Security Pins
Security Nuts & Bolts
Security Guards & Paints
At Alcomet we like to remain ahead of the game and with the price of Copper and Aluminium being at a premium, we have taken the time to listen to our customers’ needs of protecting their investment.

Alcomet’s Guardian Security Products are a range of products that have been tested and approved by specialist engineers to counter the problem of theft and vandalism in substations.

We all know the expense incurred in replacing earthing tape, not only in materials and labour, but in down time too. Therefore it makes sense to prevent the tape being taken in the first instance. Alcomet has a range of practical solutions to suit, which this brochure outlines. If you have any additional queries, please call the Alcomet team who will be more than happy to assist.

As an endorsement of quality and excellence, HM Queen Elizabeth II has honoured Alcomet with a Queen’s Award for Enterprise: Innovation 2009, expressly for the development and launch of the Guardian Security Products range.
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Conventional fixing of copper and aluminium earth tape is by the use of a metal or plastic fixing cleat. This type of fixing makes the material very easy to steal as the cleat has no security aspect to its design.

A steel anchor bolt has been used as a deterrent but has many downsides with its use.
Problems With Steel Fixings

Products made from steel are susceptible to excessive corrosion as the pictures on this page demonstrate. After a short period of time the fixing starts to break down. This process is accelerated in bund areas where water is regularly present.

There is also a need for a barrier between a steel fixing and earth tape to prevent an electrolytic reaction. Using a plastic washer removes more material and is time consuming. This also makes it easy for thieves using a bolster chisel to knock the heads off, as the fixing head is raised from the earth tape. Tinning would be an alternative barrier method but is also time consuming and has potential Health & Safety issues with concrete possibly exploding when excessive heat is applied.

Tests concluded that it was also easy to remove the fixing heads quickly as only half the shank is attached to the head - thus making it ineffective as a security product.
Guardian Stainless Steel Security Pin

Easy and quick to install with either a Guardian Impact Driver or a hammer. With engineers’ time being valuable and the benefit of increased productivity, added with its security features, the Guardian Security Pin is a winner. Simple but effective.

A longer pin is also available for use on decayed concrete surfaces. This allows you to reach a greater depth to find a more solid, secure fix.
Problem Solved

Whether you are fixing earthing tape horizontally or vertically to concrete / brick structures, the Guardian Security Pin is the fixer’s dream. The pin is easy and quick to install and extensive tests have concluded they deter theft. A thieves nightmare.

Fixing

Drill                             Drive                           Done

Benefits

• Easy to fit with either Guardian Impact Drivers or a hammer.
• Hammer becomes obsolete with the New Guardian Impact Drivers (which also reduce likelihood of RSI Injuries).
• No health and safety issues, conventional steel fixings have - tinning and the use of heating appliances eliminated.
• Specialist equipment required for removal. Over 1,000kgs of force needed to remove fixing.
• Product covered by ETA (European Technical Approval).
• Made from high corrosion resistance stainless steel.
• Increased speed of fixing – increased productivity. (up to 10 times faster installation over traditional steel fixings).
• Head covers 100% of shank and pressed / formed from 1 piece of metal preventing the head from being snapped off.
• No need to create a barrier between anchor and earthing material.
• No plastic washer or tinning required, unlike when using conventional steel fixings.
The only way for thieves to steal material after installing with the Guardian Security Pin is to grind off the pin heads or by cutting between each pin. It simply takes too much time, too much effort and makes too much noise !!!

Not only were extensive tests carried out in installing the Guardian Security Pins but the material was put through a series of extreme simulated theft scenarios to prove its security values.
Pin Withstanding Attack

Made from high corrosion resistant stainless steel, the Guardian Security Pin can withstand aggressive attack. The pin’s head covers 100% of the shank as the product is pressed / formed from 1 piece of metal. This prevents the head from being forcefully removed. Thieves try to remove - but soon give up!!
Guardian Concrete Cover Guard

To avoid the possibility of theft by sawing off the earthing tape between the Guardian Security Pins, cover guards have been specifically designed to protect the material.

Made from a specially selected grade of material the guard can easily be formed.
Easily Installed

The Guardian Security Pin is used to secure the cover guard. To complement the Guardian Security Range a tinned copper washer is available from stock to enable the guard to be earthed.

Fixing

Benefits

- Easy to fit.
- Increase speed of installation using the Guardian Impact Driver.
- Low height to avoid being a tripping hazard.
- Specialist equipment required for removal. Over 1000 kgs of force needed to remove Guardian Security Pins.
- Deters vandalism.
- Eliminates theft.
Using The Guardian Cover Guard

Previously there have been two methods of addressing earthing joints when installing the Guardian Cover Guard. The first is to cover the joint which is costly in terms of time and effort in mating the guards. Once installed it has good security features but prevents the joint from any future testing / inspection.

