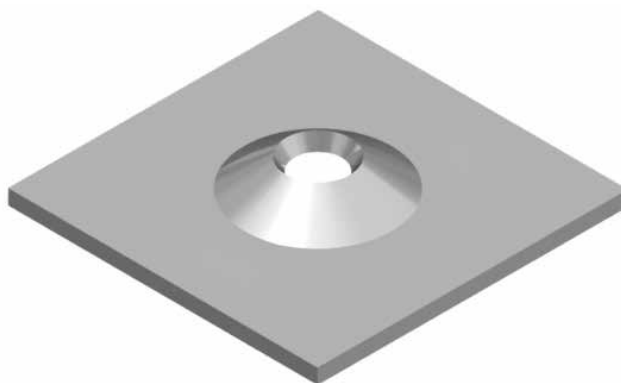
| Tensioning Capacity (kN) | Max. Operating Pressure (Bar) | Ram Area (cm2) | Stroke (mm) | Weight (kg) | Min. strand length required (mm) |
|--------------------------|-------------------------------|----------------|-------------|-------------|----------------------------------|
| 294 | 370 | 79.9 | 87 | 14 | 100 |

PLATES



Plates

Cable Bolt Volcano Plate



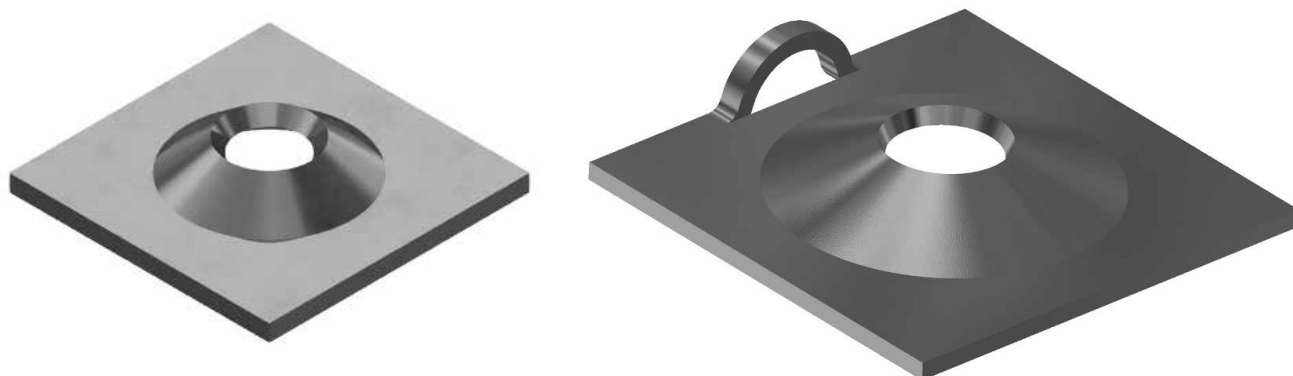
Features:

- Designed for used with domed barrel and wedge for better alignment with non-axial installation
- Optional grout indicator slots
- Available as plain or with hot dip galvanised corrosion protection
- Other plate thickness of 12, 14mm also available

| Square dimension (mm) | Thickness (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Mass (kg) | Standard pack |
|-----------------------|----------------|--------------------|----------------------------|-----------|---------------|
| 200 x 200 | 10 | 30 | 200 | 1.76 | 500/pallet |

Plates

Rock Bolt Volcano Plate



Features:

- Dome profile allows for 18° angles of alignment when installing the rock bolt with a domed ball washer
- Can be supplied with a "hanger" slot
- Available as "rumbled" to take off sharp edges

| Square dimension (mm) | Thickness (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Minimum Pull Through load (kN) | Mass (kg) | Standard pack |
|-----------------------|----------------|--------------------|----------------------------|--------------------------------|-----------|---------------|
| 150 x 150 | 6 | 36 | 120 | 294 | 1.1 | 980 |
| 150 x 150 | 10 | 36 | 216 | 294 | 1.76 | 980/pallet |

Plates

Combination Volcano Plate – Mech Lok



Features:

- A combination of 2 plates for load bearing capacity over a larger surface area
- User friendly “rumbled”, rounded and smoothed edges
- Available as plain or with hot dip galvanised corrosion protection

| Plate Type | Dimension (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|------------|----------------|--------------------|----------------------------|---------------|
| Volcano | 150 x 150 x 4 | 50 | 220 | 250/pallet |
| Butterfly | 300 x 280 | 50 | | |

Plates

Combination Volcano Plate



Features:

- A combination of 2 plates for load bearing capacity over a larger surface area
- User friendly "rumbled", rounded and smoothed edges
- Optional 50kg WLL hanger slot
- Available as plain or with hot dip galvanised corrosion protection

| Plate Type | Dimension (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|------------|----------------|--------------------|----------------------------|---------------|
| Volcano | 150 x 150 x 4 | 36 | 220 | 250/pallet |
| Butterfly | 300 x 280 | 50 | | |

Plates

Combination Volcano Plate



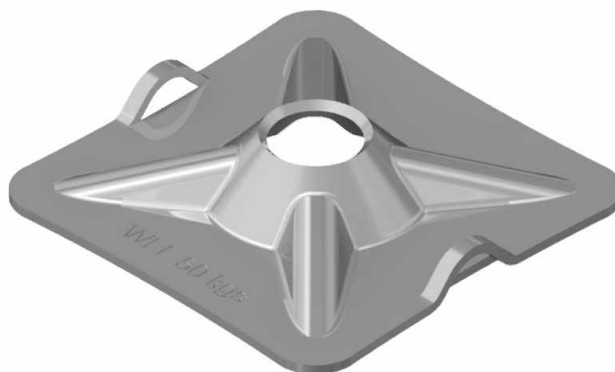
Features:

- A combination of 2 plates for load bearing capacity over a larger surface area
- User friendly "rumbled", rounded and smoothed edges
- Available as plain or with hot dip galvanised corrosion protection

| Plate Type | Dimension (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|------------|----------------|--------------------|----------------------------|---------------|
| Volcano | 150 x 150 x 4 | 36 | 120 | 250/pallet |
| Butterfly | 300 x 280 | 50 | | |

Plates

Kanga Plate



Features:

- High load bearing characteristics
- Light weight and rounded corners
- Lesser tendency to cut mesh upon loading
- Varying combination plate applications available
- Load rated hanger slot with 50kg WLL
- Available as plain or with hot dip galvanised corrosion protection

| Square dimension (mm) | Thickness (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|-----------------------|----------------|--------------------|----------------------------|---------------|
| 150 x 150 | 5 | 41 | 205 | 980/pallet |
| 200 x 200 | 5 | 42 | 205 | 500/pallet |
| 200 x 200 | 5 | 50 | 205 | 500/pallet |

Plates

Combination Kanga Plate



Features:

- A combination of 2 plates for load bearing capacity over a larger surface area
- User friendly "rumbled", rounded and smoothed edges
- 50kg WLL hanger slot
- Available as plain or with hot dip galvanised corrosion protection

| Plate Type | Dimension (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|------------|----------------|--------------------|----------------------------|---------------|
| Kanga | 150 x 150 x 4 | 41 | 205 | 250/pallet |
| Butterfly | 300 x 280 | 50 | | |

Plates

Combination Roll Top Plate



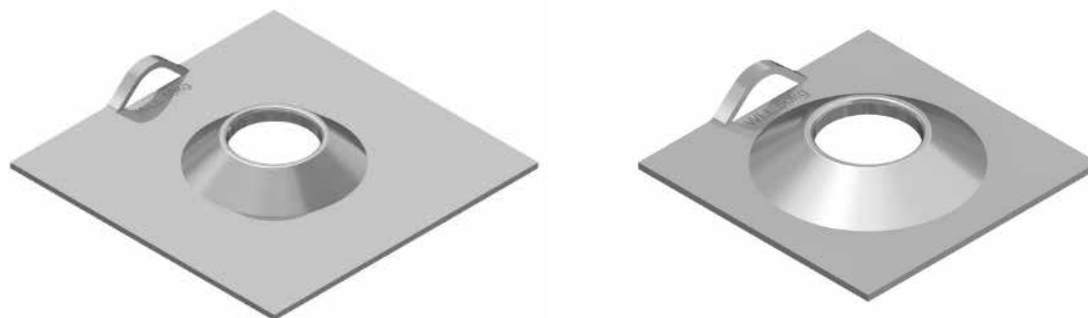
Features:

