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YOUR SUPPLIER OF HIGH-STRENGTH STAINLESS STEEL FASTENERS

Bulten Stainless has its own production facility in Sweden and holds a very wide range in stock for rapid delivery. If you are in need of unique solutions, talk to our technical customer services. We accept all challenges.

ROOTED IN QUALITY

The company's roots go as far back as the 17th century – a time when exactitude and a sense of responsibility were the most characteristic qualities of forges and foundries. The manufacture and sale of stainless steel fasteners started in 1926. We are carrying on that tradition in our high levels of quality and by working closely with our customers.

COMPLETE RANGE

As market leader, Bulten Stainless always has a complete range of high-strength stainless steel fasteners in stock.



OWN PRODUCTION FACILITIES

At its own production facilities in Sweden, Bulten Stainless manufactures both standard and engineered special products. If you have a requirement, we have the resources and skill to offer customised solutions. For many years, Bulten Stainless has been manufacturing fasteners “that don't exist” – in other words, products with properties far beyond normal standards. The earlier we get involved in the process, the better we are able to fulfil the customer's requirements.

RESEARCH AND DEVELOPMENT

Continuous product development is a central feature of operations at Bulten Stainless. In addition, we work very closely with Swedish manufacturers of high-alloy steel. This has resulted in several products that are globally unique in various ways, and means that we are always ready to face any challenges that come along.

LOGISTICS






Distribution is an important part of our business today. Speed, safety and precision are three key words in our deliveries.



World-class performance!

Many of our customers work in highly demanding environments on a day-to-day basis. This is why Bulten Stainless has developed Bumax.

Bumax involves:

-  **Unmatched corrosion resistance.**
-  **Safer and smaller joints thanks to their uniquely high strength.**
-  **New solutions thanks to extreme hardness.**
-  **Peace of mind in guaranteed traceability.**
-  **Better overall economy.**

BUMAX®

For a long time, Bulten Stainless has dominated the development of high-strength fasteners made of high-alloy steel. Bumax is, so far, the best we have ever made.

Bumax 88/109 displays peak performance long after other fasteners have reached their limits. This is thanks to its uniquely high strength. The difference in extreme environments is particularly noticeable.

Bumax Hard has been developed for thread forming in steel and in stainless steel. This is made possible by its exceptional surface hardness.

All of our Bumax products are made from the best A4 steel on the market – a new variant of the acid-proof Swedish steel SS14.2343. The special characteristic of the composition of this steel is its low carbon content and enhanced chromium, nickel and molybdenum content.

Bumax is a complete range of high-strength fasteners that we always hold in stock.

Bulten Stainless is constantly striving to force the pace of development. This – in combination with our in-depth knowledge of production processes – means that we are able to offer support and technical solutions that contribute to the development of the customer's business as well.

In most technical structures there are strict safety requirements – and within certain industries these requirements are extreme. Oil drilling rigs are facilities where there is no room for compromise in the choice of fasteners. The highest levels of quality are required for working life, strength and corrosion resistance – requirements that match the properties of Bumax. ▶

For obvious reasons, corrosion resistance is the key consideration when building ships and other marine products. Today, the industry is also trying to achieve increasingly low weight in the designs. As regards resistance to corrosion and the combination of low weight/high strength, the unique performance of Bumax products has therefore stirred up justifiable attention within the marine industry – worldwide. ▼





▲ Volvo Ocean Race

The Volvo Ocean Race, formerly called the Whitbread Round the World Race, is the toughest sailing contest in the world, with crews and equipment constantly exposed to extreme stresses. The first competition took place in 1973

and has since then been arranged every four years. The 2001 event was the first under the auspices of Volvo – in previous years British company Whitbread had responsibility for arranging the round-the-world race.



◀ Assa Abloy

“Ocean racing has become a materials sport and, naturally, it is extremely important to have a good supplier of fasteners. I have to say that Bulten Stainless not only met my greatest expectations but exceeded them. I have rarely encountered such a professional, helpful and enthusiastic business partner.

Not once did I hear the word “impossible” – they were always highly motivated in their search for the best solution. The engineered special products manufactured, such as keel bolts, were extremely successful.”

Magnus Olsson, helmsman on the Assa Abloy boat and technical supervisor for the project.

PED-approved pressure vessel screw for Metso Paper ▶

Bumax 88 is the first acid-proof, high-strength fastener on the market to be approved in accordance with the new pressure equipment directive, PED 97/23/EC.

TÜV's PMA approval (Particular Material Appraisal) of the screw means that manufacturers of pressure vessels obtain a number of advantages.

- *Existing designs do not need to be redimensioned and changed. Bumax 88 can be used with the same dimensions as previous screws.*
- *In the case of new designs, bolted joints can even be scaled down, thanks to the uniquely high strength of Bumax.*

There is currently no other high-strength screw on the market that fulfils the new requirements without a comprehensive and very expensive testing and certification process.

Bumax 88, with pressure vessel approval, therefore comes as a great relief to many industries – including Metso Paper, a world leader in the manufacture of production equipment for the paper and pulp industries. When the company discovered Bumax 88, it was able to avoid paying out huge sums for special certification – getting a screw with higher strength instead.



Asko Cylinda ▶

Bulten Stainless is a flexible, expert partner in product development and problem-solving. Collaboration with white-goods manufacturer Asko Cylinda resulted in a brand new screw with unique characteristics – Bumax Hard. It was developed to cope with thread-forming in stainless steel, in order to simplify an element of the assembly process in dishwasher production.

Bumax Hard resolved Asko Cylinda's problem. And it is now a standard product for many other manufacturers requiring stainless steel, thread-forming screws with high-strength properties.





The label and traceability

Yellow label/Bumax 109 and Bumax Hard

Bumax 109 products. Min. tensile strength (Rm) 1000 N/mm² and min. stress at 0.2% permanent strain (Rp 0.2) 900 N/mm². Bumax 109 products are made from acid-proof steel, SS 14.2343/1.4436, with a low carbon content of max. 0.03% (AISI 316L high Mo) and, as regards Rm and Rp 0.2, they are equivalent to Class 10.9 steel bolts.

Orange label /Bumax 88

Bumax 88 products. Min. tensile strength (Rm) 800 N/mm² and min. stress at 0.2% permanent strain (Rp0.2) 640 N/mm². Bumax 88 products are made from acid-proof steel, SS 14.2343/1.4436, with a low carbon content of max. 0.03% (AISI 316L high Mo) and, as regards Rm and Rp 0.2, they are equivalent to Class 8.8 steel bolts.



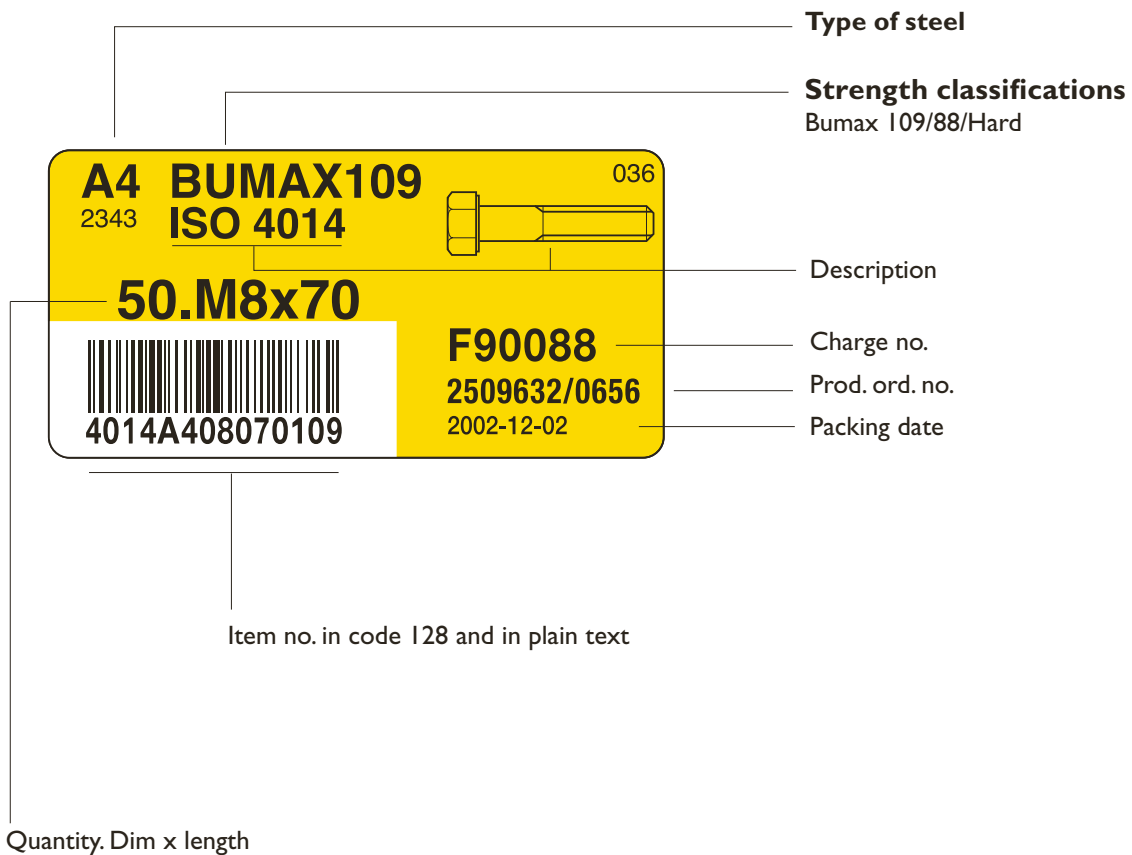
Yellow label

Bumax 109, Bumax Hard
2343/1.4436/316L HiMo

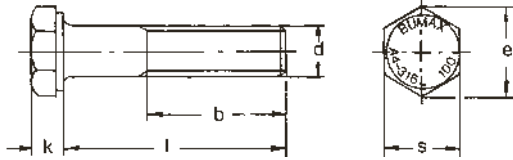


Orange label

Bumax 88
2343/1.4436/316L HiMo







HEXAGON HEAD BOLT 100 M

Bumax 109-M6S
A4-SS 2343-316L HiMo

EN 24014, ISO 4014

| Thread | | | | | |
|-------------------------------|----------------------------|-------|-------|-------|-------|
| d | M6 | M8 | M10 | M12 | M16 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 | 2 |
| s | 10 | 13 | 16 | 18 | 24 |
| k | 4 | 5.3 | 6.4 | 7.5 | 10 |
| e (min.) | 11.05 | 14.38 | 17.77 | 20.03 | 26.75 |
| Length of thread engagement b | | | | | |
| for l to 125 inclusive | 18 | 22 | 26 | 30 | 38 |
| over 125 | | | | | |
| Bolt length | | | | | |
| l | Approximate weight per 100 | | | | |
| | kg | kg | kg | kg | kg |
| 35 | 0.92 | | | | |
| 40 | 1.0 | 2.0 | | | |
| 45 | 1.2 | 2.2 | 3.8 | 5.4 | |
| 50 | 1.3 | 2.4 | 4.0 | 5.8 | |
| 55 | 1.4 | 2.6 | 4.4 | 6.3 | |
| 60 | 1.5 | 2.8 | 4.7 | 6.7 | |
| 65 | | | 5.0 | | |
| 70 | 1.7 | 3.2 | 5.3 | 7.5 | 14 |
| 80 | 1.9 | 3.6 | 5.9 | 8.4 | 16 |
| 90 | | | 6.6 | 9.2 | 17 |
| 100 | | | 7.2 | 10 | 19 |
| 120 | | | | 12 | 22 |
| Nut type | | | | | |
| Bumax 109-M6M | 0.22 | 0.48 | 1.1 | 1.5 | 2.9 |

Sample order: Bumax 109-M6S M6x35

Supplied anti-friction conditioned.



