

Strata Bolt Product Data



Solutions from Materials Technology





Strata Bolt™



SCS Strata (friction) Bolts have been manufactured in Australia for over 10 years. Strata Bolts are high tensile steel tubular bolts rollformed into a "C" shape. Compression of the high tensile steel "C" shape into a hole diameter smaller than the tube diameter generates a load transfer from the steel to the rock.

This results in a frictional resistance to axial pull-out load of the tube from the hole. A steel ring is fixed to the collar end of the tube that will retain a plate on the installed tube to establish a compressive force against the rock.

Friction bolts have been used internationally in mining for decades and are considered the simplest form of ground support available in metal mining and tunnelling development. SCS Strata Bolts benefit from a unique shape that enables increased contact surface of the steel with the hole, which provides higher pull out loads than traditional round friction bolts.

Strata Bolts provide an immediate frictional support at the face and can be installed with either hand held or mechanised equipment (Jumbos, Robolters etc.). For additional load bearing capacity Strata Bolts can be post grouted with cement grouts or Minova's Capcem cement capsules.

Strata bolts are available in black or hot dip galvanised steel, are manufactured in 34 mm, 40 mm and 47 mm diameters and various lengths from 600 mm to 3,000 mm. Strata Bolts are manufactured and supplied from both Minova's Sydney and Perth facilities.

Minova also manufactures the SCS Mesh Pin bolt for mesh overlapping applications. The Mesh pin consists of a modified 900 mm long 40 mm diameter Strata Bolt, with a 47 mm ring fixed to the collar end of the bolt. Mesh pins are installed into previously installed 47 mm Strata Bolts using the same 47 mm driver and same plate. This reduces the amount of inventory necessary on sites.

The Mesh Pin also eliminates the possibility of a driver designed to install 40 mm diameter bolts being used to install 47 mm diameter bolts. Bolts installed with an incorrect driver tool can result in significant damage to the collar end of the bolt during installation and possibly reduce the load capacity of the plate. Mesh Pins can also be post grouted to stiffen the support and are available in black or hot dip galvanised steel.



Technical Data

| Mechanical Properties | Strata Bolt 34 Minimum | Strata Bolt 34 Typical | Strata Bolt 40 / Mesh Pin Minimum | Strata Bolt 40 / Mesh Pin Typical | Strata Bolt 39.8 mm x 3.2 mm Minimum | Strata Bolt 39.8 mm x 3.2 mm Typical | Strata Bolt 47 Minimum | Strata Bolt 47 Typical |
|-----------------------------|------------------------|------------------------|-----------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|------------------------|------------------------|
| Bolt Diameter (mm) | – | 34 | – | 40 | – | 39.8 | – | 47 |
| Yield Strength (MPa) | 410 | 520 | 410 | 520 | 350 | 460 | 350 | 460 |
| Yield Force (MT) | 7.2 | 10.4 | 8.4 | 11.9 | 9.7 | 13.0 | 11.6 | 15.0 |
| Tensile Strength (MPa) | 520 | 600 | 520 | 600 | 430 | 520 | 430 | 520 |
| Tensile Force (MT) | 9.1 | 12.0 | 10.7 | 13.0 | 11.9 | 15.8 | 14.2 | 18.3 |
| Elongation 80 mm sample (%) | 18 | 22–28 | 18 | 22–28 | 20 | – | 20 | – |
| Mass per metre – (kg/m) | – | 1.55 | – | 1.75 | – | 2.4 | – | 2.74 |

Note: Minimum yield and tensile forces are based on minimum material size and strength.

Testing Standards

| | Strata Bolt 34 | Strata Bolt 40 / Mesh Pin | Strata Bolt 39.8 3.2 mm | Strata Bolt 47 |
|-------------|----------------|---------------------------|-------------------------|----------------|
| Material | AS1594 | AS1594 | AS1594 | AS1594 |
| Galvanising | AS4680 | AS4680 | AS4680 | AS4680 |
| Steel Grade | AB4121 | AB4121 | HA350 | HA350 |

Plates

Minova manufactures a comprehensive range of specially designed plates for use with rock bolts and cable bolts. Extensive product data is available on Minova's full range of plates from Minova's product catalogue and web site, www.minova.com.au Plates most typically used with Strata Bolts are:

| | |
|--------------------|---|
| Dome Plate | <ul style="list-style-type: none"> • 150 mm x 150 mm x 4 mm – 7 mm |
| Dome Plate | <ul style="list-style-type: none"> • 200 mm x 200 mm x 4 mm |
| Combi Plate | <ul style="list-style-type: none"> • 280 mm x 300 mm – 240 mm x 300 mm |
| Crown Plate | <ul style="list-style-type: none"> • 150 mm x 150 mm x 5 mm |