- A combination of 2 plates for load bearing capacity over a larger surface area
- User friendly "rumbled", rounded and smoothed edges
- 50kg WLL hanger slot
- Available as plain or with hot dip galvanised corrosion protection
- Same single plate compatible for Jennmar 39mm and 47mm Friction Loks

| Plate Type | Dimension (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|------------|----------------|--------------------|----------------------------|---------------|
| Roll Top | 150 x 150 x 4 | 50 | 100 | 250/pallet |
| Butterfly | 300 x 280 | 50 | | |

Plates

Roll Top Plate



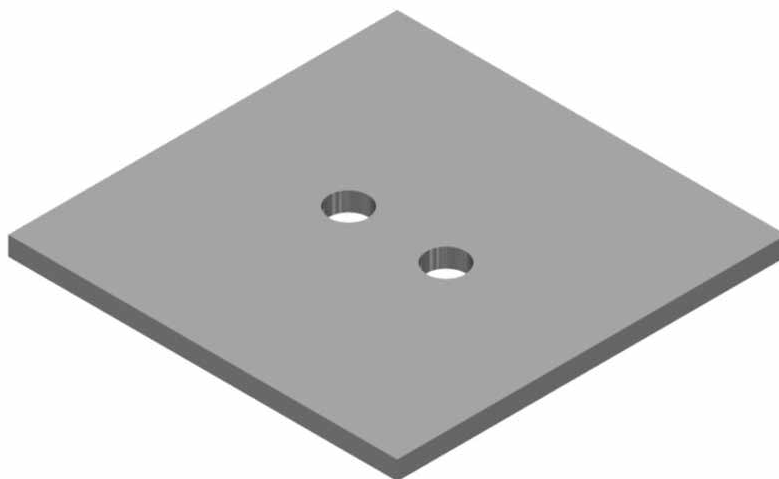
Features:

- Same single plate compatible for Jennmar 39mm and 47mm Friction Loks
- User friendly "rumbled", rounded and smoothed edges
- Available as plain or with hot dip galvanised corrosion protection

| Square dimension (mm) | Thickness (mm) | Hole diameter (mm) | Minimum Collapse load (kN) | Standard pack |
|-----------------------|----------------|--------------------|----------------------------|---------------|
| 150 x 150 | 4 | 50 | 100 | 980/pallet |
| 200 x 200 | 4 | 50 | 100 | 500/pallet |

Plates

Flat Plate



Features:

- Can be supplied “rumbled” to take off edges. Unless specified, plates are supplied un-rumbled
- Used predominately with 15.2mm cable bolts can be supplied with 2 holes for cable bolting and grout tube application
- 200 x 200mm plates are often used on single tail twin-strand cable bolts with a flat barrel and wedge. Can be used in conjunction with a pizza pan
- Available as black or hot dipped galvanised
- Other plate thickness of 12, 14mm also available

| Dimension (mm) | Thickness (mm) | Hole diameter (mm) | Mass (kg) | Standard pack |
|----------------|----------------|--------------------|-----------|---------------|
| 200 x 200 | 10 | 20 | 3.2 | 250 |

Plates

Mesh Plate

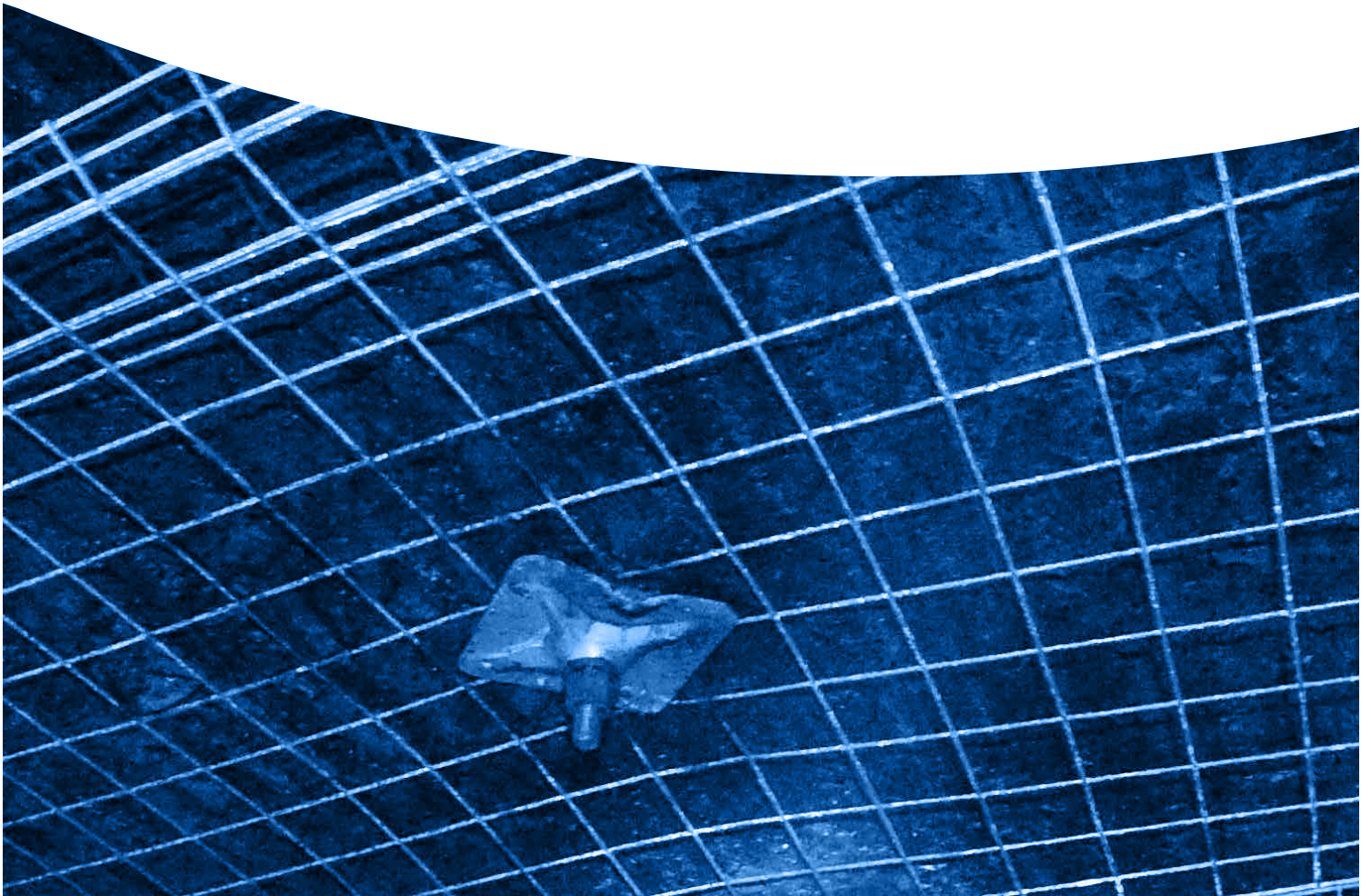


Features:

- For pinning mesh against the rock face over top of pre-installed rock bolts
- Welded nut of any size to thread onto existing installed rock bolts
- 200mm round plate to aid spinning the plate against mesh, no corners to catch in the wires
- Extruded height to accommodate the standard tail length of an installed bolt, allowing the mesh to be pushed tight against the rock face
- 3mm thick plate for extra strength
- Good for pinning rock fall netting over installed dynamic ground support

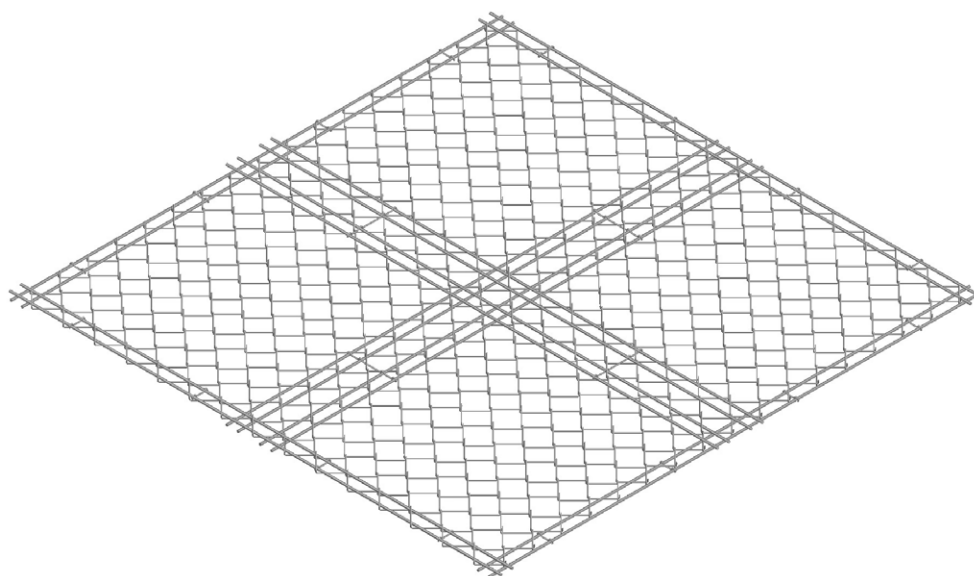
| Nut | Diameter (mm) |
|-------------|---------------|
| 20mm J-Tech | 200 |
| 25mm J-Tech | 200 |