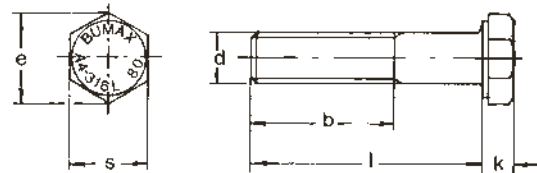
Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|----|-----|-----|-----|
| No. per pack | 100 | 50 | 50 | 25 | 25 |

HEXAGON HEAD BOLT 80 M

Bumax 88-M6S
A4-SS 2343-316L HiMo

EN 24014, ISO 4014



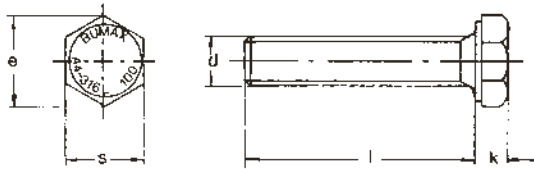
| Thread | | | | | | | | | | | | |
|-------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| d | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M24 | M27 | M30 | M36 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 | 2 | 2 | 2.5 | 2.5 | 3 | 3 | 3.5 | 4 |
| s | 10 | 13 | 16 | 18 | 21 | 24 | 27 | 30 | 36 | 41 | 46 | 55 |
| k | 4 | 5.3 | 6.4 | 7.5 | 8.8 | 10 | 11.5 | 12.5 | 15 | 17 | 18.7 | 22.5 |
| e (min.) | 11.05 | 14.38 | 17.77 | 20.03 | 23.35 | 26.75 | 30.14 | 33.53 | 39.98 | 45.2 | 50.85 | 60.79 |
| Length of thread engagement b | | | | | | | | | | | | |
| for l to 125 inclusive | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 54 | 60 | 66 | 84 |
| over 125 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 60 | 66 | 72 | 84 |
| Bolt length | | | | | | | | | | | | |
| l | Approximate weight per 100 | | | | | | | | | | | |
| | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg |
| 30 | 0.83 | | | | | | | | | | | |
| 35 | 0.92 | 1.8 | | | | | | | | | | |
| 40 | 1.0 | 2.0 | 3.4 | | | | | | | | | |
| 45 | 1.2 | 2.2 | 3.8 | 5.4 | | | | | | | | |
| 50 | 1.3 | 2.4 | 4.0 | 5.8 | | 10 | | | | | | |
| 55 | 1.4 | 2.6 | 4.4 | 6.3 | | 11 | | | | | | |
| 60 | 1.5 | 2.8 | 4.7 | 6.7 | | 12 | | | | | | |
| 65 | 1.6 | 3.0 | 5.0 | 7.1 | | 13 | | | | | | |
| 70 | 1.7 | 3.2 | 5.3 | 7.5 | | 14 | | 23 | | | | |
| 75 | | 3.4 | 5.5 | 7.9 | | 15 | | 24 | 37 | | 64 | |
| 80 | 1.9 | 3.6 | 5.9 | 8.4 | 12 | 16 | | 25 | 39 | | 69 | |
| 85 | | | 6.2 | | | | | | | | | |
| 90 | 2.1 | 3.9 | 6.6 | 9.2 | 13 | 17 | 22 | 28 | 43 | | 71 | |
| 100 | 2.3 | 4.3 | 7.2 | 10 | 14 | 19 | 24 | 30 | 46 | 60 | 77 | 117 |
| 110 | 2.5 | 4.7 | 7.5 | 11 | | 20 | | 33 | 50 | 65 | 82 | |
| 120 | 2.7 | 4.8 | 8.3 | 12 | 16 | 22 | 28 | 35 | 54 | 70 | 88 | 132 |
| 130 | 2.9 | 5.3 | 9.6 | 13 | | 23 | | 38 | 56 | 72 | 92 | |
| 140 | | 5.8 | 10 | 14 | 19 | 25 | 32 | 40 | 60 | 77 | 98 | 147 |
| 150 | | 6.2 | 11 | 15 | | 26 | 34 | 42 | 63 | 81 | 103 | |
| 160 | | | 12 | 16 | | 28 | | 45 | 67 | 86 | 109 | 163 |
| 180 | | | 13 | 17 | | 31 | | 49 | 74 | 95 | 120 | |
| 200 | | | 14 | | | 34 | | 54 | 81 | 103 | 131 | 195 |
| Nut type | | | | | | | | | | | | |
| Bumax 88-M6M | 0.22 | 0.48 | 1.1 | 1.5 | 2.3 | 2.9 | 4.9 | 5.7 | 11 | 16 | 22 | 40 |

Sample order: Bumax 88-M6S M6x30



Packaging

| Diameter | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M24 | M27 | M30 | M36 |
|--------------|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| No. per pack | 100 | 50 | 50 | 25 | 25 | 25 | 10 | 10 | 10 | 10 | 10 | 10 |



HEXAGON HEAD SCREW 100 M

Bumax 109-M6S-H
A4-SS 2343-316L HiMo

EN 24017, ISO 4017

| Thread | | | | | |
|-----------------|-------|----------------------------|-------|-------|-------|
| d | M6 | M8 | M10 | M12 | M16 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 | 2 |
| s | 10 | 13 | 16 | 18 | 24 |
| k | 4 | 5.3 | 6.4 | 7.5 | 10 |
| e (min.) | 11.05 | 14.38 | 17.77 | 20.03 | 26.75 |
| Screw length | | Approximate weight per 100 | | | |
| l | kg | kg | kg | kg | kg |
| 20 | 0.6 | 1.2 | 2.1 | | |
| 25 | 0.7 | | | | |
| 30 | 0.8 | 1.6 | 2.6 | 3.8 | 7.7 |
| 35 | | | | | |
| 40 | | | 3.1 | 4.5 | 9.0 |
| 45 | | | | | 9.7 |
| 50 | | | | | 10 |
| 55 | | | | | 11 |
| 60 | | | | | 12 |
| Nut type | | | | | |
| Bumax 109-M6M | 0.22 | 0.48 | 1.1 | 1.5 | 2.9 |

Sample order: Bumax 109-M6S-H M6x20

Supplied anti-friction conditioned.



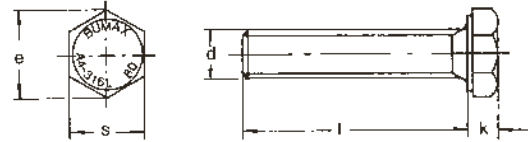
Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|----|-----|-----|-----|
| No. per pack | 100 | 50 | 50 | 25 | 25 |

HEXAGON HEAD SCREW 80 M

Bumax 88-M6S-H
A4-SS 2343-316L HiMo

EN 24017, ISO 4017



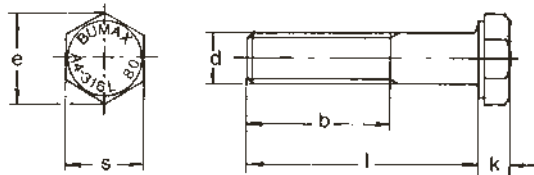
| Thread | | | | | | | | | | | | | | |
|-----------------|----------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|
| d | M4 | M5 | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M24 | M27 | M30 | M36 |
| Pitch of thread | 0.7 | 0.8 | 1 | 1.25 | 1.5 | 1.75 | 2 | 2 | 2.5 | 2.5 | 3 | 3 | 3.5 | 4 |
| s | 7 | 8 | 10 | 13 | 16 | 18 | 21 | 24 | 27 | 30 | 36 | 41 | 46 | 55 |
| k | 2.8 | 3.5 | 4 | 5.3 | 6.4 | 7.5 | 8.8 | 10 | 11.5 | 12.5 | 15 | 17 | 18.7 | 22.5 |
| e (min.) | 7.66 | 8.79 | 11.05 | 14.38 | 17.77 | 20.03 | 23.36 | 26.75 | 30.14 | 33.53 | 39.98 | 45.2 | 50.85 | 60.79 |
| Screw length | | | | | | | | | | | | | | |
| l | Approximate weight per 100 | | | | | | | | | | | | | |
| | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg |
| 6 | 0.14 | | | | | | | | | | | | | |
| 8 | 0.15 | | | | | | | | | | | | | |
| 10 | 0.16 | 0.27 | 0.41 | 0.91 | | | | | | | | | | |
| 12 | 0.18 | 0.29 | 0.44 | 0.98 | 1.7 | | | | | | | | | |
| 14 | | 0.32 | 0.48 | 1.0 | | | | | | | | | | |
| 16 | 0.21 | 0.35 | 0.51 | 1.1 | 1.9 | | | | | | | | | |
| 20 | 0.24 | 0.39 | 0.58 | 1.2 | 2.1 | 3.1 | | | | | | | | |
| 22 | | | 0.62 | 1.3 | | | | | | | | | | |
| 25 | 0.28 | 0.46 | 0.67 | 1.4 | 2.4 | 3.4 | | 7.0 | | | | | | |
| 30 | 0.31 | 0.55 | 0.75 | 1.6 | 2.6 | 3.8 | 5.8 | 7.7 | | | | | | |
| 35 | | 0.63 | 0.84 | 1.7 | 2.9 | 4.1 | | 8.3 | | 15 | | | | |
| 40 | | 0.65 | 0.92 | 1.9 | 3.1 | 4.5 | 6.8 | 9.0 | 12 | 16 | 24 | | | |
| 45 | | 0.70 | 1.0 | 2.0 | 3.4 | 4.9 | | 9.7 | | 17 | 26 | | | |
| 50 | | 0.76 | 1.1 | 2.2 | 3.6 | 5.2 | 7.8 | 10 | 14 | 18 | 27 | 38 | | |
| 55 | | | | | | | | | | 19 | | | | |
| 60 | | | 1.3 | 2.5 | 4.1 | 5.8 | 8.8 | 12 | 15 | 20 | 30 | 42 | 54 | |
| 65 | | | | | | | | | | 21 | 32 | | | |
| 70 | | | 1.4 | 2.8 | 4.6 | 6.7 | 9.8 | 13 | 17 | 22 | 33 | 45 | 59 | |
| 75 | | | | | | | | | | 23 | 35 | | | |
| 80 | | | 1.6 | 3.1 | 5.1 | 7.4 | | 14 | 19 | 24 | 36 | 49 | 64 | 99 |
| 90 | | | | | 5.7 | 8.1 | | | | | 39 | 53 | 69 | 106 |
| 100 | | | | | 6.1 | 8.8 | | | | 28 | 42 | 57 | 73 | 114 |
| 110 | | | | | 6.6 | | | | | | | | | |
| 120 | | | | | 7.1 | | | 20 | | | 48 | 65 | | 127 |
| 130 | | | | | 7.6 | | | | | | | 69 | | 134 |
| 140 | | | | | | | | | | | | 73 | | 141 |
| 150 | | | | | | | | | | 38 | | 77 | | 148 |
| 160 | | | | | | | | | | | | 81 | | |
| Nut type | | | | | | | | | | | | | | |
| Bumax 88-M6M | 0.07 | 0.11 | 0.22 | 0.48 | 1.1 | 1.5 | 2.3 | 2.9 | 4.9 | 5.7 | 11 | 16 | 22 | 40 |

Sample order: Bumax 88-M6S-H M4x6



Packaging

| Diameter | M4 | M5 | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M24 | M27 | M30 | M36 |
|--------------|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| No. per pack | 200 | 100 | 100 | 50 | 50 | 25 | 25 | 25 | 10 | 10 | 10 | 10 | 10 | 10 |