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Drivers

Minova manufactures a full range of purpose designed Strata Bolt Drivers for use with hand held or mechanise bolting equipment. Extensive product data is available on Minova's full range of drivers from Minova's product catalogue and web site, www.minova.com.au Drivers most typically used with Strata Bolts are:

| | |
|---------------------------|---|
| Driver Strata Bolt | <ul style="list-style-type: none">• 34 / 40 – Hand Held |
| Driver Strata Bolt | <ul style="list-style-type: none">• 4 / 40 / 47 – R32 / R38 / T38 |

Parameters

Hole Lengths

- Can be varied depending on application

Installation Angle

- Although sometimes difficult to obtain, Strata bolts should be installed at +/- 10 deg. Excessive angles of installation could will create a point loading effect on the bolt ring, which in turn may effect the bolts performance.

Hole Size (diameter)

- Strata Bolt 34 – typically 30 mm – 31 mm
- Strata Bolt 40 – typically 36 mm – 37 mm
- Strata Bolt 39.8 3.2 mm – typically 36 mm – 37 mm
- Strata Bolt 47 – typically 44 mm – 45 mm

Drive Times

- Can be an indicator for correct or incorrect drill bit selection. For a typical 2400 mm Strata Bolt installation, the drive time should be in the range of 15–18 seconds.

Note: Different rock types / ground conditions may effect the actual hole size drilled. Minova's Technical Service personnel can assist customers requirements with the use of borehole measuring equipment to determine correct drill bit sizes applicable.

The table below lists the typical Strata Bolts, purchase codes, descriptions, unit weights and pack sizes. Other sizes are available on request, depending on the number required.

Codes, Dimensions and Weights

| Item Code | Description | Unit Weight | Pack Size |
|-----------|---|-------------|-----------|
| FB208104 | Strata Bolt 34x900 Galvanised | 1.4 kg | 300 |
| FB208110 | Strata Bolt 34x1800 Galvanised | 2.8 kg | 300 |
| FB208114 | Strata Bolt 34x2400 Galvanised | 3.8 kg | 300 |
| FB208132 | Strata Bolt 40x600 Galvanised | 1.2 kg | 300 |
| FB208054 | Mesh Pin 40x900 47 Ring Black | 1.7 kg | 150 |
| FB208154 | Mesh Pin 40x900 47 Ring Galvanised | 1.7 kg | 150 |
| FB208244 | Strata Bolt 40 3.2 mm x 2400 Galvanised | 4.6 kg | 300 |
| | Strata Bolt 40 3.2 mm x 2400 Black | 4.5 kg | 300 |
| FB208564 | Strata Bolt 47x900 Black | 2.6 kg | 150 |
| FB208570 | Strata Bolt 47x1800 Black | 5.2 kg | 150 |
| FB208572 | Strata Bolt 47x2100 Black | 5.9 kg | 150 |
| FB208574 | Strata Bolt 47x2400 Black | 6.9 kg | 150 |
| FB208662 | Strata Bolt 47x600 Galvanised | 1.8 kg | 150 |
| FB208664 | Strata Bolt 47x900 Galvanised | 2.6 kg | 150 |
| FB208668 | Strata Bolt 47x1500 Galvanised | 4.3 kg | 150 |
| FB208670 | Strata Bolt 47x1800 Galvanised | 5.2 kg | 150 |
| FB208674 | Strata Bolt 47x2400 Galvanised | 6.9 kg | 150 |
| FB208676 | Strata Bolt 47x3000 Galvanised | 8.7 kg | 150 |

Strata Bolt is a registered trademark of Minova Australia Pty Ltd





Product Service Support

Minova provides a full service support package to customers, including underground pull testing, operator awareness training, underground audits and stock control assistance. Each service package is developed to suit the individual customers requirements.

All aspects of Minova's product service support service is provided by experienced trained and qualified personnel.

Additional Information

For additional information relating to any aspect of this product specification data, including product performance, quality, testing, specification, range, availability etc. please contact your nearest Minova office, or email: technicalsupport@minovaint.com

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