The second method is to leave the earthing joint exposed which does enable any testing / inspection to be carried out. The BIG problem is the joints are prone to attack. Crow bar attacks can easily break the joint putting the network at risk and costly to repair.

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Problems With Joints

When joints are left uncovered they remain vulnerable. The general result, if they are attacked, is damage to the joint itself. If the joint fails the cost to put the circuit back to working order is heavy.

The pictures shown to the right clearly illustrate a failed attempt to remove the guards at the location of a joint.

Fortunately in this attack the joint was still intact - but this would have been costly to repair if it had not been.
Guardian Removable Joint Covers

Removable Joint Covers have been developed to solve the big problem of how to protect joints. Quick and easy to install the Joint Covers prevent attack and potential damage. In the event of the connection needing testing the cover can be removed by unscrewing the unique Guardian Security Nut and screwed back and secured after testing. A unique shaped driver socket is needed to remove the Security Nut - without it you won’t get it off!

The Joint Covers mate perfectly with the Guardian Cover Guards therefore they automatically become attached to the earth system.

Joints are covered and protected so now attacks are unlikely!!

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Problem Solved

The Guardian Removable Joint Covers protect all combinations of joints - 90 degree angle, tee, straight and cross. By using the Guardian Security Nut and Guardian Threaded Pin the cover is secured - only a special tool can remove.

Fixing

Benefits

• Easy to fit.
• Specialist equipment required for removal. Over 1,000kgs of force needed to remove fixing.
• Guardian Security Pin used for fixing is made from high corrosion resistance stainless steel.
• Requires special tooling to remove.
• Allows easy access for testing.
• Fully protects joints.

* The number of drill holes may vary on the cover products shown.
Conventional Fixing Methods On Metal Structures

Conventional fixing of copper and aluminium earth tape is by the use of a metal or plastic fixing cleat. This type of fixing makes the material very easy to steal as the cleat has no security aspect to its design. A thief’s dream!
Problems With Conventional Fixing Methods

When copper earthing is used on metal structures the fixing methods used enabled easy removal by thieves. If plastic self locking cleats have been used they simply pull the material out of the fixing by hand - no security deterrent at all.

Copper needs to be protected on metal structures. If copper earth is suspended and not attached to a structure it needs to be protected to ensure it cannot be removed. Tests have shown that when copper is protected on concrete alone, thieves simply remove from where it is still exposed and unprotected. The pictures on the right of the page illustrate this. The cost to repair remains high so it’s essential to protect both the earthing on concrete and metal at the same time.
Guardian Security
Star Bolts

Like the Guardian Security Pin the Star Bolt is easy and quick to install. With engineers’ time being valuable and the benefit of increased productivity, added with its security features, the Guardian Star Bolt and Shear Nut - A winning combination.

Straightforward yet powerfull!
Problem Solved

Guardian Star Bolts have been designed with security in mind. The use of a shake washer is recommended to avoid shear nuts loosening in cases where there is a possibility of vibration. The Star Bolts are quick and easy to install and extensive tests have concluded they deter theft.

Benefits

- Easy to fit.
- Unique insert tool needed to secure and remove.
- Low profile head to avoid been forcefully removed.
- Made from high corrosion resistant stainless steel.
- Increased speed of fixing compared with conventional methods - increased productivity.
- Cost effective - at least half the cost against traditional fixings which have no deterrent.
Testing

The only way thieves can steal material after installing with the Guardian Star Bolts is to grind off the bolt heads or cut in between each bolt. It simply takes too much time, too much effort and makes too much noise !!!

Not only were extensive tests carried out in installing the Guardian Star Bolt but the material was put through a series of extreme simulated theft scenarios to prove its security values.
Star Bolt
Withstanding Attack

Made from high corrosion resistant stainless steel, the Guardian Star Bolt can withstand aggressive attack. The Star Bolt head covers the shank as the product is pressed / formed from one piece of metal. This prevents the head from being forcefully removed. Thieves try to remove - but soon give up!!

Earthing - don’t let them get away with it
To avoid the possibility of theft by sawing off the earthing tape between the Guardian Star Bolts, cover guards have been specifically designed to protect the material.