HEXAGON HEAD BOLT 80 UNC

Bumax 88-U6S
A4-SS 2343-316L HiMo

SS 1943 (ANSI B18.2)

| Thread | UNC | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 7/8 | 1 |
|--|-----|-----------------------------------|-------|-------|-------|-------|-------|--------|-------|
| No. of threads per inch | | 20 | 18 | 16 | 13 | 11 | 10 | 9 | 8 |
| s inch (es) | | 7/16 | 1/2 | 9/16 | 3/4 | 15/16 | 1.1/8 | 1.5/16 | 1.1/2 |
| s mm | | 11.1 | 12.7 | 14.3 | 19 | 23.8 | 28.6 | 33.3 | 38.1 |
| k | | 4 | 5.2 | 6 | 7.9 | 9.9 | 11.9 | 13.9 | 15.5 |
| e (min.) | | 12.39 | 14.15 | 15.95 | 21.34 | 26.69 | 31.85 | 37.21 | 42.55 |
| Length of thread engagement b for l to 152 inclusive | | 19 | 22 | 25 | 32 | 38 | 44 | 51 | 57 |
| over 152 | | | | | | | 51 | | |
| Bolt length l | | Approximate weight per 100 | | | | | | | |
| inch | mm | kg | kg | kg | kg | kg | kg | kg | kg |
| 1/2 | 13 | 0.56 | 0.95 | | | | | | |
| 5/8 | 16 | 0.62 | 1.1 | 1.5 | | | | | |
| 3/4 | 19 | 0.66 | 1.1 | 1.6 | | | | | |
| 7/8 | 22 | | | 1.7 | | | | | |
| 1 | 25 | 0.79 | 1.3 | 1.9 | 3.8 | 6.8 | | | |
| 1.1/4 | 32 | 0.97 | 1.5 | 2.2 | 4.4 | 7.7 | 12 | | |
| 1.1/2 | 38 | 1.1 | 1.8 | 2.5 | 4.8 | 8.5 | 13 | 20 | |
| 1.3/4 | 45 | 1.3 | 2.0 | 2.9 | 5.6 | 9.4 | 15 | | |
| 2 | 51 | 1.4 | 2.3 | 3.3 | 6.2 | 10 | 16 | 24 | 33 |
| 2.1/4 | 57 | | | 3.6 | 6.7 | 11 | 17 | | 35 |
| 2.1/2 | 64 | 1.7 | 2.8 | 3.9 | 7.5 | 12 | 19 | 27 | 37 |
| 2.3/4 | 70 | | | 4.3 | 8.1 | 13 | 20 | 29 | |
| 3 | 76 | 2.0 | 3.2 | 4.7 | 8.7 | 14 | 21 | 31 | 42 |
| 3.1/4 | 83 | | | 5.0 | 9.2 | 15 | 23 | 33 | |
| 3.1/2 | 89 | | 3.7 | 5.3 | 10 | 16 | 24 | 35 | 47 |
| 4 | 102 | | 4.3 | 6.1 | 11 | 18 | 27 | 39 | 52 |
| 4.1/2 | 114 | | | 6.7 | 12 | 20 | 30 | 42 | 57 |
| 5 | 127 | | | 7.4 | 14 | 23 | 33 | 46 | 61 |
| 5.1/2 | 140 | | | 8.2 | 15 | 24 | 36 | 50 | 67 |
| 6 | 152 | | | 8.7 | 16 | 26 | 38 | 54 | 71 |
| 6.1/2 | 165 | | | | | | 41 | | |
| 7 | 178 | | | | | | 44 | | |
| Nut type | | | | | | | | | |
| Bumax 88-U6M | | 0.32 | 0.47 | 0.69 | 1.6 | 3.2 | 5.3 | 9.2 | 14 |

Sample order: A4-U6S 1/4x13

Screws above the stepped line are fully-threaded.

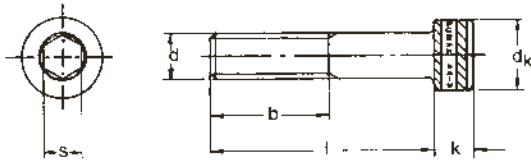
Can be manufactured to order as Bumax 109.



Packaging

| Diameter | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 7/8 | 1 |
|--------------|-----|------|-----|-----|-----|-----|-----|----|
| No. per pack | 100 | 50 | 50 | 25 | 25 | 10 | 10 | 10 |





HEXAGON SOCKET 100 M

Hexagon socket head cap screw

Bumax 109-MC6S
A4-SS 2343-316L HiMo

EN/ISO 4762 (DIN 912)

| Thread | | | | |
|-------------------------------|------|----------------------------|-----|------|
| d | M6 | M8 | M10 | M12 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 |
| dk | 10 | 13 | 16 | 18 |
| k | 6 | 8 | 10 | 12 |
| s | 5 | 6 | 8 | 10 |
| Length of thread engagement b | | | | |
| | 24 | 28 | 32 | 36 |
| Screw length | | Approximate weight per 100 | | |
| l | kg | kg | kg | kg |
| 20 | 0.65 | 1.3 | 2.3 | |
| 30 | 0.83 | 1.7 | 2.8 | 3.9 |
| 40 | 1.1 | 2.1 | 3.3 | 4.7 |
| 50 | 1.3 | 2.5 | 3.9 | 5.5 |
| 60 | 1.5 | 2.9 | 4.6 | 6.3 |
| 70 | 1.9 | 3.3 | 5.2 | 7.1 |
| 80 | 2.1 | 3.7 | 5.9 | 8.0 |
| 90 | | 4.0 | 6.5 | 8.9 |
| 100 | | | 7.1 | 9.8 |
| 120 | | | | 12 |
| Nut type | | | | |
| Bumax 109-M6M | 0.22 | 0.48 | 1.1 | 1.5 |

Sample order: Bumax 109-MC6S M6x20

Screws above the stepped line are fully-threaded.

Supplied anti-friction conditioned.



Packaging

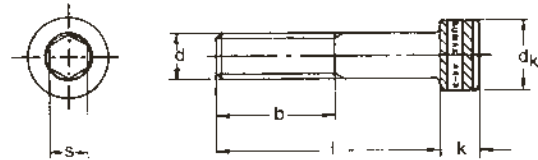
| Diameter | M6 | M8 | M10 | M12 |
|--------------|-----|----|-----|-----|
| No. per pack | 100 | 50 | 50 | 25 |

HEXAGON SOCKET 80 M

Hexagon socket head cap screw

Bumax 88-MC6S
A4-SS 2343-316L HiMo

EN/ ISO 4762 (DIN 912)



| Thread | | | | | | | | | | |
|-------------------------------|----------------------------|------|------|------|------|-----|------|-----|-----|-----|
| d | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M16 | M20 | M24 |
| Pitch of thread | 0.5 | 0.7 | 0.8 | 1 | 1.25 | 1.5 | 1.75 | 2 | 2.5 | 3 |
| dk | 5.5 | 7 | 8.5 | 10 | 13 | 16 | 18 | 24 | 30 | 36 |
| k | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 16 | 20 | 24 |
| s | 2.5 | 3 | 4 | 5 | 6 | 8 | 10 | 14 | 17 | 19 |
| Length of thread engagement b | 18 | 20 | 22 | 24 | 28 | 32 | 36 | 44 | 52 | 60 |
| Screw length | | | | | | | | | | |
| l | Approximate weight per 100 | | | | | | | | | |
| | kg | kg | kg | kg | kg | kg | kg | kg | kg | kg |
| 6 | 0.071 | 0.15 | | | | | | | | |
| 8 | 0.080 | 0.17 | | | | | | | | |
| 10 | 0.088 | 0.18 | 0.27 | | | | | | | |
| 12 | 0.096 | 0.20 | 0.30 | 0.51 | | | | | | |
| 14 | | | | 0.52 | | | | | | |
| 16 | 0.12 | 0.23 | 0.35 | 0.58 | 1.2 | 2.1 | | | | |
| 20 | 0.14 | 0.27 | 0.40 | 0.65 | 1.3 | 2.3 | 3.2 | | | |
| 22 | | | | | | | | | | |
| 25 | 0.16 | 0.32 | 0.48 | 0.76 | 1.5 | 2.5 | 3.6 | | | |
| 30 | 0.19 | 0.37 | 0.56 | 0.83 | 1.7 | 2.8 | 3.9 | 7.8 | 13 | |
| 35 | | 0.42 | 0.63 | 0.99 | 1.9 | 3.0 | 4.3 | 8.4 | | |
| 40 | | 0.47 | 0.71 | 1.1 | 2.1 | 3.3 | 4.7 | 9.1 | 15 | |
| 45 | | | 0.79 | 1.1 | 2.2 | 3.6 | 5.0 | 9.8 | 16 | |
| 50 | | 0.56 | 0.86 | 1.3 | 2.5 | 3.9 | 5.5 | 11 | 17 | 30 |
| 55 | | | | | | 4.2 | | 12 | | |
| 60 | | | 1.0 | 1.5 | 2.9 | 4.6 | 6.3 | 12 | 19 | 32 |
| 65 | | | | | | 4.8 | | | | |
| 70 | | | 1.2 | 1.9 | 3.3 | 5.2 | 7.1 | 14 | 22 | 36 |
| 75 | | | | | | 5.4 | | | | |
| 80 | | | | 2.1 | 3.7 | 5.9 | 8.0 | 15 | 24 | 40 |
| 90 | | | | 2.2 | | 6.5 | 8.9 | 17 | 27 | 43 |
| 100 | | | | | | 7.1 | 9.8 | 19 | 29 | 47 |
| 110 | | | | | | | | 20 | | |
| 120 | | | | | | 8.4 | 12 | 22 | | 55 |
| 130 | | | | | | | | | | |
| 140 | | | | | | | | | 39 | 62 |
| 150 | | | | | | | | | | 66 |
| Nut type | | | | | | | | | | |
| Bumax 88-M6M | 0.03 | 0.07 | 0.11 | 0.22 | 0.48 | 1.1 | 1.5 | 2.9 | 5.7 | 11 |

Sample order: Bumax 88-MC6S M3x6

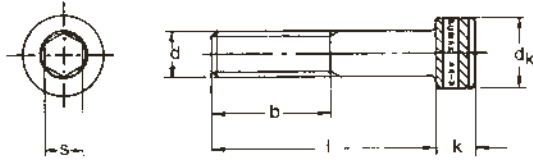
Screws above the stepped line are fully-threaded.

Due to space restrictions, M3 and M4 can be supplied without marking and knurling.

Packaging

| Diameter | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M16 | M20 | M24 |
|--------------|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|
| No. per pack | 500 | 200 | 100 | 100 | 50 | 50 | 25 | 25 | 10 | 10 |





HEXAGON SOCKET 80 UNC

Hexagon socket head cap screw

Bumax 88-UC6S
A4-SS 2343-316L HiMo

SS 1960 (ANSI B18.3)

| Thread | UNC | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 7/8 | 1 |
|-------------------------|-----|-----------------------------------|------|------|------|------|------|------|------|
| No. of threads per inch | | 20 | 18 | 16 | 13 | 11 | 10 | 9 | 8 |
| dk | | 9.5 | 11.9 | 14.3 | 19 | 23.8 | 28.6 | 33.3 | 38.1 |
| k | | 6.3 | 7.9 | 9.5 | 12.7 | 15.9 | 19 | 22.2 | 25.4 |
| s mm | | 3/16 | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 3/4 |
| s mm | | 4.8 | 6.4 | 7.9 | 9.5 | 12.7 | 15.9 | 19 | 19 |
| b | | 25 | 28 | 38 | 38 | 51 | 57 | 76 | 76 |
| Screw length l | | Approximate weight per 100 | | | | | | | |
| inch | mm | kg | kg | kg | kg | kg | kg | kg | kg |
| 1/2 | 13 | 0.50 | 0.9 | | | | | | |
| 5/8 | 16 | 0.58 | 1.0 | | | | | | |
| 3/4 | 19 | 0.62 | 1.1 | 1.7 | | | | | |
| 7/8 | 22 | | 1.1 | 1.9 | | | | | |
| 1 | 25 | 0.73 | 1.2 | 2.0 | 4.1 | | | | |
| 1.1/4 | 32 | 0.86 | 1.3 | 2.1 | 4.8 | 8.2 | | | |
| 1.1/2 | 38 | 1.0 | 1.6 | 2.5 | 5.2 | 9.0 | | | |
| 1.3/4 | 45 | | | | | | | | |
| 2 | 51 | | 2.1 | 3.2 | 6.2 | 11 | 17 | 26 | 37 |
| 2.1/4 | 57 | | | | | 12 | | | |
| 2.1/2 | 64 | | | 4.0 | | | 20 | | |
| 2.3/4 | 70 | | | | | | | | |
| 3 | 76 | | | | 8.2 | | 23 | 32 | 46 |
| 3.1/4 | 83 | | | | | | | | |
| 3.1/2 | 89 | | | | | | | | |
| 4 | 102 | | | | | | | 40 | 56 |
| Nut type | | | | | | | | | |
| Bumax 88 | | 0.32 | 0.47 | 0.69 | 1.6 | 3.2 | 5.3 | 9.2 | 14 |

Sample order: Bumax 88-UC6S 1/4UNCx13

Screws above the stepped line are fully-threaded, while screws below the line are usually supplied partially-threaded with a thread engagement length as above.

However we reserve the right, at our discretion, to supply all lengths in a fully-threaded design.



