

BUMAX®

THE WORLD'S STRONGEST
STAINLESS STEEL BOLTS

BUMAX 109



BUMAX® 109- the Strongest A4/316L Stainless Steel Fasteners

Manufactured in Sweden, BUMAX meets the requirements of high demanding customers when it comes to quality, corrosion resistance, high strength, fatigue strength, traceability and heat resistance. All products are European traceable, fully tested and available with optional 3.1 product test certification. We deliver reliability and safety. Visit the BUMAX website for further information, technical data, CAD files, customer cases and see why BUMAX products are trusted by the most demanding industries around the world.

Features vs A4-100



Premium A4/316L Material



Very High Mechanical Strength



Good Corrosion Resistance



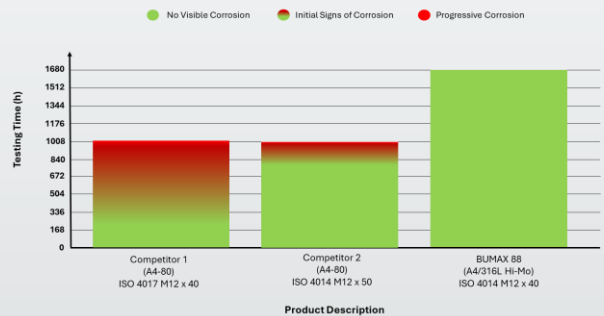
Low Risk of Galling- easy assembly



Low Magnetic Permeability

As a result, BUMAX 109 offers much better corrosion resistance compared with other A4-100 stainless fastener products, due to higher molybdenum content, lower carbon content, smooth surface properties and rigid control of trace elements and inclusions.

Visual Inspection of Samples During Salt Spray Testing
(Testing to ISO 9227- 5% NaCl- 35°C)



Corrosion Resistance

BUMAX® 109 is manufactured from premium 316L high Molybdenum grades, with much higher alloying composition than standard A4/316L (ISO 3506-1) or B8M (ASTM A193) stainless steel material grades, more commonly found on the market.

The Pitting Resistance Equivalent Number (PREN) is a well-known formula that indicates the pitting resistance and crevice corrosion resistance, based on the material's alloying content. The higher PRE number, the more resistant is the steel against pitting corrosion in seawater and chloride induced corrosion.

Grade	Cr	Mo	Ni	PRE
A4/316L	17	2.3	10-15	25
ASTM A193 B8M	17	2.3	10-14	25
BUMAX 109 (A4/316L Hi Mo)	17	2.7	min. 11	27

Mechanical Properties

BUMAX® 109 fasteners are stronger than class A4-100 and equivalent in strength to carbon steel 10.9. The minimum mechanical properties of BUMAX 109 are also guaranteed regardless of fastener diameter.

BUMAX 109 also retains its excellent material properties down to cryogenic temperatures, with negligible loss in toughness, down to operating temperatures as low as -273°C.

BUMAX 109 offers design engineers unique capabilities where standard A4/316L Class 80 (A4-80) and even Class 100 (A4-100) fasteners are unable to cope.

The added mechanical strength offered by BUMAX 109 can be utilised to downsize fastener diameters for smaller, more compact and efficient designs. Alternatively, BUMAX 109 can be designed in retrospectively, for added capacity against increased loads or to provide additional margins of safety.

Grade	Dimension	Tensile Strength (min.)	Yield Strength (min.)
BUMAX 109 (A4/316L Hi Mo)	M3-M20	1,000 MPa / 145 ksi	900 MPa / 130 ksi
A4/316 Class 100 (A4-100)	M3-M12	1,000 MPa / 145 ksi	800 MPa / 116 ksi
ASTM A193 B8M Class II	< ¾"	760 MPa / 110 ksi	655 MPa / 95 ksi
ASTM A193 B8M Class II	¾" – 1"	690 MPa / 100 ksi	551 MPa / 80 ksi
ASTM A193 B8M Class II	1" – 1¼"	655 MPa / 95 ksi	448 MPa / 65 ksi
ASTM A193 B8M Class II	1¼" – 1½"	620 MPa / 90 ksi	345 MPa / 50 ksi

Application Examples

- Industrial Machinery
- Space
- Vacuum Assemblies
- Low Temperature & Cryogenic Applications
- Process & Pipework Installations
- Structural Bolting (Non-preloaded & Preloaded)



Customer Case- MMG Propellers (Germany)

Propeller caps increase efficiency and reduce ship fuel consumption by 3%. However, installation of these propeller caps can require retrofitting to vessels that are currently in operation. Standard stainless-steel screws lacked mechanical strength needed to cope with the loads and would have meant creating larger diameter holes to install larger diameter bolts. This process would require more extensive and costly installation works, keeping the vessel out of service for a longer period.

BUMAX® 109 screws offered high tensile strengths and therefore the existing holes could be utilised. This meant installation could be done far more quickly and efficiently, saving a considerable amount of time, resource and cost. Higher levels of corrosion resistance and also mechanical performance meant lower risk of costly issues during service and operation.

Quality, Traceability & Certification

All BUMAX® fasteners are fully traceable, with 100% of all material and manufacture exclusively within Western Europe. All BUMAX production undergoes full testing in accordance with ISO 3506 and every product is available with optional 3.1 test certification. Products are traceable down to individual box labels (material cast and production number) and can be cross referenced against the 3.1 certificates.



Stock

BUMAX® 109 fasteners are stocked in hex bolts, hex set screws, socket head cap screws, nuts, and washers in sizes from M6 to M16 as standard. Other sizes and fastener types can be manufactured to order. See the BUMAX website for the full range.