Made from a specially selected grade of stainless steel material the guard can easily be formed. The guards can also protect material that cannot be secured to a structure. This is achieved by using two pieces of guard back to back sandwiching the material inside. The metal is secured inside the guards by using Guardian Star Bolts and shear nuts.
Easily Installed

The Guardian Star Bolt, shake washer and shear nut is used to secure the cover guards. 6.5mm holes are drilled through earthing and structure to enable the 6mm bolt being placed through pre drilled guards.

The Guardian Star Bolt is tightened with a unique tool, shear nut snaps off and job done.

Fixing

Benefits

• Easy to fit.
• Unique tool bit required for removal.
• Prevents easy removal of earthing.
• Deters vandalism.
• Eliminates theft.
Conventional Nuts & Bolt Fixings

Standard nuts and bolts have been used to secure joints. The pictures illustrate typical situations. These are easily removed with standard tools.
The pictures shown clearly illustrate the problems that arise when thieves and vandals remove nuts and bolts. Removing standard nuts and bolts is easy work compared to cutting through the material with metal cutters or by sawing. Making the theft of earthing light work.

Even when the material is secured with the Guardian Concrete Solution the rest of the material remains vulnerable if it’s not protected, as the middle picture illustrates. Again, when the nuts and bolts are removed, the costs to repair and make safe are extensive.
The Guardian Pin Hex Bolt and Guardian Security Removable Nuts have been specifically designed to avoid being removed. Unlike traditional fixings special tools are required to enable removal. Made from high corrosion resistant stainless steel so rusting is not an issue.

The range is complemented with flat and spring washers in all standard sizes.
Problem Solved

By using Guardian Security Nuts and Bolts equipment will be safe from attack. The unique design prevents removal unless you use special tools. All tools and attachments needed for use with the Guardian range are available in a specially produced tool box; ensuring you keep your tools safe - you don’t want them getting into the wrong hands!

Benefits
• Easy to fit.
• Unique tools required for removal.
• Made from high corrosion resistant stainless steel.

* New anti climb top hats available.
Guardian Security Paints

Where it’s not possible to protect earthing tape with a Guardian Security Guard a range of Security Paints are available.

The range includes:

- Guardian Camouflage Paint
- Guardian Anti-handling Paint
- Guardian Bitumastic Paint
Additional Products

Tinned Copper Washer
In a worst case scenario the Guardian Security Guard could become live. The tinned copper washer is used to earth the guard.

Bicon Jointing Paste
For jointing similar and dissimilar metals. Assumes a high conductivity joint by sealing out air and moisture to prevent corrosion and reformation of oxide film.

Copper Top Hat
For attaching earth leads – Circuit Main and Field Earths.

Alcomet is an official distributor of P&B Weir earth leads – contact us for stock details
Products For Protecting On Concrete & Brick

Guardian Security Pin
Made from high corrosion resistant stainless steel for securing earth tape and Guardian Cover Guards.

- Guardian Security Pin, Standard: GSP01C
- Guardian Security Pin, Extra Long: GSP03C

Guardian Cover Guard
To protect earth tape and stranded conductor.

- Max width 25mm: GCG25C
- Max width 40mm: GCG40C
- Max width 50mm: GCG50C
- Max width 75mm: GCG75C
- Max diameter 22.9mm (150sqmm): GCGST

Guardian Removable Joint Covers
Removable to enable access earth tape and stranded conductor.

- Tee 40mm width: GJC40T
- Angle 40mm width: GJC40A
- Cross 40mm width: GJC40C
- Straight 40mm width: GJC40S
- Tee 50mm width: GJC50T
- Angle 50mm width: GJC50A
- Cross 50mm width: GJC50C
- Straight 50mm width: GJC50S

Guardian Security Pin, Nut & Socket for Removable Joint Cover
Needed to secure and remove joint covers.

- Pin, Nut, Driver Socket Set: GSP02C
- Stainless Steel M6 Removable Nuts: GRN06
- Security M6 1/2” Driver Socket: GDS06

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Guardian Tinned Copper Washer
Used to connect Guardian Security Guard to earth.
40mm width  GCW40
50mm width  GCW50

Bicon Jointing Paste
For jointing similar and dissimilar metals. Assumes a high conductivity joint by sealing out air and moisture to prevent corrosion and reformation of oxide film.
Tubes 225ml  BJP01

Drill Bits & Attachments
For metal and concrete for use with Guardian Security Pin.
Guardian Impact Driver, Slip On  GID01
Guardian Impact Driver, SDS  GID02
6mm dia’ SDS, Masonary  GDB06C
6.5mm dia’ HSS, Metal  GDB065
8mm dia’ HSS, Metal  GDB08

Guardian Anti Climb Top Hat
For attaching earth leads – Circuit Main and Field Earths.
Items are stocked in thicknesses of 3mm to 7mm in both widths.
Guardian Anti Climb Top Hat 40mm  GACTH40
Guardian Anti Climb Top Hat 50mm  GACTH50

Guardian Galvanised Seal Spray
Used to seal cut or exposed edges of Guardian Cover Guards.
Guardian Cold Bright Galvanised Spray 400ml  GSC04
# Products For Protecting On Metal Structures & Security Paints

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Guardian Cover Guard
Stainless Steel cover to protect earth tape.