Packaging

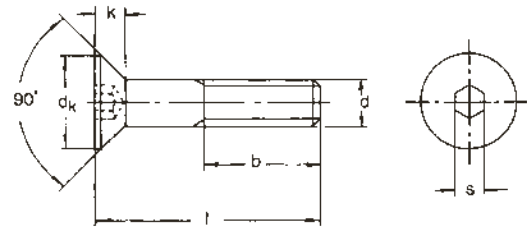
| Diameter | 1/4 | 5/16 | 3/8 | 1/2 | 5/8 | 3/4 | 7/8 | 1 |
|--------------|-----|------|-----|-----|-----|-----|-----|----|
| No. per pack | 100 | 50 | 50 | 25 | 25 | 10 | 10 | 10 |

HEXAGON SOCKET 80 M

Hexagon socket countersunk head screw

Bumax 88-MF6S
A4-SS 2343-316L HiMo

EN/ ISO 10642 (DIN 7991)



| Thread | | | | | | | | |
|-------------------------------|------|------|-------|-------|-------|------|-------|------|
| d | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M16 |
| Pitch of thread | 0.5 | 0.7 | 0.8 | 1 | 1.25 | 1.5 | 1.75 | 2 |
| dk max. | 6.72 | 8.96 | 11.20 | 13.44 | 17.92 | 22.4 | 26.88 | 33.6 |
| k max. | 1.86 | 2.48 | 3.1 | 3.72 | 4.96 | 6.2 | 7.44 | 8.8 |
| s | 2 | 2.5 | 3 | 4 | 5 | 6 | 8 | 10 |
| Length of thread engagement b | 18 | 20 | 22 | 24 | 28 | 32 | 36 | 44 |
| Screw length | | | | | | | | |
| Approximate weight per 100 | | | | | | | | |
| l | kg | kg | kg | kg | kg | kg | kg | kg |
| 6 | 0.04 | | | | | | | |
| 8 | 0.05 | | | | | | | |
| 10 | 0.06 | 0.11 | 0.19 | 0.26 | | | | |
| 12 | 0.07 | 0.12 | 0.20 | 0.32 | | | | |
| 16 | 0.08 | 0.15 | 0.26 | 0.36 | 0.74 | | | |
| 20 | 0.10 | 0.18 | 0.31 | 0.44 | 0.87 | 1.4 | | |
| 25 | | 0.22 | 0.36 | 0.53 | 1.0 | 1.7 | | |
| 30 | | 0.29 | 0.45 | 0.64 | 1.2 | 1.9 | 2.9 | |
| 35 | | | | | 1.3 | 2.2 | | |
| 40 | | | | 0.88 | 1.6 | 2.4 | 3.6 | 6.5 |
| 45 | | | | | | | 4.1 | |
| 50 | | | 0.77 | 1.1 | 2.0 | 3.0 | | 7.8 |
| 60 | | | | 1.3 | 2.5 | | 5.5 | 9.2 |
| 70 | | | | | 3.0 | | 6.3 | 11 |
| 80 | | | | | | | | 13 |
| 90 | | | | | | | | |
| 100 | | | | | | | | 16 |
| Nut type | | | | | | | | |
| Bumax 88-M6M | 0.03 | 0.07 | 0.11 | 0.22 | 0.48 | 1.1 | 1.5 | 2.9 |

Sample order: Bumax 88-MF6S M3x6

Screws above the stepped line are fully-threaded.

However we reserve the right, at our discretion, to supply all lengths in a fully-threaded design.

Packaging

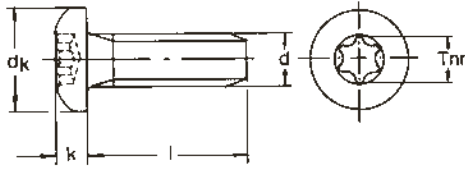
| Diameter | M3 | M4 | M5 | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|-----|-----|-----|----|-----|-----|-----|
| No. per pack | 500 | 200 | 100 | 100 | 50 | 50 | 25 | 25 |



Bulten Stainless supplies high-strength acid-proof fasteners to the defence industry throughout Europe.







HEXALOBULAR SOCKET SCREW M

Thread-forming Taptite pan head screw, Torx grip

Bumax Hard-MRT-TT
A4-SS 2343-316L HiMo

| Thread | | | | | |
|-----------------|-----|-----|-----|-----|------|
| d | M3 | M4 | M5 | M6 | M8 |
| Pitch of thread | 0.5 | 0.7 | 0.8 | 1 | 1.25 |
| dk | 5.6 | 8 | 9.5 | 12 | 16 |
| k (max) | 2.4 | 3.1 | 3.7 | 4.6 | 6 |
| Torx nr | T10 | T20 | T25 | T30 | T45 |

| Screw length l | Approximate weight per 100 | | | | |
|-------------------|----------------------------|------|------|------|-----|
| | kg | kg | kg | kg | kg |
| 6 | 0.06 | | | | |
| 8 | 0.07 | 0.15 | | | |
| 10 | 0.08 | 0.17 | 0.28 | | |
| 12 | 0.09 | 0.18 | 0.31 | 0.51 | |
| 16 | | 0.22 | 0.35 | 0.58 | 1.2 |
| 20 | | 0.25 | 0.41 | 0.65 | 1.4 |
| 25 | | | 0.47 | 0.74 | 1.5 |
| 30 | | | | 0.82 | 1.7 |
| 40 | | | | | 2.0 |

Sample order: Bumax Hard-MRT-TT Torx M3x6

All lengths are supplied in a fully-threaded design.

Guide values for hole diameter – refer to technical information.

For assembly in structural steel type ST37 and stainless steel <200 HV.

Supplied surface coated. Dim. ≥M8 also anti-friction conditioned.



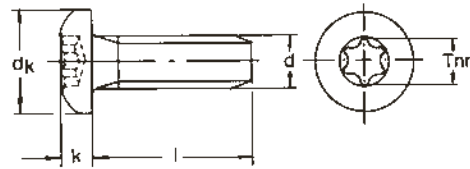
Packaging

| Diameter | M3 | M4 | M5 | M6 | M8 |
|--------------|-----|-----|-----|-----|----|
| No. per pack | 500 | 200 | 100 | 100 | 50 |

HEXALOBULAR SOCKET SCREW M

Thread forming Taptite pan head screw, Torx grip

Bumax MRT-TT
A4-SS 2343-316L HiMo



| Thread | | | | | |
|-----------------|-----|-----|-----|-----|------|
| d | M3 | M4 | M5 | M6 | M8 |
| Pitch of thread | 0.5 | 0.7 | 0.8 | 1 | 1.25 |
| dk | 5.6 | 8 | 9.5 | 12 | 16 |
| k (max.) | 2.4 | 3.1 | 3.7 | 4.6 | 6 |
| Torx no. | T10 | T20 | T25 | T30 | T45 |

| Screw length l | Approximate weight per 100 | | | | |
|-------------------|----------------------------|------|------|------|-----|
| | kg | kg | kg | kg | kg |
| 6 | 0.06 | | | | |
| 8 | 0.07 | 0.15 | | | |
| 10 | 0.08 | 0.17 | 0.28 | | |
| 12 | 0.09 | 0.18 | 0.31 | 0.51 | |
| 16 | | 0.22 | 0.35 | 0.58 | 1.2 |
| 20 | | 0.25 | 0.41 | 0.65 | 1.4 |
| 25 | | | 0.47 | 0.74 | 1.5 |
| 30 | | | | 0.82 | 1.7 |
| 40 | | | | | 2.0 |

Sample order: Bumax -MRT-TT Torx M3x6

All lengths are supplied in a fully-threaded design.

For assembly in material with hardness not exceeding HV 115.

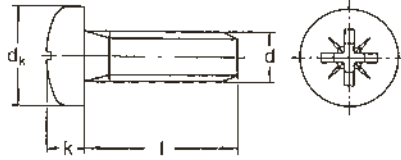
Guide values for hole diameter – refer to technical information.

Bumax HARD or hardened, bright galvanised screws in SS 2302/2303, which are made to order; are recommended for assembly in material with a hardness exceeding HV 115.

Packaging

| Diameter | M3 | M4 | M5 | M6 | M8 |
|--------------|-----|-----|-----|-----|----|
| No. per pack | 500 | 200 | 100 | 100 | 50 |





CROSS RECESSED SCREW M

Thread-forming Taptite pan head screw, cross-recess Z

Bumax MRX-TT
A4-SS 2343-316L HiMo

| Thread | M3 | M4 | M5 | M6 |
|-----------------|-----|-----|-----|-----|
| Pitch of thread | 0.5 | 0.7 | 0.8 | 1 |
| dk | 5.6 | 8 | 9.5 | 12 |
| k (max.) | 2.4 | 3.1 | 3.7 | 4.6 |
| Driver no. | 1 | 2 | 2 | 3 |

| Screw length | Approximate weight per 100 | | | |
|--------------|----------------------------|------|------|------|
| l | kg | kg | kg | kg |
| 6 | 0.06 | | | |
| 8 | 0.07 | 0.15 | | |
| 10 | 0.08 | 0.17 | 0.28 | |
| 12 | 0.09 | 0.18 | 0.31 | 0.51 |
| 16 | | 0.22 | 0.35 | 0.58 |
| 20 | | | 0.41 | 0.65 |
| 25 | | | | 0.74 |

Sample order: Bumax-MRX-TT Z M3x6

All lengths are supplied in a fully-threaded design.

For assembly in material with hardness not exceeding HV 115.

Guide values for hole diameter – refer to technical information.

For assembly in material with hardness not exceeding HV 115.

Bumax Hard or hardened, bright galvanised screws in SS 2302/2303, which are made to order, are recommended for assembly in material with a hardness exceeding HV 115.

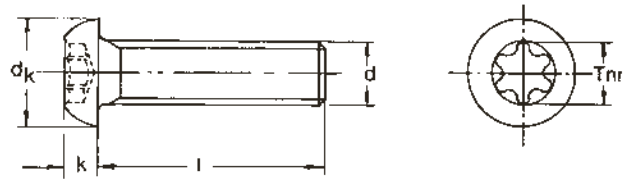


Packaging

| Diameter | M3 | M4 | M5 | M6 |
|--------------|-----|-----|-----|-----|
| No. per pack | 500 | 200 | 100 | 100 |

HEXALOBULAR SOCKET SCREW 80 M

Button head, Torx grip
Bumax 88-MKT
A4-SS 2343-316L HiMo



(DIN/EN/ISO 7380)

| Thread | | | |
|-----------------|----------------------------|------|------|
| d | M5 | M6 | M8 |
| Pitch of thread | 0.8 | 1 | 1.25 |
| dk | 9.5 | 10.5 | 14 |
| k (max.) | 2.75 | 3.3 | 4.4 |
| Grip no. | T25 | T30 | T40 |
| Screw length | Approximate weight per 100 | | |
| l | kg | kg | kg |
| 8 | 0.19 | | |
| 10 | 0.26 | 0.29 | |
| 12 | 0.35 | 0.38 | |
| 14 | | 0.43 | |
| 16 | 0.47 | 0.49 | 1.1 |
| 20 | 0.54 | 0.67 | 1.2 |
| 25 | 0.63 | 0.76 | 1.3 |
| 30 | 0.71 | 0.85 | 1.3 |
| 35 | | 0.98 | |
| 40 | 0.87 | 1.10 | 1.6 |
| 50 | 0.95 | 1.30 | 1.9 |
| 70 | | 1.80 | |

Sample order: Bumax 88-MKT M5x8

All lengths are supplied in a fully-threaded design.

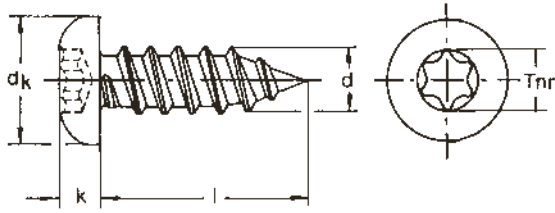
Packaging

| Diameter | M5 | M6 | M8 |
|--------------|-----|-----|----|
| No. per pack | 100 | 100 | 50 |









HEXALOBULAR SOCKET SCREW ST

Self tapping pan head screw, Torx grip

Bumax Hard-RTS
A4-SS 2343-316L HiMo

EN/ISO 7049 (DIN 7981)

| Thread d | ST2,9 (B4) | ST3,5 (B6) | ST4,2 (B8) | ST4,8 (B10) | ST5,5 (B12) | ST6,3 (B14) |
|-------------|---------------|---------------|---------------|----------------|----------------|----------------|
|-------------|---------------|---------------|---------------|----------------|----------------|----------------|

| | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|
| dk | 5.6 | 7 | 8 | 9.5 | 11 | 12 |
| k (max.) | 2.4 | 2.6 | 3.1 | 3.7 | 4 | 4.6 |
| TORX no. | T10 | T15 | T20 | T25 | T25 | T30 |

| Screw length l | Approximate weight per 100 | | | | | |
|-------------------|----------------------------|------|------|------|------|------|
| | kg | kg | kg | kg | kg | kg |
| 9.5 | 0.050 | 0.08 | 0.12 | | | |
| 13 | 0.063 | 0.10 | 0.15 | 0.22 | | |
| 16 | 0.074 | 0.11 | 0.17 | 0.25 | 0.36 | |
| 19 | 0.085 | 0.13 | 0.19 | 0.28 | 0.40 | |
| 25 | | 0.16 | 0.23 | 0.34 | 0.48 | 0.61 |
| 32 | | 0.20 | 0.28 | 0.41 | 0.57 | 0.73 |
| 38 | | | 0.32 | 0.47 | 0.65 | 0.84 |
| 50 | | | | 0.52 | 0.81 | 1.1 |

Sample order: Bumax Hard-RTS Torx 2.9x9.5

Guide values for hole diameter – refer to technical information.