MESH



Mesh

ST Mesh

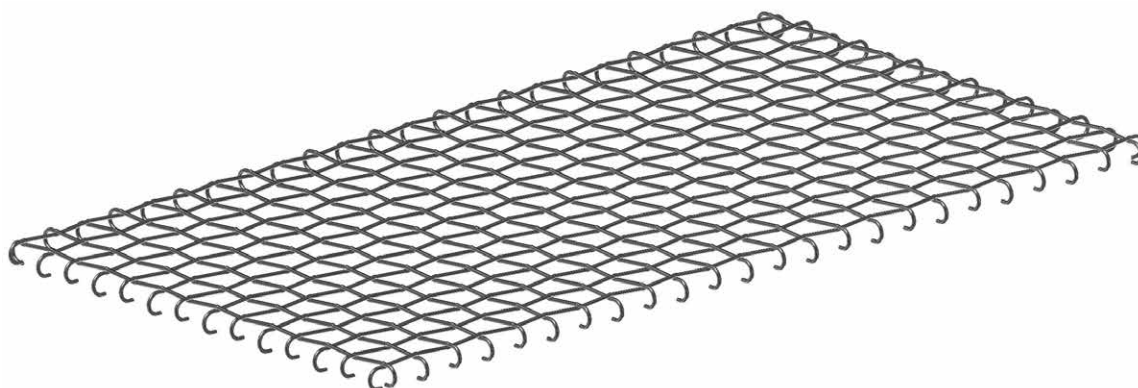


- High strength woven mesh designed to minimize displacement and provide ground support system solutions
- 10mm bolt reinforcing wires with 5mm chain link wire
- Designed for long term support in extreme conditions such as draw points
- 200kN capacity at less than 300mm displacement
- Easy Installation from standard bolting machines
- Available as plain or with hot dip galvanised corrosion protection

| Property | Unit | Typical Value |
|---------------|------|---------------|
| Aperture | mm | 100 |
| Load Capacity | kN | 230 |
| Module Size | mm | 2200 x 2200 |
| Module Mass | kg | 65 |

Mesh

Woven Mesh

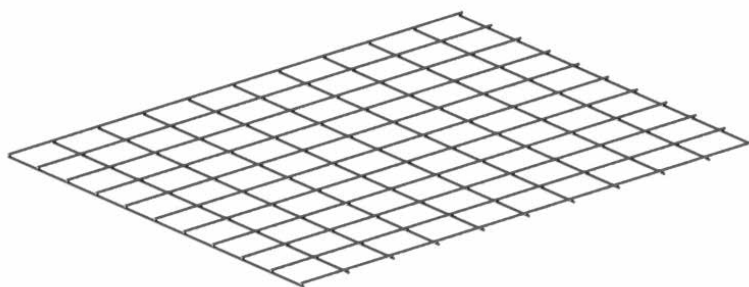


- High strength woven mesh designed to minimize displacement and provide ground support system solutions
- Designed for long term support in extreme conditions such as draw points
- 200kN capacity at less than 300mm displacement
- Easy Installation from standard bolting machines
- Modular panels allowing multiple sheet installation together utilizing hooked design
- Available as plain or with hot dip galvanised corrosion protection

| Property | Unit | Typical Value |
|---------------|------|---------------|
| Wire Diameter | mm | 10 |
| Aperture | mm | 100 |
| Load Capacity | kN | 230 |
| Module Size | mm | 1500 x 2400 |
| Module Mass | kg | 43 |

Mesh

Mine Mesh



Features:

- Trimmed edges to ensure there is a limited overhang of wire to cause injury when handling
- Weld tests completed on all welders over continuous runs
- Weld strength to be greater than 75% of the wire UTS
- Typical wire spacing of 100mm
- Wire diameters, spacing and overall dimensions can be customised to suit particular applications
- Customised paint lines along the modules to suit roof bolt patterns
- Available as strap from 4mm to 8mm diameters
- Custom high strength or seismic sheets available with double or additional wires if requested
- Available as plain or with galvanised corrosion protection

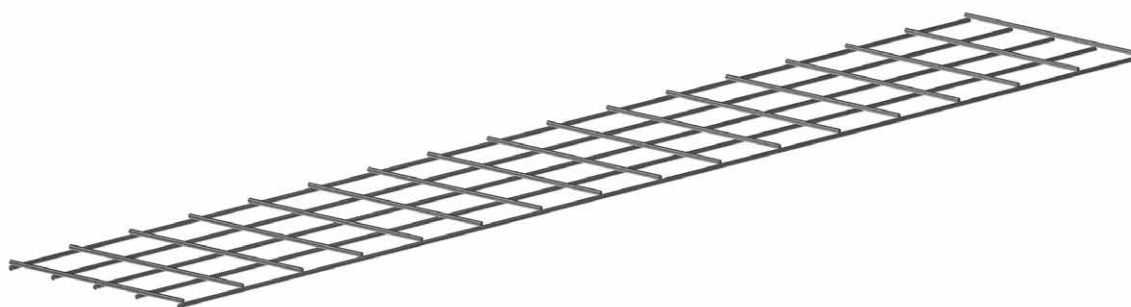
Packaging:

- Steel or plastic strapping
- Bundle sizes to suit the customer

| Wire diameter (mm) | Weld Strength (kN) |
|--------------------|---------------------------|
| 4 | 4.7 |
| 5 | 7.5 |
| 5.6 | 9.4 |
| | |
| Wire Grade | AS4671:2001 - Grade 500L |
| Galvanising | AS 2423:2001 W02Z >80g/m2 |

Mesh

Mesh Strap



Features:

- Typically flat sheets if larger wire diameter and dimensions suitable for wall support
- Wire diameters, spacing and overall dimensions can be customised to suit particular applications such as mesh arches.
- Customised paint lines along the modules to suit bolt patterns

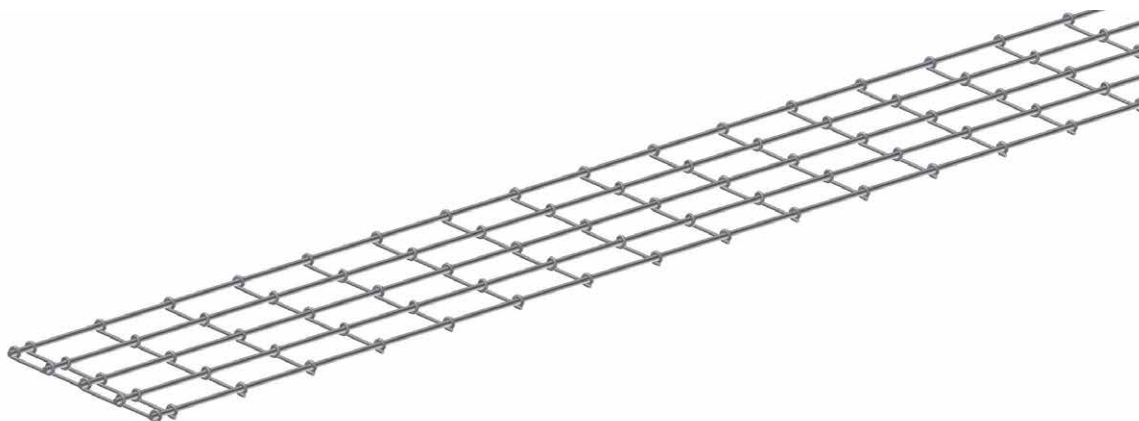
Packaging:

- Steel or plastic strapping
- Bundle sizes to suit the customer

| Wire diameter (mm) | Weld Strength (kN) |
|--------------------|---------------------------|
| 4 | 4.7 |
| 5 | 7.5 |
| 5.6 | 9.4 |
| 7 | 14.4 |
| 8 | 18.9 |
| 10 | 29.5 |
| | |
| Wire Grade | AS4671:2001 - Grade 500L |
| Galvanising | AS 2423:2001 W02Z >80g/m2 |

Mesh

Ausro Strap



Features:

- High energy absorbing design
- Allows for movement without weakening the integral mesh strength
- Pig tail cross wire design allows for load distribution over multiple bolts
- Corrosion protection options available

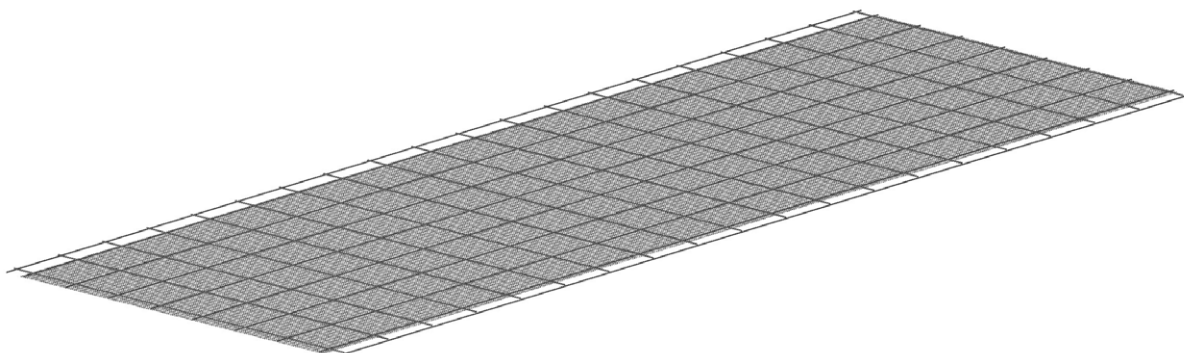
Packaging:

- Widths 300 to 600mm
- Black or galvanized finish

| Wire Direction | Wire diameter (mm) |
|----------------|---------------------------|
| Longitudinal | 10 |
| Cross | 6.3 |
| | |
| Wire Grade | AS4671:2001 - Grade 500L |
| Galvanising | AS 2423:2001 W02Z >80g/m2 |

Mesh

Shotcrete Mesh



Features:

- Suitable for spraying shotcrete over
- Allows faster and more efficient underground construction of walls and barriers
- Avoids the need for using hessian screens
- Can be easily folded and maneuvered

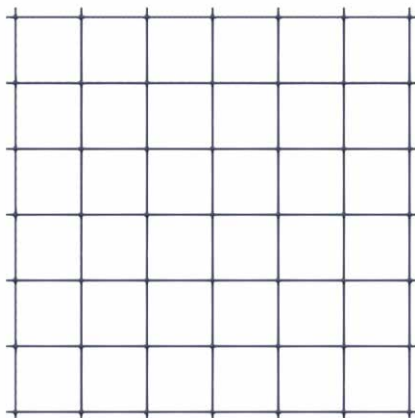
Packaging:

- Black or galvanized finish

| Wire diameter (mm) | Sheet Dimensions (m) | Mass per sheet (kg) |
|--------------------|----------------------|---------------------|
| 4 | 1.17 x 3.00 | 5.6 |

Mesh

Fibreglass Mesh



Features:

- Available in custom rigid flat sheets
- Commonly used for surface support that will later be required to be cut
- Corrosion resistant

| Rod Diameter (mm) | Breaking load of rod (kN) | Load at knot (kN) | Aperture (mm) |
|-------------------|---------------------------|-------------------|---------------|
| 4 | 12.5 | 2 - 3 | 100 x 100 |
| 6 | 28 | 3 - 5 | 100 x 100 |

Available in flat sheets to custom dimensions

Mesh

Spiderweb Mesh



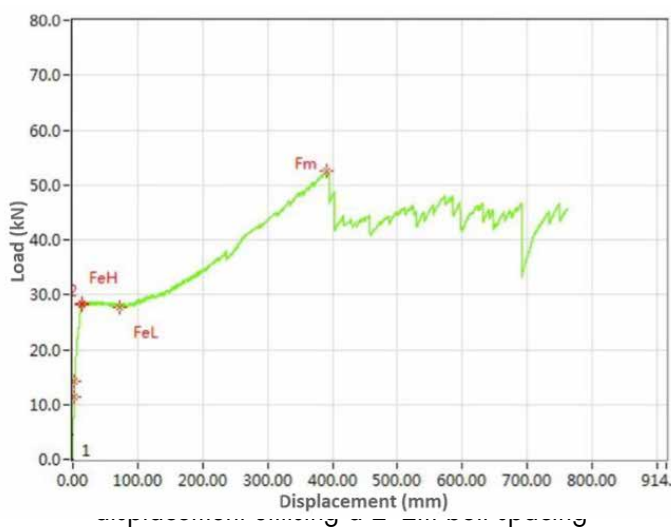
SpiderWeb Mesh is a high strength polyester geofabric designed for reduced manual handling and easy installation with existing mining equipment. The module conforms well to rock undulation and provides alternative support to welded steel mesh in extreme mining conditions.

SpiderWeb Mesh Technical Data:

| Tensile Strength (kN/m) | Elongation at Yield % (mm) | Aperture (mm) | Roll Dimensions (m) |
|-------------------------|----------------------------|---------------|---------------------|
| 100 | 13 | 100 x 100 | 100 x 5.2 |

FRAS to MT141-2005

Available in flat sheets cut to custom dimensions

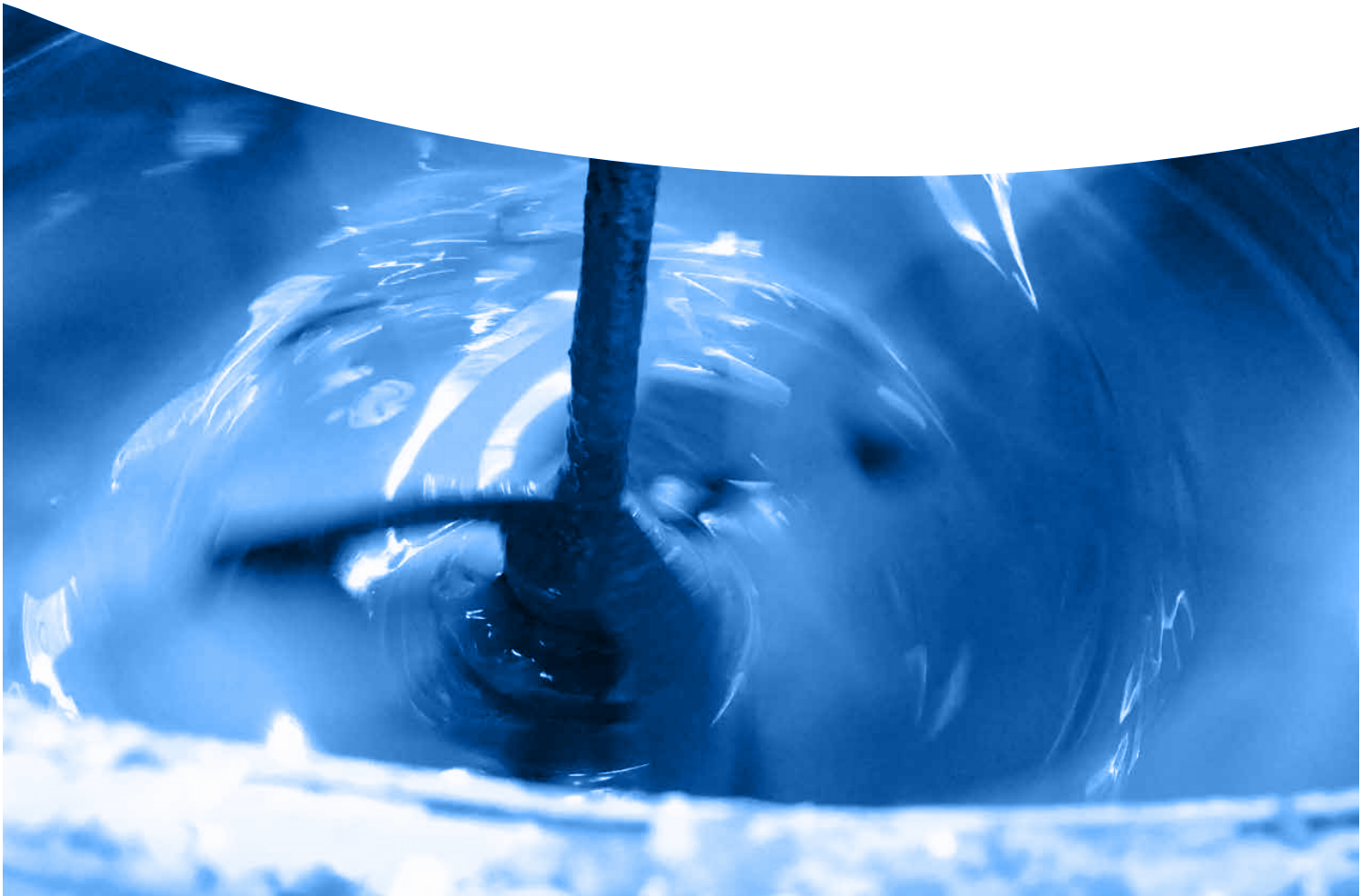


Features:

- High capacity and lightweight mesh module
- Displacement minimised to below 400mm when nearing ultimate loads using 2m x 2m bolt spacing
- Load capacity - Minimum 38kN
- Load capacity - Typically 50kN
- User-friendly cuttable design and packaging
- Lightweight - approximately 0.5kg/m²
- Mesh Roll - 100M X 5.2M, 100X100MM apertures.
- Non Metallic - Suitable for Shaft Lining
- Can be tailor-made to suit various or desired roll lengths eg 4.5m x 5.5m sheets



GROUTS



Grouts

Bottom-Up 100 MPa Grout

Bottom-Up-100 is a pumpable cementitious grout for use as a bonding agent between a reinforcing member and the borehole wall in ground support systems. The product is packaged in durable water proof 20 kg bags for use in remote and harsh underground mining environments. The product is designed to minimise the risk of hard lumps entering pumping injection systems, which in turn minimises hazardous pressurisation and blockages.

Features:

- High strength 100 MPa cable bolt grout for "bottom-up" grouting
- Ready to use, mix with water and pump
- Excellent pumpability
- Non shrink, unique expansion system compensates for shrinkage
- Typically used with Bowen cables, 15.2mm triple/twin-strand cable bolts and trusses

Packaging:

- Durable water proof 20kg bags for use in remote and harsh underground mining environments
- 56 bags per pallet, 1.2 tonne per pallet



| Uniaxial Compressive Strength* (MPa) | | | |
|--------------------------------------|-------|--------|-----------|
| | 1 DAY | 7 DAYS | 28 DAYS** |
| 5 litres/bag | 60 | 100 | 105 |
| 6 litres/bag | 55 | 90 | 100 |

*UCS independent test results were obtained using 50 x 50mm cubes

**28 day strength may vary between 85 MPa and 105 MPa depending on water content and testing methods utilised

Estimated yield 12 – 13 litres of grout at 5 – 6 litres of water per bag

| | |
|-------------------|------------------------|
| Water : Grout Mix | 5 - 6 litres per bag |
| Estimated Yield | 12 - 13 litres per bag |

Specialty Grouts and Cements

Top-Down 80 Plus Grout

Top-Down-80PLUS is a pumpable cementitious grout for use as a bonding agent between a reinforcing member and the borehole wall in ground support systems. The product is specifically suited for long distance pumping up to 100 metres. TD80PLUS grout is packaged in durable water proof 20 kg bags for use in remote and harsh underground mining environments. The product is designed to minimise the risk of hard lumps entering pumping injection systems, which in turn minimises hazardous pressurisation and blockages.

Features:

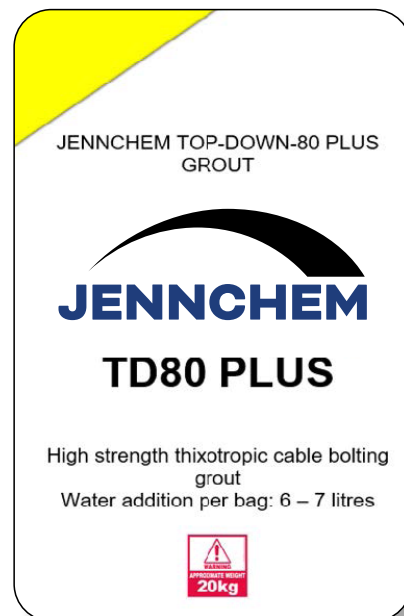
- Highly thixotropic to enable top-down grouting
- High strength – 80 Mpa
- Excellent pumpability. Longer pumping distances achieved, up to 100 metres
- Shrinkage compensation maintains full grout contact between the ground support and borehole wall

Application:

- A high shear mechanical mixer is required
- Typical pump pressure requirement 500psi
- Maximum pumping distance 100m through a 25mm hose

Packaging:

- Durable water proof 20kg bags for use in remote and harsh underground mining environments
- 56 bags per pallet, 1.2 tonne per pallet



| Uniaxial Compressive Strength* (MPa) | | | |
|--------------------------------------|-------|--------|-----------|
| | 1 DAY | 7 DAYS | 28 DAYS** |
| 6 litres/bag | 43 | 77 | 89 |
| 7 litres/bag | 33 | 63 | 80 |

*UCS independent test results were obtained using 50 x 50mm cubes

** 28 day strength may vary between 70 MPa and 90 MPa depending on water content and testing method utilised

| | |
|-------------------|------------------------|
| Water : Grout Mix | 6 - 7 litres per bag |
| Estimated Yield | 13 - 14 litres per bag |
| Fresh Wet Density | 2000 kg/m ³ |
| Set Time | 7 hrs |
| Expansion | 1-3% |

Grouts

Jennchem J-URR Grout

Jennchems Underground Roadway Repair “J-URR” is a specially formulated fast setting concrete designed for rehabilitating underground roadways and filling mud holes the mining and tunneling industries.

Features:

- Designed specifically for demanding applications where quick return to service is required, or where traditional concrete mixing equipment is unavailable or impractical
- Formulated to absorb water and gain strength rapidly with no mixing
- Simple application with minimal dust generation

Packaging:

- 1 Tonne bulk bags
- 20kg bags

| Foot Traffic | Light Duty Traffic (Utes) | Heavy duty Traffic (Jumbo & Drills) | Extreme Duty Traffic (Trucks) |
|--------------|---------------------------|-------------------------------------|-------------------------------|
| 10 Minutes | 30 Minutes | 4 hours | 8 hours |

Estimated yield approximately 15 litres per 20kg bag

Specialty Grouts and Cements

J-Fill Grout

Jennchem J-FILL is a pumpable cementitious grout for use in ventilation devices and void filling applications for ground control in underground mining. Jennchem J-Fill has a high volume output which means that significantly less material is required to be mixed with water compared to conventional grouts.

Features:

- High volume output, typically 340 – 440kg produces 1 cubic metre of grout
- Non-shrink
- Low alkali, safe to handle
- Rapid gelling for ease of placement
- Yields to ground movement
- Consult Jennchem personnel for installation instructions

Application:

- A continuous placer pump is required. Consult Jennchem personnel for installation instructions

Packaging:

- 20kg plastic bags (56 per pallet)
- 1 tonne bulk bags



Uniaxial Compressive Strength* (MPa)

| Water: Powder | 1 DAY | 7 DAYS | 28 DAYS |
|---------------|-------|--------|---------|
| 2:1 | 0.6 | 3.3 | 7.5 |
| 2.5:1 | 0.4 | 1.5 | 4.5 |

| Water: Powder | Fresh Wet Density Kg/m3 | Gel Times (minutes) | Kg Powder/m3 |
|---------------|-------------------------|---------------------|--------------|
| 2:1 | 1200 - 1300 | 4 - 8 | 400 - 440 |
| 2.5:1 | 1160 - 1260 | 6 - 10 | 340 - 360 |

Specialty Grouts and Cements

J-CRETE (FS) Sprayable Dry Mix Shotcrete

Jennchem's J-CRETE is a sprayable dry mix shotcrete for use in the construction of ventilation devices, strata stabilisation and remediation applications for ground control in underground mining.

J-CRETE's rapid setting and high early strength characteristics allow for more efficient installation rates and earlier return to service. J-CRETE can be applied through any of the industry approved dry shotcreteing equipment.