1100mm lengths - Max 40mm  GCG40M
1100mm lengths - Max 50mm  GCG50M
1100mm lengths - Max 75mm  GCG75M

Drill Bit
For use with Guardian Security Star Bolt.
6.5mm dia’ HSS, Metal  GDB065M

Guardian Anti Climb Top Hat - Tinned Copper
For attaching earth leads – Circuit Main and Field Earths. Comes complete with M12 Security Fixings and Washers.

Guardian Anti Climb Top Hat 40mm  GACTH40D
Guardian Anti Climb Top Hat 50mm  GACTH50D
Guardian Anti Climb Top Hat 75mm  GACTH75D

Guardian Security Paints
Used to disguise and protect copper tape.
Guardian Camouflage Paint  GSC01
Guardian Anti-handling Paint  GSC02
Guardian Bitumastic Paint  GSC03

Paintbrush
For applying Guardian Security Paint.
Width 50mm  GPB20
Security Nuts & Bolts

Guardian Security Pin Hex Bolts
Stainless Steel unique patterned bolt for bolted connections.
M8 x 30mm GPHB08X30
M8 x 40mm GPHB08X40
M8 x 50mm GPHB08X50
M10 x 20mm GPHB10X20
M10 x 40mm GPHB10X40
M10 x 50mm GPHB10X50
M10 x 100mm GPHB10X100
M12 x 25mm GPHB12X25
M12 x 30mm GPHB12X30
M12 x 40mm GPHB12X40
M12 x 50mm GPHB12X50
M12 x 60mm GPHB12X60
M12 x 80mm GPHB12X80

Guardian Security Pin Hex Bolt Insert
For use with Guardian Security Pin Hex Bolt.
1/2" Driver Socket - M8 GPHIB08
1/2" Driver Socket - M10 GPHIB10
1/2" Driver Socket - M12 GPHIB12

Guardian Security Pin Hex Bolt Key Wrench
For use with Guardian Security Pin Hex Bolt.
M8 GPHKR08
M10 GPHKR10
M12 GPHKR12
Guardian Security Removable Nuts
Stainless Steel unique pattenened nut for use with Guardian Security Pin Hex Bolt.
Stainless Steel - M8 GRN08
Stainless Steel - M10 GRN10
Stainless Steel - M12 GRN12

Guardian Security Driver Socket
For use with Guardian Security Removable Nut.
1/2” - M8 GDS08
1/2” - M10 GDS10
1/2” - M12 GDS12

Guardian Security Washers
Stainless Steel Washers for use with Guardian Security Nuts and Bolts.
Stainless Steel Flat Washer - M8 GFW08
Stainless Steel Spring Washer - M8 GSW08
Stainless Steel Flat Washer - M10 GFW10
Stainless Steel Spring Washer - M10 GSW10
Stainless Steel Flat Washer - M12 GFW12
Stainless Steel Spring Washer - M12 GSW12

Drill Bits
For use with Guardian Security Pin Hex Bolt.
11mm dia’ HSS, Metal GDB11
13mm dia’ HSS, Metal GDB13

* Other sizes available to order
* Sheer nuts available in all sizes for permanent connections
Alcomet Guardian Security Products are a range of products that have been tested and approved by specialist engineers to counter the problem of theft and vandalism in substations.

Other Earthing Stocked Items

- Copper & Aluminium Earthing Tape (Many Company Logo’d)
- Fryolux
- Cuprotectic Brazing Rods
- Silfos Brazing Shim
- Scotchbrite Brazing Preparation Pads
- Brazing Clamps
- Conventional Galvanised and Stainless Steel Nuts, Bolts and Washers
- Transition Washers
- Exothermic Welding System
- Equipotential Earth Mats
- P&B Weir Earth Leads – Circuit Main and Field Earths

We are constantly reviewing and updating our products, for the latest information please call us on: 01384 404488 or visit our website at: www.alcomet.net

Earthing - don’t let them get away with it

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