For assembly in structural steel type ST37 with HV<200.

Supplied surface-coated.

During a transitional period, we reserve the right to supply in accordance with the withdrawn DIN standard.



Packaging

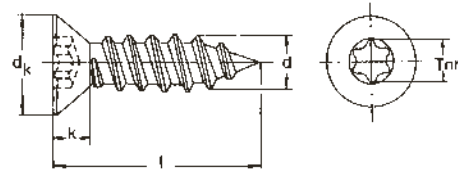
| Diameter | ST2.9 | ST3.5 | ST4.2 | ST4.8 | ST5.5 | ST6.3 |
|--------------|-------|-------|-------|-------|-------|-------|
| No. per pack | 500 | 500 | 500 | 200 | 200 | 200 |

HEXALOBULAR SOCKET SCREW ST

Self tapping countersunk head screw, Torx grip

Bumax Hard-FTS
A4-SS 2343-316L HiMo

EN/ISO 7050 (DIN 7982)



| Thread | | | | | | |
|----------|---------------|---------------|---------------|----------------|----------------|----------------|
| d | ST2.9 (B4) | ST3.5 (B6) | ST4.2 (B8) | ST4.8 (B10) | ST5.5 (B12) | ST6.3 (B14) |
| dk | 5.5 | 7.3 | 8.4 | 9.3 | 10.3 | 11.3 |
| k (max.) | 1.7 | 2.35 | 2.6 | 2.8 | 3 | 3.15 |
| TORX no. | T10 | T15 | T20 | T25 | T25 | T30 |

| Screw length l | Approximate weight per 100 | | | | | |
|-------------------|----------------------------|-------|-------|------|------|------|
| | kg | kg | kg | kg | kg | kg |
| 6.5 | 0.028 | | | | | |
| 9.5 | 0.035 | 0.054 | 0.078 | | | |
| 13 | 0.048 | 0.072 | 0.10 | 0.15 | | |
| 16 | 0.058 | 0.087 | 0.12 | 0.18 | | |
| 19 | 0.069 | 0.10 | 0.14 | 0.21 | 0.29 | 0.36 |
| 25 | 0.070 | 0.13 | 0.19 | 0.27 | 0.37 | 0.47 |
| 32 | | 0.15 | 0.24 | 0.34 | 0.46 | 0.60 |
| 38 | | 0.17 | 0.28 | 0.40 | 0.54 | 0.70 |
| 50 | | | 0.37 | 0.52 | 0.70 | 0.90 |

Sample order: Bumax Hard-FTS Torx 2.9x6.5

Guide values for hole diameter – refer to technical information.

For assembly in structural steel type ST37 with HV<200.

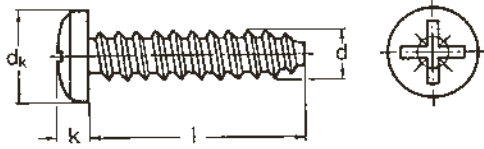
During a transitional period, we reserve the right to supply in accordance with the withdrawn DIN standard.

Supplied surface coated.

Packaging

| Diameter | ST2.9 | ST3.5 | ST4.2 | ST4.8 | ST5.5 | ST6.3 |
|--------------|-------|-------|-------|-------|-------|-------|
| No. per pack | 500 | 500 | 500 | 200 | 200 | 200 |





CROSS RECESSED SCREW PLASTITE

Self tapping pan head screw for plastics, cross-recess Z

Bumax RX-Plastite
A4-SS 2343-316L HiMo

| Thread no. threads/inch | 4-20 | 6-19 | 8-16 | 10-14 |
|-------------------------|-----------------------------------|---------|---------|---------|
| d | 3.1 | 3.6 | 4.6 | 5.3 |
| dk | 5.6 | 7.0 | 8.0 | 9.5 |
| k | 2 | 2.5 | 2.9 | 3.5 |
| Driver no. | 1 | 2 | 2 | 2 |
| Hole diameter | 2.5-2.7 | 3.0-3.2 | 3.8-4.0 | 4.4-4.7 |
| Screw length | Approximate weight per 100 | | | |
| l | kg | kg | kg | kg |
| 8 | 0.04 | | | |
| 10 | 0.05 | 0.09 | | |
| 12 | 0.06 | 0.10 | 0.17 | |
| 16 | 0.08 | 0.12 | 0.20 | 0.26 |
| 20 | | 0.14 | 0.23 | 0.30 |
| 25 | | | 0.26 | 0.34 |

Sample order: Bumax 316L-RX-Plastite 4-20x8



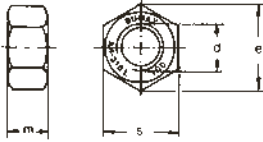
Packaging

| Diameter | 4-20 | 6-19 | 8-16 | 10-14 |
|--------------|------|------|------|-------|
| No. per pack | 500 | 500 | 500 | 500 |





HEXAGON NUT 100 M



Bumax I09-M6M
A4-SS 2343-316L HiMo

EN 24032, ISO 4032

| Thread d | Pitch of thread | s max. | m max. | Strength classification | Approx. Weight kg/100 |
|-------------|--------------------|-----------|-----------|----------------------------|--------------------------|
| M6 | 1 | 10 | 5.2 | 100 | 0.25 |
| M8 | 1.25 | 13 | 6.8 | 100 | 0.52 |
| M10 | 1.5 | 16 | 8.4 | 100 | 1.2 |
| M12 | 1.75 | 18 | 10.8 | 100 | 1.7 |
| M16 | 2 | 24 | 14.8 | 100 | 3.3 |

Sample order: Bumax I09-M6M M6

Supplied anti-friction conditioned.



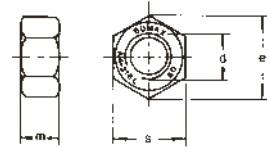
Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|-----|-----|-----|-----|
| No. per pack | 100 | 100 | 50 | 25 | 25 |

HEXAGON NUT 80 M

Bumax 88-M6M
A4-SS 2343-316L HiMo

EN 24032, ISO 4032



| Thread d | Pitch of thread | s max. | m max. | Strength classification | Approx. Weight kg/100 |
|-------------|--------------------|-----------|-----------|----------------------------|--------------------------|
| M6 | 1 | 10 | 5.2 | 80 | 0.25 |
| M8 | 1.25 | 13 | 6.8 | 80 | 0.52 |
| M10 | 1.5 | 16 | 8.4 | 80 | 1.2 |
| M12 | 1.75 | 18 | 10.8 | 80 | 1.7 |
| M14 | 2 | 21 | 12.8 | 80 | 2.5 |
| M16 | 2 | 24 | 14.8 | 80 | 3.3 |
| M18 | 3 | 27 | 15.8 | 80 | 4.9 |
| M20 | 2.5 | 30 | 18 | 80 | 6.4 |
| M24 | 3 | 36 | 21.5 | 80 | 11 |

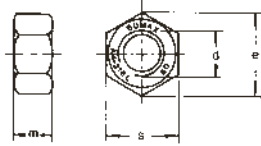
Sample order: Bumax 88-M6M M6

Supplied anti-friction conditioned.



Packaging

| Diameter | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 | M24 |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| No. per pack | 100 | 100 | 50 | 50 | 50 | 25 | 25 | 25 | 10 |



HEXAGON NUT 80 UNC

Bumax 88-U6M
A4-SS 2343-316L HiMo

SS 1989, (ANSI B18.2)

| Thread d | No. of threads per inch | s inch (es) | s mm | m mm | Strength classification | Approx. Weight kg/100 |
|-------------|----------------------------|----------------|---------|---------|----------------------------|--------------------------|
| 1/4 UNC | 20 | 7/16 | 11.1 | 5.6 | 80 | 0.32 |
| 5/16 UNC | 18 | 1/2 | 12.7 | 6.7 | 80 | 0.47 |
| 3/8 UNC | 16 | 9/16 | 14.3 | 8.3 | 80 | 0.69 |
| 7/16 UNC | 14 | 11/16 | 17.5 | 9.5 | 80 | 1.3 |
| 1/2 UNC | 13 | 3/4 | 19.1 | 11.1 | 80 | 1.6 |
| 5/8 UNC | 11 | 15/16 | 23.8 | 13.9 | 80 | 3.2 |
| 3/4 UNC | 10 | 1.1/8 | 28.6 | 16.3 | 80 | 5.3 |
| 7/8 UNC | 9 | 1.5/16 | 33.3 | 19.1 | 80 | 9.2 |
| 1 UNC | 8 | 1.1/2 | 38.1 | 21.8 | 80 | 14 |

Sample order: Bumax 88-U6M 1/4 UNC

Since no particular requirement has been specified regarding the shape of the nut, the designation U6M has been given. U6M means that any design of U6FM, U6AM or U6PM is approved by the purchaser. Bulten Stainless normally supplies 1 design in accordance with U6FM unless otherwise specified.

Supplied anti-friction conditioned.



Packaging

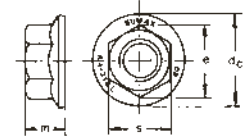
| Diameter | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 5/8 | 3/4 | 7/8 | 1" |
|--------------|-----|------|-----|------|-----|-----|-----|-----|----|
| No. per pack | 100 | 100 | 50 | 50 | 50 | 25 | 25 | 10 | 10 |

HEXAGON NUT 80 M

With flange

Bumax 88-MF6M
A4-SS 2343-316L HiMo

DIN 6923, ISO 4161



| Thread d | Pitch of thread | s max. | m max. | dc-max. | Strength classification | Approx. Weight kg/100 |
|-------------|--------------------|-----------|-----------|---------|----------------------------|--------------------------|
| M6 | 1 | 10 | 6 | 14.2 | 80 | 0.35 |
| M8 | 1.25 | 13 | 8 | 17.9 | 80 | 0.70 |
| M10 | 1.5 | 15 | 10 | 21.8 | 80 | 1.2 |
| M12 | 1.75 | 18 | 12 | 26 | 80 | 2.1 |
| M16 | 2 | 24 | 16 | 34.5 | 80 | 4.1 |
| M20 | 2.5 | 30 | 20 | 42.8 | 80 | 7.3 |

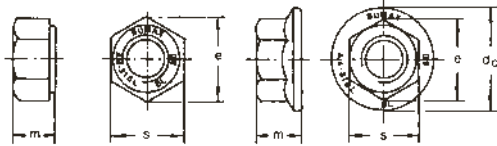
Sample order: Bumax 88-MF6M M6

Supplied anti-friction conditioned.

Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|-----|-----|-----|-----|
| No. per pack | 100 | 100 | 50 | 25 | 25 |





PREVAILING TORQUE HEXAGON NUT 80 M

All-metal
Bumax Lock 88
A4-SS 2343-316L HiMo

| | Thread d | Pitch of thread | s max. | m max. | dc-max. | Strength classification | Approx. Weight kg/100 |
|--------|-------------|--------------------|-----------|-----------|---------|----------------------------|--------------------------|
| Fläns | M6 | 1 | 10 | 6 | 14.2 | 80 | 0.35 |
| | M8 | 1.25 | 13 | 8 | 17.9 | 80 | 0.7 |
| | M10 | 1.5 | (16). 15 | 10 | 21.8 | 80 | 1.2 |
| | M12 | 1.75 | 18 | 12 | 26 | 80 | 2.1 |
| Ansats | M12 | 1.75 | 18 | 12 | | 80 | 1.9 |
| | M16 | 2 | 24 | 16 | | 80 | 3.8 |
| | M20 | 2.5 | 30 | 20 | | 80 | 7.2 |

Sample order: Bumax Lock 88 M6

M6-M12: with flange

M12-M20: with collar. To be fitted with the collar downward against the base.