Features:

- Rapid setting
- High early strength
- Minimum rebound
- Chloride free (non-corrosive to steel)
- Non-Flammable
- Water resistant

Application:

- Rated and non-rated ventilation control devices
- Remediation work
- Strata stabilisation

Application Equipment:

- LOVA Pump
- Piccola Pump

Packaging:

- 20kg bags
- 1000kg, 1200kg bulk bags

| | UCS (MPa) | Bond Strength (MPa) | Flexural Strength (MPa) |
|---------|-----------|---------------------|-------------------------|
| 4 Hours | 15 | - | - |
| 3 Days | 40 | 21 | 4.5 |
| 7 Days | 60 | - | 6.5 |
| 28 Days | 75 | - | 8 |



Thin Spray Liners

TL-40 - Thin Sprayed Liner

2 part spray applied polymer modified membrane for surface sealing and weathering protection of rock and coal substrate.

Features:

- Rapid setting
- High early strength development
- Excellent bond to substrate
- Easily spray applied
- Dustless application
- Can be pumped long distances
- Non toxic
- Low VOC

Packaging:

- Part A – 20kg bags
- Part B – 20L Pales

Application:

- Specialist pump and nozzle required for bulk application. Contact Jennchem for further details
- Small applications can be completed with a clark pump and specialist nozzle from Jennchem

Applications:

- Stabilisation of rock and coal strata
- Flexible surface support
- Temporary or preliminary slope protection
- Non rated ventilation control devices
- Corrosion protection for steel standing support
- Surface support before shotcrete application
- To reduce rock weathering
- Minimise hard rock bursting
- Pillar/Rib Support
- Abutment for low pressure injection

Technical Data – TL-40 - Thin Sprayed Liner

| | |
|-------------------------------|--------------------|
| Typical Application Thickness | 2 – 12mm |
| Maximum Thickness | 40mm |
| Density | 1900kg/m3 |
| Bond Strength @ 7 days | |
| Concrete | >1.7Mpa |
| Coal | >Substrate Failure |
| Compressive strength | 50Mpa @ 28 days |
| Tensile Strength @ 7 days | >3.5 Mpa |
| Flexural Strength | >7Mpa |
| Elongation at break | 60% |
| Flammability | Self Extinguishing |

Mix Design – TL-40 - Thin Sprayed Liner

| | |
|-------------------|-----------------|
| Part A | 4 x 20kg bag |
| Part B | 1 x 20L polymer |
| Product Volume | 42 Litres |
| Applied Thickness | 5mm |
| Coverage | 8.4m2 |



J-LOK RESIN CAPSULE & ACCESSORIES



Resin Capsules And Accessories

J-Lok Hard Rock Twin Resin Capsules



Features:

- Twin capsules with different set hold times sealed at each end by wire clips and joined together
- J-Lok capsules utilize a stiffer more robust capsule film containing the resin mastic and catalyst sections separated by a thin plastic film inside each capsule which improves durability and handling
- Available in oil or water type catalyst types
- Standard oil based catalyst as approximately 7% of capsule and standard water based catalyst as approximately 20% of capsule for improved mixing
- Larger limestone grit to improve flow of resin around bolt during installation and increase load transfer
- For general purpose anchoring of typical rebar rock bolts
- Available in diameters of 25, 26, 30 and 36mm
- Available gel times range from 12 seconds to 90 seconds
- Parachute retainers available with each box
- Other sizes available on request

| | |
|--|----------------|
| Punched shear strength (MPa) | >22 |
| Shelf life (months) * when stored as recommended | 6 |
| Diameters available (mm) | 25, 26, 30, 36 |
| Available Gel Times (secs) | 12-90 |

| | | | |
|------------------------------------|------|-----------|-----------|
| Total 30mm Twin Capsule Length(mm) | 1800 | 2100-2400 | 2900-3000 |
| Quantity / box | 9 | 7 | 5 |
| Quantity / pallet | 378 | 294 | 210 |

| Speed | Capsule Colour | Approximate spin time (s) | Approximate hold time (s) |
|-------------------|----------------|---------------------------|---------------------------|
| Extra Fast / Slow | Yellow / Blue | 15 | 12-60 |
| Fast / Slow | Yellow / Blue | 15 | 12-60 |
| Medium / Slow | Red / Blue | 20 | 19-60 |

Resin Capsules And Accessories

Spin & Hold Single Capsule Speed Resin



Features:

- For anchoring of all types of rock bolts and with a range of hand held and mechanized bolters
- Single J-Lok capsules utilize a stiffer more robust capsule film containing the resin mastic and catalyst sections separated by a thin plastic film inside each capsule which improves durability and handling
- Available in oil or water type catalyst types
- Standard oil based catalyst as approximately 7% of capsule and standard water based catalyst as approximately 20% of capsule for improved mixing
- Larger limestone grit to improve flow of resin around bolt during installation and increase load transfer
- For general purpose anchoring of typical rebar rock bolts
- Available in diameters of 25, 26, 30 and 36mm
- Available gel times range from 12 seconds to 90 seconds
- Parachute retainers or cardboard insertion sleeves available
- Other sizes available on request

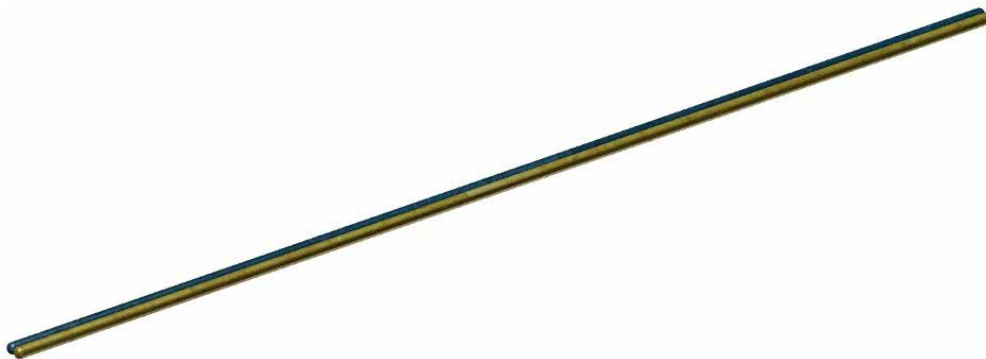
| | |
|--|----------------|
| Punched shear strength (MPa) | >22 |
| Shelf life (months) * When stored as recommended | 6 |
| Diameters available (mm) | 25, 26, 30, 36 |

| Capsule length(mm) | 330-440 | 550-650 | 800-100 | 1100-1500 | 2100-2400 | 2900-3000 |
|--------------------|---------|---------|---------|-----------|-----------|-----------|
| Quantity / box | 40 | 35 | 25 | 20 | 14 | 10 |
| Quantity / pallet | 2240 | 1680 | 1050 | 840 | 294 | 210 |

| Speed | Fast | Medium | Slow |
|---------------------------|--------|--------|------|
| Capsule Colour | Yellow | Red | Blue |
| Approximate spin time (s) | 10 | 12 | 20 |
| Approximate hold time (s) | 4 | 10 | 120 |

Resin Capsules And Accessories

Rapid Development Resin Capsules



Features:

- Increased productivity – no waiting for resin to cure before tightening the nut for most installations
- Self-auditing bolt installation – based upon remnant thread length of bolt which provides an indication if the standard of installation
- High pre-tension levels can still be achieved where required
- Extensive research and independent testing shows minimal damage to resin bond using rapid development
- Uses J-Lok dual speed specifically formulated accelerated cure resin capsule and Jennmar bolt with engineered accurate and reliable pin break out level
- Available in diameters of 25, 26 and 30mm
- Available gel times range from 12 seconds to 90 seconds
- Resin parachute retainers available
- Other sizes available on request

| | |
|--|-------|
| Shelf life (months) | 6 |
| Gel Time Range (secs) * when stored as recommended | 12-90 |
| Approximate spin time (secs) | 20 |
| Approximate hold time (secs) | 3-5 |

| | |
|------------------------------------|-----------|
| Capsule length (mm) | 1800-3000 |
| Capsule Diameter (mm) | 26-30 |
| 2400/30mm Length Quantity / box | 7 |
| 2400/30mm Length Quantity / pallet | 294 |

Resin Capsules And Accessories

Shooter Resin Capsules



Features:

- Separate resin mastic and catalyst encased within a thin plastic film, sealed at each end by wire clips
- Stiffer more robust capsule film to improve durability, handling and reduce rupture when shooting through the hoses and into the hole
- Standard oil based catalyst as 7% of capsule
- Larger limestone grit to improve flow of resin around bolt during installation and increase load transfer
- For general purpose anchoring of typical rebar rock bolts
- Designed specifically for WILCO TECHNOLOGIES Shooter System
- Available gel times range from 12 seconds to 90 seconds

| | |
|--|-----|
| Punched shear strength (MPa) | >22 |
| Shelf life (months) * when stored as recommended | 6 |
| Diameter (mm) | 25, |

| | |
|--------------------|---------|
| Capsule length(mm) | 600-650 |
| Quantity / box | 35 |
| Quantity / pallet | 1680 |

| Speed | Fast | Medium | Slow |
|---------------------------|--------|--------|------|
| Capsule Colour | Yellow | Red | Blue |
| Approximate spin time (s) | 10 | 12 | 20 |
| Approximate hold time (s) | 4 | 10 | 120 |

Resin Capsules And Accessories

Post Grout Cable



Features:

- Designed for rapid development cablebolting
- Allows point anchoring of cable bolts for tensioning prior to being post cementitious grouted
- Cost effective as allows rapid development and increased turnaround time
- Comes with resin retainer
- Available with oil (~7%) or water (~20%) catalyst
- Water based catalyst allows for improved mixing of resins in larger diameter drill holes

| Capsule length(mm) | 650 | 800 - 1100 | 1200 |
|--------------------|-----|------------|------|
| Quantity / box | 15 | 10 | 9 |
| Quantity / pallet | 720 | 420 | 378 |

| Speed | Medium | Slow |
|---------------|--------|------|
| Hold time (s) | 19 | 80 |

| | |
|---|-----|
| Punched shear strength (MPa) | >22 |
| Shelf Life (months) *when stored as recommended | 4 |

Refer to individual box label for spin and hold installation instructions
Available in standard or grit limestone filler configurations

Resin Capsules And Accessories

Jumbo Resin Inserter Kits



Features:

- Nylon Jumbo fittings with clear tube to aid installation of resin capsules
- Available in range of sizes

| Thread | Diameters available (mm) | Lengths (mm) |
|--------|--------------------------|--------------|
| R32 | 26, 30 | 2000-3600 |
| T38 | 26, 30 | 2000-3600 |

CUTTABLE SUPPORT & ACCESSORIES



Cutable Support

32mm Torque Tension Bolt



Features:

- High capacity support where extraction includes cutting of bolts
- 46mm Hex nut
- Break-out cap is designed to break into small pieces to clear easily from spanners/dollies
- "V" Notch end to promote shredding of the resin capsule film
- Continuous rope thread providing deformations for resin mixing and high bond strength with the rock
- J-Lok resin capsules available in 32 – 36mm diameter for maximum encapsulation
- Both 200mm and 300mm square plastic steel inserted plates with 51mm holes available to suit this product
- Do not store these products in direct sunlight

| Property | Minimum Value |
|---|---------------|
| Ultimate Tensile Strength of Rod (kN) | 500 |
| Ultimate Tensile strength with Nut (kN) | 90 |
| Single Shear Strength (kN) | 110 |
| Rod Torsional Strength (Nm) | 200 |
| Elongation % | 2 |
| Cross sectional area (mm ²) | 730 |
| Thread pitch (mm) | 10 |
| Mass/meter (kg/m) | 1.45 |

| Break-out Nut | Torque Setting (N.m) |
|---------------|----------------------|
| White | 130 - 175 |

Rod Colour - Black
To suit drill bit 38 - 42mm

Cuttable Support

32mm Hollow Bolt



Features:

- High capacity secondary support fiberglass dowel
- Suitable for use with common mine site cable bolting consumables:
 - 36mm diameter resin capsules
 - Cable bolt grouts
- 46mm Hex Nut
- Purpose designed installation spanners and grout connectors available
- Custom configurations are available including;
 - Resin anchored, tensioned, post grouted dowel
 - Simple fully grouted dowel
- Hollow dowels stocked in 3m and 4m lengths
- Do not store these products in direct sunlight

| Property | Minimum Value |
|---|---------------|
| Ultimate Tensile Strength of Rod (kN) | 320 |
| Ultimate Tensile strength with Nut (kN) | 90 |
| Single Shear Strength (kN) | 83 |
| Rod Torsional Strength (Nm) | 150 |
| Elongation % | 2 |
| Cross sectional area (mm ²) | 730 |
| Thread pitch (mm) | 10 |
| Mass/meter (kg/m) | 1.2 |

Rod Colour - White
To suit drill bit 42 – 45 mm

Cutable Support

22mm Thrust Dowel



Features:

- Used for support where extraction includes cutting of bolts
- Patented high strength over-moulded polymer head achieves double the strength of standard fiberglass nuts
- Coloured over-moulding polymer provides length colour code after installation
- Thrust dowels eliminate tails protruding
 - reducing the risk of damage to rib support by mobile equipment
 - reduces risk of personal injury when walking around equipment installations
- "V" Notch end to promote shredding of the resin capsule film
- Continuous rope thread providing large deformations for resin mixing and high bond strength with the rock
- 22mm diameter dowel for high strength and maximum encapsulation by volume
- Do not store these products in direct sunlight

| Property | Minimum Value |
|---|---------------|
| Ultimate Tensile Strength of Rod (kN) | 230 |
| Molded Head Tensile Strength (kN) | 120 |
| Single Shear Strength (kN) | 50 |
| Rod Torsional Strength (Nm) | 80 |
| Elongation % | 2 |
| Cross sectional area (mm ²) | 340 |
| Thread pitch (mm) | 10 |
| Mass/meter (kg/m) | 0.61 |

| Bolt length (mm) | Head colour code |
|------------------|------------------|
| 1150 | Blue |
| 1450 | Yellow |
| 1750 | Red |

Rod Colour - White
To suit drill bit 42 – 45 mm

Cutable Support

25mm Thrust Dowel



Features:

- Used for support where extraction includes cutting of bolts
- Thrust dowels eliminate tails protruding
 - reducing the risk of damage to rib support by mobile equipment
 - reduces risk of personal injury when walking around equipment installations
- "V" Notch end to promote shredding of the resin capsule film
- Continuous rope thread providing large deformations for resin mixing and high bond strength with the rock
- 25mm diameter dowel for high strength and maximum encapsulation by volume
- Do not store these products in direct sunlight

| Property | Minimum Value |
|---|---------------|
| Ultimate Tensile Strength of Rod (kN) | 300 |
| Ultimate Tensile strength with Nut (kN) | 50 |
| Single Shear Strength (kN) | 60 |
| Rod Torsional Strength (Nm) | 110 |
| Elongation % | 2 |
| Cross sectional area (mm ²) | 434 |
| Thread pitch (mm) | 10 |
| Mass/meter (kg/m) | 0.95 |

Rod colour – 1.5m = Orange, 1.2m = Black
To suit drill bit 28mm

Cutable Support

22mm Extra High Torsion (Xht) Tensionable Bolt



Features:

- Extra high torsional strength material minimises risk of damage to fiberglass when tightening
- Used for support where extraction includes cutting of bolts
- Break-out cap is designed to break into small pieces to clear easily from spanners/dollies
- "V" Notch end to promote shredding of the resin capsule film
- Continuous rope thread providing large deformations for resin mixing and high bond strength with the rock
- 22mm diameter dowel for high strength and maximum encapsulation by volume
- Recommended for drill hole diameters 27 - 28mm

| Property | Minimum Value |
|---|---------------|
| Ultimate Tensile Strength of Rod (kN) | 210 |
| Ultimate Tensile strength with Nut (kN) | 60 |
| Single Shear Strength (kN) | 50 |
| Rod Torsional Strength (Nm) | 250 |
| Elongation % | 2 |
| Cross sectional area (mm ²) | 340 |
| Thread pitch (mm) | 10 |
| Mass/meter (kg/m) | 0.61 |

| Break-out Nut | Torque Setting (N.m) |
|---------------|----------------------|
| White | 80 - 110 |
| Blue | 30 - 50 |

Rod colour - Grey
To suit drill bit 27 – 28mm

Cutable Support

Plastic Plates



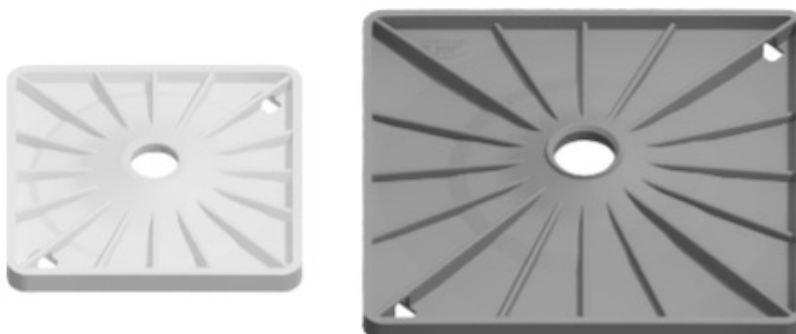
Features:

- Used as surface support where extraction involved cutting the support
- Compatible with JENNMAR 22mm dowels
- Flexibility of all plastic allow conforming to shape of uneven coal rib
- Tested to ensure no splitting under severe deformation found in uneven coal ribs
- Square plate is designed to visually turn corners upon applying hydraulic rib bolter thrust
- Do not store these in direct sunlight

| Dimension (mm) | Hole diameter (mm) | Minimum Pull through load (kN) | Mass (kg) | Standard pack | Compatible Bolt dia (mm) |
|----------------|--------------------|--------------------------------|-----------|---------------|--------------------------|
| 230 round | 33 | 20 | 0.3 | 1000 | 22 |
| 230 square | 33 | 12 | 0.3 | 1000 | 22 |

Cutable Support

Plastic Steel Combination Plates 22-25mm Dowels



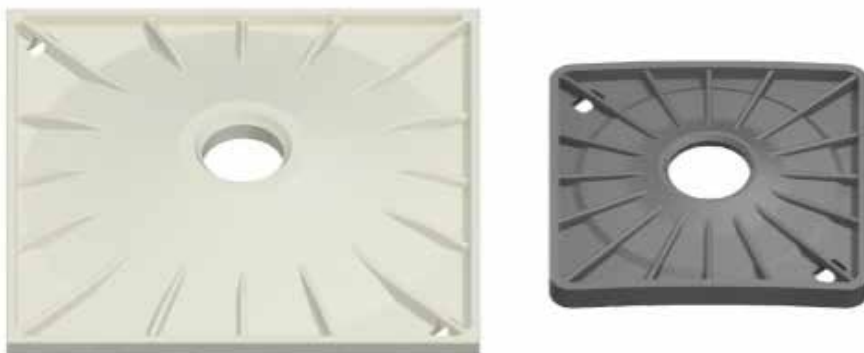
Features:

- Used as surface support where extraction involved cutting the support
- Thin 3mm steel plate encased within the main plate provides up to 3 times the strength of a standard plastic plate
- Superior strength is compatible with new improved fiberglass dowels
- Steel inserts allow use of bolting rig magnetic holders
- Steel plate thin gauge and rounded corners minimize risk of conveyor belt damage
- Do not store these products in direct sunlight

| Dimension (mm) | Hole diameter (mm) | Minimum Pull through load (kN) | Mass (kg) | Standard pack | Compatible Bolt diameter (mm) |
|------------------|--------------------|--------------------------------|-----------|---------------|-------------------------------|
| 230 round | 33 | 50 | 0.6 | 500 | 22 |
| 200 x 200 square | 33 | 50 | 0.7 | 1000 | 22 |
| 200 x 200 square | 42 | 50 | 0.7 | 1000 | 22 and 25 |
| 300 x 300 square | 33 | 50 | 1.0 | 1000 | 22 |
| 300 x 300 square | 42 | 50 | 1.0 | 1000 | 22 and 25 |

Cutable Support

Plastic Steel Combination Plates 32mm Dowels



Features:

- Used as surface support where extraction involved cutting the support
- Thin 3mm steel plate encased within the main plate provides up to 3 times the strength of a standard plastic plate
- Superior strength is compatible with new improved fiberglass dowels
- Steel inserts allow use of bolting rig magnetic holders
- Steel plate thin gauge and rounded corners minimize risk of conveyor belt damage
- Do not store these products in direct sunlight

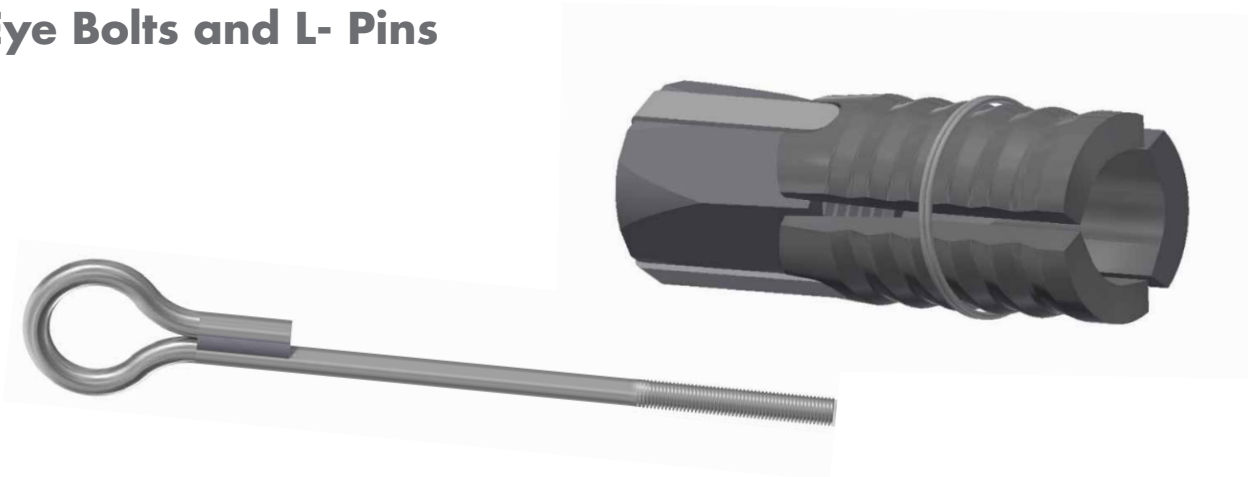
| Dimension (mm) | Hole diameter (mm) | Minimum Pull through load (kN) | Mass (kg) | Standard pack | Compatible Bolt diameter (mm) |
|------------------|--------------------|--------------------------------|-----------|---------------|-------------------------------|
| 200 x 200 square | 51 | 50 | 0.7 | 1000 | 32 |
| 300 x 300 square | 51 | 50 | 1.0 | 1000 | 32 |

HARDROCK ACCESSORIES



Hardrock Accessories

Eye Bolts and L- Pins



Features:

- Expansion shells able to achieve tension to 50kN in competent ground. Load testing should always be performed to determine the suitability of the anchor

| ITEM | Hole Diameter | |
|---------------------|---|---|
| 24mm Eye Bolt | 42-45 | 24mm eye bolt system using right hand thread 3 leaf expansion shell |
| 24mm L-Pins | | |
| M24 Expansion Shell | | |
| 20mm Eye Bolt | 35-38 | 20mm eye bolt system using right hand thread 3 leaf expansion shell |
| M20 Expansion Shell | | |
| 16mm Eye Bolt | 30 | 16mm eye bolt system using right hand thread 3 leaf expansion shell |
| M16 Expansion Shell | - | |
| Pine Wedges | - | Pine Wedges for range of uses |
| Washers | Range of separate dome washers to fit Jennmar Bolts | |
| Hex Nuts | Range of separate dome washers to fit Jennmar Bolts | |

Further specifications available on request

Hardrock Accessories

Clip Up Hooks



Features:

- 120mm Pipe Line hook hangers to suit 110mm poly with added 62mm hook and patented safety latch for easy "Clip Up" operation. (minsup clips)
- Safe, tidy, and organized pump lines away from mobile equipment
- Designed with saddles use with moving pipes extending pipe life
- Range of chains and ring options for "D" shackle or Friction Lok hanging
- 3 or 4 pipe options
- Load rated to 800kg WLL
- Can be used horizontally or vertically

| Dimension (mm) | Thickness (mm) | Pipe Diameter (mm) | Working Load Limit* (kg) | Unit Weight (kg) | Standard pack |
|----------------|----------------|--------------------|--------------------------|------------------|---------------|
| 940 x 190 | 6 | 120 | 800 | 1.5 | 50 |

WWW.JENNMAR.COM.AU

Head Office and Plant

40-44 Anzac Avenue, Smeaton Grange NSW 2567

Ph: +61 2 4648 7500

Fax: +61 2 4648 7555

Queensland Plant

48-50 Southgate Drive, Paget QLD 4740

Ph: +61 7 4952 8700

Fax: +61 7 4952 8777

Perth Plant

84 Furniss Road, Lansdale WA 6065

Ph: +61 8 9408 9900

Fax: +61 8 9408 9999



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JEN092022