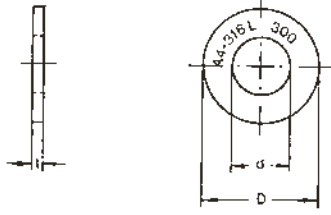
Supplied anti-friction conditioned.



Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 |
|--------------|-----|-----|-----|-----|-----|
| No. per pack | 100 | 100 | 50 | 50 | 25 |





PLAIN WASHER

Hardness HV 300

Bumax 109-HRB
A4-SS 2343-316L HiMo

DIN 125, ISO 7089

| Hole diameter d | D | t | For screw and nut with | | Approx. Weight kg/100 |
|--------------------|----|-----|------------------------|-----------------|--------------------------|
| | | | M thread | Imperial thread | |
| 6.4 | 12 | 1.6 | 6 | | 0.10 |
| 8.4 | 16 | 1.6 | 8 | 5/16 | 0.18 |
| 10.5 | 20 | 2 | 10 | | 0.36 |
| 13 | 24 | 2.5 | 12 | | 0.63 |

Sample order: Bumax 109-HRB 6.4

The washers are marked: A4-316L-300.
Recommended for Bumax 109.



Packaging

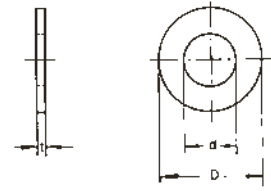
| Diameter | 6.4 | 8.4-13 |
|--------------|-----|--------|
| No. per pack | 200 | 100 |

PLAIN WASHER

Hardness HV 200

Bumax 88-RB
A4-SS 2343-316L HiMo

DIN 125, ISO 7089, SS 70



| Hole diameter d | D | t | For screw and nut with | | Approx. Weight kg/100 |
|--------------------|----|-----|------------------------|-----------------|--------------------------|
| | | | M thread | Imperial thread | |
| 5.3 | 10 | 1 | 5 | Nr 10 | 0.044 |
| 6.4 | 12 | 1.6 | 6 | | 0.10 |
| 6.7 | 14 | 1.5 | | 1/4 | 0.13 |
| 8.4 | 16 | 1.6 | 8 | 5/16 | 0.18 |
| 10 | 18 | 2 | | 3/8 | 0.26 |
| 10.5 | 20 | 2 | 10 | | 0.36 |
| 13 | 24 | 2.5 | 12 | | 0.63 |
| 13.5 | 24 | 2 | | 1/2 | 0.47 |
| 15 | 28 | 2.5 | 14 | | 0.86 |
| 17 | 30 | 3 | 16 | 5/8 | 1.1 |
| 19 | 34 | 3 | 18 | | 1.5 |
| 21 | 37 | 3 | 20 | 3/4 | 1.7 |
| 23 | 39 | 3 | 22 | 7/8 | 1.8 |
| 25 | 44 | 4 | 24 | | 3.2 |
| 26 | 45 | 4 | | 1 | 3.2 |

Sample order: Bumax 88-RB 5.3

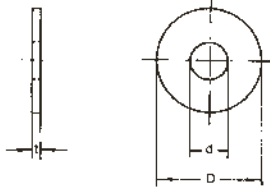
Recommended for Bumax 88.

Washers for Imperial threaded screws usually comply with SS 70.

Packaging

| Diameter | 5.3-6.7 | 8.4-23 | 25-26 |
|--------------|---------|--------|-------|
| No. per pack | 200 | 100 | 50 |





PLAIN WASHER

Large series

Bumax RBS
A4-SS 2343-316L HiMo

EN/ISO 7093, DIN 9021

| Hole diameter d1 | d2 | h | For screw and nut with | | Approx. Weight kg/100 |
|---------------------|----|-----|------------------------|-----------------|--------------------------|
| | | | M thread | Imperial thread | |
| 6.4 | 18 | 1.6 | 6 | | 0.28 |
| 8.4 | 24 | 2 | 8 | 5/16 | 0.62 |
| 10.5 | 30 | 2.5 | 10 | | 1.2 |
| 13 | 37 | 3 | 12 | | 2.2 |

Sample order: Bumax A4-SS2343-RBS 6.4



Packaging

| Diameter | 6.4 | 8.4-13 |
|--------------|-----|--------|
| No. per pack | 200 | 100 |

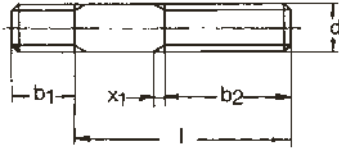




STUD 80 M

Bumax 88-PS
A4-SS 2343-316L HiMo

DIN 938



| Thread | | | | | | |
|-----------------------------|------|----------------------------|-----|------|-----|-----|
| d | M6 | M8 | M10 | M12 | M16 | M20 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 | 2 | 2.5 |
| Length of thread engagement | | | | | | |
| x1 | 2.5 | 3.2 | 3.8 | 4.3 | 5 | 6.3 |
| b2 för l < 125 | 18 | 22 | 26 | 30 | 38 | 46 |
| b2 för l > 125 | | | | | 44 | 52 |
| b1 | 6 | 8 | 10 | 12 | 16 | 20 |
| Screw length | | | | | | |
| | | Approximate weight per 100 | | | | |
| l | kg | kg | kg | kg | kg | kg |
| 20 | | 0.93 | 1.5 | | | |
| 25 | 0.57 | | 1.8 | 2.7 | | |
| 30 | 0.68 | 1.3 | 2.0 | 2.9 | | |
| 35 | 0.79 | 1.5 | | 3.4 | 6.7 | |
| 40 | | 1.6 | 2.6 | 3.9 | 7.2 | 13 |
| 45 | | | 2.9 | 4.3 | 8.1 | |
| 50 | | 2.0 | 3.2 | 4.8 | 8.9 | 14 |
| 55 | | | | | 9.8 | |
| 60 | | | 3.9 | 5.7 | 11 | 17 |
| 65 | | | 4.2 | | 11 | |
| 70 | | | | | 12 | |
| 80 | | | | | | 22 |
| 135 | | | | | | 23 |
| 160 | | | | | | 26 |

Sample order: Bumax 88-PS M6x25

Lengths above the stepped line have length of thread engagement b2 = l-(X1+3).

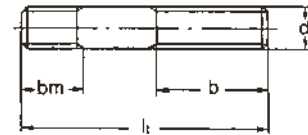


| Packaging | | | | | | |
|--------------|-----|----|-----|-----|-----|-----|
| Diameter | M6 | M8 | M10 | M12 | M16 | M20 |
| No. per pack | 100 | 50 | 50 | 25 | 25 | 10 |

STUD 80 M

Bumax 88-MPS
A4-SS 2343-316L HiMo

SS 1460



| Thread | | | | | | |
|-----------------------------|------|----------------------------|-----|------|-----|-----|
| d | M6 | M8 | M10 | M12 | M16 | M20 |
| Pitch of thread | 1 | 1.25 | 1.5 | 1.75 | 2 | 2.5 |
| Length of thread engagement | | | | | | |
| b |) |) |) |) |) |) |
| threaded end bm | 10 | 12 | 15 | 17 | 22 | 27 |
| Screw length | | Approximate weight per 100 | | | | |
| lt | kg | kg | kg | kg | kg | kg |
| 30 | 0.53 | | | | | |
| 35 | | 1.1 | | | | |
| 40 | 0.73 | 1.3 | 2.0 | 2.9 | | |
| 50 | 0.95 | 1.7 | 2.6 | 3.6 | 6.6 | |
| 60 | | 2.1 | 3.2 | 4.4 | 8.0 | |
| 70 | | | 3.8 | 5.3 | 9.2 | 15 |
| 80 | | | | | 11 | 17 |
| 100 | | | | | | 21 |

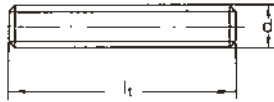
Sample order: Bumax 88-MPS M6x30

) Length of thread engagement b varies with screw lengths.
Refer to the current screw standard.

Packaging

| Diameter | M6 | M8 | M10 | M12 | M16 | M20 |
|--------------|-----|----|-----|-----|-----|-----|
| No. per pack | 100 | 50 | 50 | 25 | 25 | 10 |





STUD BOLT 80 M

Bumax 88-MHGS
A4-SS 2343-316L HiMo

DIN 976

| Thread d | Pitch of thread | l _t | Approx. Weight kg/100 | Strength classification |
|-------------|--------------------|----------------|--------------------------|----------------------------|
| M5 | 0.8 | 1000 | 12 | 80 |
| M6 | 1 | 1000 | 18 | 80 |
| M8 | 1.25 | 1000 | 32 | 80 |
| M10 | 1.5 | 1000 | 50 | 80 |
| M12 | 1.75 | 1000 | 73 | 80 |
| M14 | 2 | 1000 | 99 | 80 |
| M16 | 2 | 1000 | 133 | 80 |
| M18 | 2.5 | 1000 | 165 | 80 |
| M20 | 2.5 | 1000 | 208 | 80 |
| M22 | 2.5 | 1000 | 256 | 80 |
| M24 | 3 | 1000 | 300 | 80 |
| M27 | 3 | 1000 | 388 | 80 |
| M30 | 3.5 | 1000 | 474 | 80 |
| M33 | 3.5 | 1000 | 581 | 80 |
| M36 | 4 | 1000 | 689 | 80 |

Sample order: Bumax 88-MHGS M5x1000



Packaging

1 pcs in plastic sleeve



ALSOA ABLOY
The World's Leading Lock Group

SEMO

Engineered special products

For Bulten Stainless, the development of engineered special products is considered a responsible task of confidence – working in close collaboration with the customer. We therefore offer our own range of specially designed products.

Our high levels of skill, many years of experience and flexibility mean that we are able to satisfy most requests as regards non-standard fasteners.

Engineered special products are developed in accordance with the specifications requested by our customers:

1. Manufacture according to finished drawing from the customer.
2. Modification of standard product.
3. Manufacture of fasteners in specialist alloys.
4. Joint development projects – we produce completely new products in collaboration with the customer.



EF Language M 39
Scale 1:2

Assa Abloy M 30
Scale 1:2

Assa Abloy's keel bolts are made from an exceptionally strong super-martensitic stainless steel.

The 12 keel bolts in the Assa Abloy tolerated the same high loads as the 18 bolts in the EF Language – but replaced 36 kg of keel bolts with 11 kg. That's what you call development!

Bulten Stainless “by appointment” to the Formula 1 team of ocean racing

First it was the EF Language boat in the Whitbread Round the World Race. Then Assa Abloy in the Volvo Ocean Race. Bulten Stainless has become a trusted supplier to one of the toughest challenges in sailing.

The keel bolt challenge

For the EF Language boat, 18 x M 39 2-kilo keel bolts were supplied in ferrite austenitic steel SAF 2205.

Ahead of the Assa Abloy project, it was essential – without compromising on safety – to reduce the weight of the fasteners by 30 per cent.

After extensive consideration, testing and discussion with designers, the result was as follows:

| | Dimension | Quantity | Weight |
|-------------|-----------|----------|---------|
| EF Language | M 39 | 18 pcs | 35.6 kg |
| Assa Abloy | M 30 | 12 pcs | 10.9 kg |

Technical information

Bumax is a collective product name for Bulten Stainless high-strength, extra corrosion-resistant fasteners.

Material designations

The designations adhere to the standards established by SIS and ISO

A4 = SS14.2347 = EN 1.4401

A4-2343 = SS14.2343 = EN 1.4436

Bumax A4 = SS14.2343L = EN 1.4436L = EN 1.4432

Dimensions and weight details

Dimensions for all products are given in millimetres. For products with Imperial threads, essential dimensions are also given in inches. The weight details are weighted average figures.

Strength classifications (in compliance with SS-ISO 3506)

In this catalogue the strength values stated apply exclusively to dimensions held in stock, unless otherwise agreed. Mechanical properties are reported in the following tables.

Bumax level:

The difference between standard A4 and Bumax fasteners consists primarily in that the Bumax products' properties start out at the level where "normal" fasteners end or ended long ago.

This means that a Bumax fastener is always better, stronger and more corrosion-resistant than a "normal" fastener. Here are a few examples:

Bumax 88:

Fasteners in the Bumax 88 class have properties that correspond, as far as possible, to 8.8 carbon steel screws. Since 8.8 also indicates the type of steel, they obviously do not correspond in that respect.

Bumax 109:

Fasteners in the Bumax 109 class have properties that correspond, as far as possible, to 10.9 carbon steel screws. As for 8.8, 10.9 also indicates the type of steel – here, too, the Bumax products naturally differ from those made of carbon steel.

Table 1

| Property Class | Rm Tensile strength | Rp 0.2 Stress at 0.2% permanent strain | Elongation at fracture |
|---------------------------------|------------------------|---|------------------------|
| 8.8 steel | 800 MPa | 640 MPa | 12 % |
| Bumax 88 | 800 MPa | 640 MPa | 0.3 d |
| Bumax 88 (for pressure vessels) | 800 MPa | 640 MPa | 0.4 d |
| 10.9 steel | 1000 MPa | 900 MPa | 9 % |
| Bumax 109 ≤M12 | 1000 MPa | 900 MPa | 0.2 d |
| Bumax 109 >M12 | 1000 MPa | 800 MPa | 0.2 d |

As the table above shows, it is only the method of measuring and stating the elongation that differs. The difference consists primarily in that all testing of stainless steel fasteners must take place on the finished product in lengths ranging from 2.5xd upwards, while testing of carbon steel products is usually carried out on test pieces with the elongation then being measured on a test length of 5xd.

Obviously, with such differing methods of measuring the elongation, the measured values obtained cannot be compared, but in practice it has been demonstrated that the stainless steel screws are usually considerably tougher than the carbon steel screws.

Mechanical properties at low temperature:

The properties of the steel are affected by temperature and the ISO gives the following informative instructions for its use at low temperature.

Table 2

| Type of steel | Min °C |
|---------------|--------|
| Bumax 88 | -200 |

Mechanical properties at elevated temperature:

When the temperature rises, strength is reduced – the following table indicates, in percentage terms, the residual strength at different temperatures.

Table 3

| Type of steel | 100 °C | 200 °C | 300 °C | 400 °C | 500 °C |
|---------------|---------|---------|---------|---------|---------|
| Bumax 88 | ca 90 % | ca 90 % | ca 85 % | ca 80 % | ca 75 % |
| Bumax 109 | ca 95 % | ca 95 % | ca 90 % | ca 90 % | ca 80 % |

Tabell 4

| Mechanical properties for fasteners in austenitic steel | | | | | | | |
|---|--------------|------------------------------|------------------------------|---|--|----------------------------------|--------------------|
| Group | Type | Strength class ⁵⁾ | Diameter range ⁴⁾ | Screws and stud bolts ³⁾ | | | Nuts ³⁾ |
| | | | | Tensile strength Rm ¹⁾ N/mm ² min. | Stress at 0.2% permanent strain Rp 0.2 ¹⁾ N/mm ² min. | Elongation AL ²⁾ min. | |
| Austenite | A1.A2 | 50 | < M 39 | 500 | 210 | 0.6 d | 500 |
| | A3.A4 | 70 | < M 24 | 700 | 450 | 0.4 d | 700 |
| | and A5 | 80 | < M 24 | 800 | 600 | 0.3 d | 800 |
| Bumax 88 | Pres. vessel | Bumax 88 | < M 36 | 800 | 640 | 0.3 d ⁶⁾ | 800 |
| | | Bumax 88 | M 6 – M 24 | 800 | 640 | 0.4 d | 800 |
| | | Bumax 88 | ¼ - 1" UNC | 800 | 640 | 0.4 d | 800 |
| Bumax 109 | Pres. vessel | Bumax 109 | < M 14 | 1000 | 900 | 0.2 d | 1000 |
| | | Bumax 109 | ≥ M 14 | 1000 | 800 | 0.2 d | 1000 |

1) All mechanical strength values are calculated with regard to the nominal stress area and applies to screw lengths ≥ 2.5xd.

2) Elongation is indicated in mm x nominal screw diameter (d) and applies to screw lengths ≥ 2.5xd.

3) Testing of mechanical properties must be carried out on finished products (not on prepared test pieces).

4) For fasteners with nominal thread diameter >M24 the mechanical properties shall be agreed upon. Bumax do meet specification independent of size.

5) ISO 3506 states classes 50, 70 and 80. Bumax 88 and 109 are the internal standards of Bulten Stainless and are not included in ISO 3506.

6) For dimensions >M30 the elongation is 0.2 d min.

Marking

The Bumax range held in stock consisting of hexagon head screw, hexagon socket screw, hexagon nut and Bumax Lock are normally marked in accordance with the figure below.

Example



Exceptions

Dimensions < M5 do not contain some of the marking due to space restrictions.

Manufacturer designation (Bumax), type of steel (A4 -316L), property class (80 or 100). The marking of 80 and 100 adheres to the ISO instructions, which state that strength should be indicated by 0.1x the tensile strength in N/mm².

UNC-threaded products are not covered by ISO standards, but we do adhere to ISO-3506 for these products as well, as far as possible.

Bumax Hard Taptite Thread-forming screw

Bumax Hard Taptite is a thread-forming screw which forms its own thread during assembly, because of its trilobular shape, its conical entry thread and its great surface hardness. Bumax Hard is suitable both for assembly in structural steel and cold-rolled stainless/acid-proof steel with a max. hardness of 200 HV.

Table 5. Hole diameters and material thickness (T) for Bumax Hard Taptite thread-forming screws.

| Product | Screw dimensions | | | | | |
|----------|------------------|------|------|------|-----|-----|
| | M3 | M4 | M5 | M6 | M8 | M10 |
| | Hole diameter | | | | | |
| 0.1-1.5 | 2.7 | 3.65 | | | | |
| 1.51-2.5 | 2.8 | 3.65 | 4.6 | 5.5 | | |
| 2.51-4 | 2.8 | 3.7 | 4.7 | 5.6 | | |
| 4.1-6.5 | 2.85 | 3.75 | 4.7 | 5.6 | 7.5 | 9.3 |
| 6.6-10 | | 3.8 | 4.75 | 5.65 | 7.6 | 9.4 |
| 10.1-15 | | | | 5.7 | 7.7 | 9.5 |

All dimensions refer to drilled holes.

Table 6. Stages and forces in assembly.

Approximate values, applying to T=0.6-1xd

| Nm | Screw dimensions | | | | | |
|---------------------------------|------------------|-----|-----|----|----|-----|
| | M3 | M4 | M5 | M6 | M8 | M10 |
| Thread-forming torque Gm | 0.7 | 1.8 | 3.5 | 8 | 15 | 28 |
| Tightening torque Mv | 1.3 | 3 | 6 | 12 | 25 | 49 |
| Breakdown torque Bm | 4.5 | 7.9 | 13 | 20 | 30 | 52 |

All dimensions refer to drilled holes.

Finish

Our Bumax products are supplied bright or passivated, in order to achieve the best corrosion resistance. All products in the Bumax 109 family, and all Bumax nuts and washers, are supplied anti-friction conditioned with wax.

Choice of material

Great care has been taken in choosing the material for our Bumax products. The low carbon content combined with higher levels of the alloying elements Chromium, Nickel and Molybdenum provide the steel with excellent resistance to corrosion and put them at the top of the A4 group. For very severe corrosion conditions, we recommend that materials should be chosen in consultation with our engineers or those at the steelworks. Examples of Stainless steels often used are EN 1.4462 (SAF 2205), EN 1.4410 (SAF 2507) and EN 1.4563 (254 SMO). We also undertake manufacture in other stainless and acid-proof types of steel, assuming sufficient volumes and that the type of steel is available in a suitable form.

Bumax Hard ST Self-tapping screw (sheet metal screw)

Bumax Hard self-tapping screw with ST thread is designed for use in structural steel with a maximum hardness of approx. 200 HV. It also works exceptionally well in stainless steel sheets assuming that the thickness of the metal (T) is < the pitch of the thread (P) and that the hardness does not exceed 200 HV.

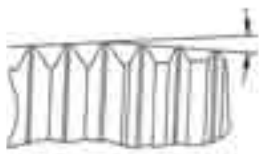
Table 7. Hole diameters and material thickness (T) for Bumax Hard ST self-tapping screws.

| Material thickness | Screw diameter | | | | | |
|--------------------|----------------|-------|-------|-------|-------|-------|
| | ST2.9 | ST3.5 | ST4.2 | ST4.8 | ST5.5 | ST6.3 |
| | Hole diameter | | | | | |
| <0.56 | 2.2 | 2.6 | | | | |
| 0.56-0.63 | 2.3 | 2.7 | 3.2 | 3.7 | | |
| 0.64-0.75 | 2.3 | 2.8 | 3.2 | 3.7 | 4.3 | |
| 0.76-0.88 | 2.4 | 2.8 | 3.2 | 3.8 | 4.3 | 4.9 |
| 0.89-1.25 | 2.4 | 2.8 | 3.3 | 3.8 | 4.4 | 4.9 |
| 1.26-1.38 | 2.5 | 2.8 | 3.5 | 3.9 | 4.5 | 4.9 |
| 1.39-1.75 | 2.6 | 2.9 | 3.8 | 3.9 | 4.6 | 5.0 |
| 1.76-2.25 | | 3.0 | 3.8 | 4.0 | 4.7 | 5.2 |
| 2.26-3.0 | | 3.2 | 3.9 | 4.1 | 5.0 | 5.3 |
| 3.1-4.0 | | | | 4.4 | 5.1 | 5.8 |

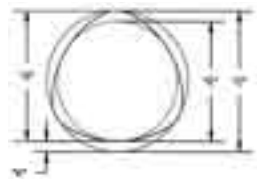
All dimensions refer to drilled holes.

In the case of stamped and collared holes in austenitic steel, the deformation hardening might mean that the hardness will exceed 200 HV and assembly problems could therefore arise. Should any assembly problems arise, please contact us for advice and instructions.

Bumax Hard Taptite – a stainless/acid-proof thread-forming screw for assembly in stainless/acid-proof steel

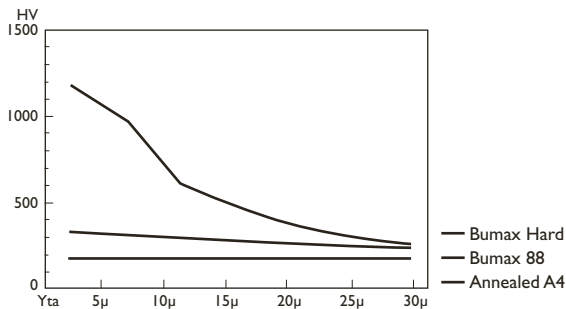


Thread form and entry thread



Tapite Trilobular geometry

Table 8. Surface hardness for Bumax Hard fasteners

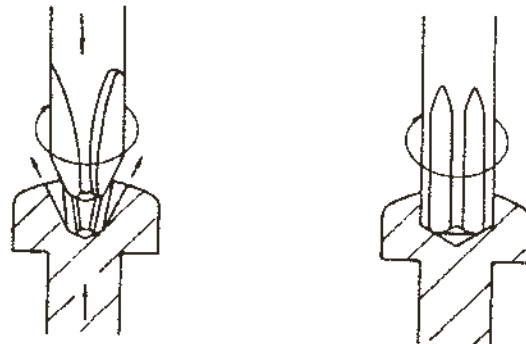


Hardness in HV on the surface as well as at hardness penetrations of 5, 10, 15, 20, 25 and 30μ.

Torx – The superior grip

Bumax Taptite, MKT and the Bumax Hard programme are supplied with a Torx grip, quite simply because it is superior to all other normal recess and grip types.

Since the driver surfaces of the Torx grip are parallel to the screw axis, there is no ratcheting effect, and a considerable reduction in the strain on fitters and tools alike. The immediate significance of this is less risk of strain injury for fitters, and a lower risk of damage to surrounding surfaces.



Bumax Lock – a stainless/acid-proof all-metal lock nut that works

Bumax Lock is an all-metal lock nut. It is equipped with a specially designed thread profile that locks when it is tightened, distributing the tensile stress along the entire

nut thread. This allows better load distribution, which in turn produces greater gripping strength. NB: Bumax Lock needs a higher tightening torque. Refer to Table 9.

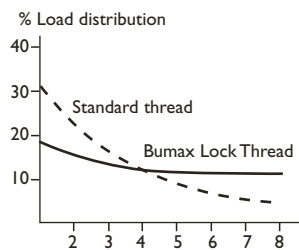
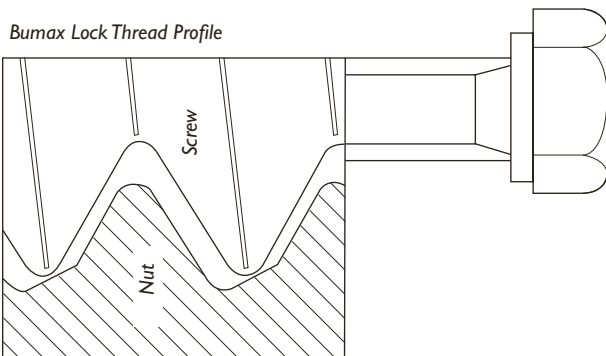


Figure 2. Load distribution

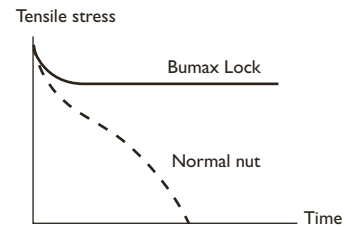


Figure 3. Residual stress

Tightening torques and forces for Bumax unions

Table 9

| Screw | Tightening torque M _v , Nm ^{1),3)} | | | Preload applied KN ± 23% ²⁾ | | | Failure load KN | | | Yield load KN | | | Nominal stress area mm ² | Pitch of thread |
|------------------|---|------|---------|---|-------|---------|--------------------|-------|---------|------------------|-------|---------|--|--------------------|
| | 109 | 88 | Lock 88 | 109 | 88 | Lock 88 | 109 | 88 | Lock 88 | 109 | 88 | Lock 88 | | |
| dim/class, Bumax | | | | | | | | | | | | | | |
| M3 | 1.7 | 1.3 | - | 2.9 | 2.1 | 2.1 | 5 | 4 | 4 | 4.5 | 3.2 | 3.2 | 5.03 | 0.5 |
| M4 | 4.1 | 2.9 | - | 5.2 | 3.6 | 3.6 | 8.8 | 7 | 7 | 8 | 6 | 6 | 8.78 | 0.7 |
| M5 | 8.1 | 5.7 | 6.6 | 8.6 | 5.9 | 5.9 | 14 | 11 | 11 | 13 | 9 | 9 | 14.2 | 0.8 |
| M6 | 14 | 10 | 12 | 12 | 8.4 | 8.4 | 20 | 16 | 16 | 18 | 13 | 13 | 20.1 | 1.0 |
| M8 | 34 | 25 | 29 | 21 | 15 | 15 | 37 | 29 | 29 | 33 | 23 | 23 | 36.6 | 1.25 |
| M10 | 66 | 47 | 54 | 34 | 24 | 24 | 58 | 46 | 46 | 52 | 37 | 37 | 58.0 | 1.5 |
| M12 | 115 | 82 | 94 | 49 | 35 | 35 | 84 | 67 | 67 | 76 | 54 | 54 | 84.3 | 1.75 |
| M14 | 162 | 129 | - | 60 | 48 | 48 | 115 | 92 | 92 | 92 | 74 | 74 | 115 | 2.0 |
| M16 | 248 | 198 | 228 | 81 | 65 | 65 | 157 | 126 | 126 | 125 | 100 | 100 | 157 | 2.0 |
| M18 | 344 | 275 | - | 100 | 80 | 80 | 192 | 154 | 154 | 154 | 123 | 123 | 192 | 2.0 |
| M20 | 481 | 385 | 442 | 128 | 102 | 102 | 245 | 196 | 196 | 196 | 157 | 157 | 245 | 2.5 |
| M24 | - | 665 | 765 | - | 181 | 181 | - | 282 | 282 | - | 226 | 226 | 353 | 3.0 |
| M27 | - | 961 | - | - | 235 | 235 | - | 367 | 367 | - | 294 | 294 | 459 | 3.0 |
| M30 | - | 1310 | - | - | 287 | 287 | - | 449 | 449 | - | 359 | 359 | 561 | 3.5 |
| M36 | - | 2280 | - | - | 418 | 418 | - | 654 | 654 | - | 523 | 523 | 817 | 4.0 |
| 1/4-20 UNC | - | 11 | - | - | 8.0 | 8.0 | - | 17.0 | - | - | 13.1 | - | 20.5 | 20 th/inch |
| 5/16-18 UNC | - | 22 | - | - | 13.2 | 13.2 | - | 28.0 | - | - | 22.4 | - | 33.8 | 18 th/inch |
| 3/8-16 UNC | - | 39 | - | - | 19.5 | 19.5 | - | 41.5 | - | - | 33.2 | - | 50.0 | 16 th/inch |
| 1/2-13 UNC | - | 95 | - | - | 35.7 | 35.7 | - | 75.9 | - | - | 60.8 | - | 91.5 | 13 th/inch |
| 5/8-11 UNC | - | 188 | - | - | 56.9 | 56.9 | - | 121.0 | - | - | 96.9 | - | 146.0 | 11 th/inch |
| 3/4-10 UNC | - | 329 | - | - | 84.2 | 84.2 | - | 179.0 | - | - | 143.4 | - | 216.0 | 10 th/inch |
| 7/8-9 UNC | - | 527 | - | - | 116.2 | 116.2 | - | 247.0 | - | - | 197.9 | - | 298.0 | 9 th/inch |
| 1"-8 UNC | - | 789 | - | - | 152.5 | 152.5 | - | 325.0 | - | - | 259.6 | - | 391.0 | 8 th/inch |

¹⁾ The tightening torque recommendations refer to flat burr-free surfaces, lubricated with a high quality lubricant.

²⁾ Preload applied is calculated as 65% of Rp 0.2, but in practice the value could be expected to vary between around 50% and 80% of this.

³⁾ The tightening torque recommendations are calculated according to a co-efficient of friction of 0.16, which is equivalent to wax BSAB 1952V. The stress is calculated as around 70% of the yield load but could in practice be expected to vary between around 60% – 80%.

The Bumax Lock thread is a special nut thread that locks because of its thread design. The nut spins freely until it encounters the load when being tightened. NB: The Bumax Lock nut must be fitted with the flange or collar against the base to enable locking.

Bumax Lock nuts are designed to be fitted against hard bases that can bear the surface pressure that arises at a given tightening torque.



Bumax 88 for pressure vessels

The new pressure equipment directive, PED, 97/23/EC, came into force within the EU on 29 May 2002, concerning pressure-bearing equipment with a working pressure > 0.5 Bar.

Bumax 88 is currently the only high-strength fasteners with approval for pressure vessels in Europe. Bumax 88 has been approved by TÜV in a special Particular Material Appraisal in compliance with PED 97/23/EC and TÜV documents Nos. 01 IP01421H and 0121P003310-1 and in accordance with AD 2000 W2 issued December 2002.

Product types

Hexagon head bolts and screws in compliance with ISO 4014 and 4017 and SS 1943. Socket head cap screws in accordance with ISO 4762, DIN 912 and SS 1960. Studs and stud bolts in accordance with DIN 938, 939, 976, SS 1948 and SS 1947. Nuts in accordance with ISO 4032 and SS 1989.

Dimensions range

M6 – M24 and 1/4 - 1" with min. length 3 x nominal thread diameter.

Temperature range

Bumax 88 may be used in pressure vessel equipment within a temperature range of -200 to +400 °C.

Mechanical properties at room temperature:

At room temperature, the following values apply to dimensioning.

Tensile strength (Rm) min 800 N/mm²
Yield strength Rp 0.2 min 640 N/mm²
Elongation after fracture A min 0.4 x d
d = nominal thread diameter

Mechanical properties at elevated temperature:

At elevated temperatures, the following values apply to dimensioning.

| Temperature °C | 100 | 200 | 300 | 400 |
|--------------------------|-----|-----|-----|-----|
| Rp 0.2 N/mm ² | 510 | 480 | 450 | 420 |
| Rm N/mm ² | 553 | 501 | 474 | 461 |

Certification

Bumax 88 for pressure vessels is supplied with a special certificate in accordance with EN/ISO 10204 3.1.B, stating that the products are approved in accordance with PED 97/23/EC.



Material data for stainless and acid-proof steel

Table 10

| Steel type | Stainless | Acid-proof | Acid-proof | Acid-proof Bumax |
|------------------------------------|---|---|---|---|
| Designation: | | | | |
| ISO group | A2 | A4 | A4 | A4 |
| ISO no. | (11) | 20a | 20 | - |
| Bulten Stainless | A2 | A4-2343 | A4 | Bumax |
| SS 14 ¹⁾ | 2333 | 2343 | 2347 | 2353 |
| Avesta | 832MV | 832 SK | 832SF | - |
| Fagersta | P350 | P440 | P425 | R44010 |
| Sandvik | 5P10 | 5R60 | - | - |
| EN Name ¹⁾ | X5CrNi18-10 | X3CrNiMo17-13-3 | X5CrNiMo17-12-2 | X2CrNiMo17-12-3 |
| EN 10027-2 | 1.4301 | 1.4436 | 1.4401 | 1.4432 |
| USA(AISI) ¹⁾ | 304 | 316L | 316 | - |
| UK (BS) ¹⁾ | 304S15 | - | 316S16 | 316S13 |
| France (AFNOR) ¹⁾ | Z6CN18-09 | Z6CND 17-12 | Z6CND 17-11 | Z3CND17-13-03 |
| Italy (UNI) ¹⁾ | X5Cr 1810 | X5CrNiMo 1713 | X5CrNiMo 1712 | X2CrNiMo18-14-3 |
| Japan (JIS) ¹⁾ | 304 | - | 316 | - |
| Analysis: | | | | |
| Carbon C % | max.0.07 | max. 0.05 | max. 0.07 | max- 0.03 |
| Chromium Cr % | 17-19,5 | 16-18.5 | 16,5-18.5 | 16.5-18.5 |
| Nickel Ni % | 8-10,5 | 10,5-14 | 10-13 | 11.0-14.5 |
| Molybdenum Mo % | - | 2.5-3.0 | 2-2.5 | 2.5-3.0 |
| Copper Cu % | ≤ 4 | - | < 1 | - |
| Stabiliser Ti/Nb % | - | - | - | - |
| Structure | Austenitic | Austenitic | Austenitic | Austenitic |
| Physical data | | | | |
| Magnetic | No ²⁾ | No | No | No |
| Scaling temp. In air approx. °C | 850 | 850 | 850 | 850 |
| Conditioning properties | | | | |
| Temperable | No | No | No | No |
| Weldability | Very good ³⁾ | Very good ⁴⁾ | Very good | Very good ⁴⁾ |
| Remarks | At an Ni content of ≤9% and high degree of cold working, there is a risk of the material becoming magnetised. For normal corrosion stresses, usable within the food and chemicals industries. | Used within the cellulose and paper industries, for example. Good corrosion resistance. | Similar to SS 2343, but there is a slightly higher risk of crevice corrosion and pitting in environments where chlorides are present. | Similar to 2343 but because of its low carbon content, the steel has very good resistance to inter-granular corrosion. Refer to SS14.2353. The increased Cr and Ni contents make the steel more resistant to pitting and crevice corrosion. The increased Ni content also has a positive effect as regards the risk of stress corrosion cracking. |

¹⁾ Given as a reference. EN standards apply. For Bumax is Bumax-composition given.

²⁾ With Ni contents of ≤9% and with higher strengths, magnetisation may occur.

³⁾ With annealed weld joint insensitive to inter-granular corrosion.

⁴⁾ Not sensitive to inter-granular corrosion up to 500 °C.



Karameva waterjets from Rolls-Royce



ISO 9001, ISO 14001 Certification

Bulten Stainless strives constantly to improve the quality of its end products as well as its business operation. We therefore work according to carefully structured management systems that have been granted certification in compliance with the latest standards.

The Quality Management System has been awarded



certification in compliance with ISO 9001:2000, in which customer satisfaction is among the central components. The Environmental Management System has been granted certification in compliance with ISO 14001, and ensures that we continuously develop our environmental efforts to promote ecological sustainability.

Approved pressure vessel screw

In compliance with a PMA (Particular Material Appraisal) approval from TÜV, Bumax 88 fulfils the requirements contained in the new pressure equipment directive, PED 97/23/EC. Bumax 88 is the first fastener on the market to have been approved in compliance with the PED requirements.



BULTEN
STAINLESS

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