



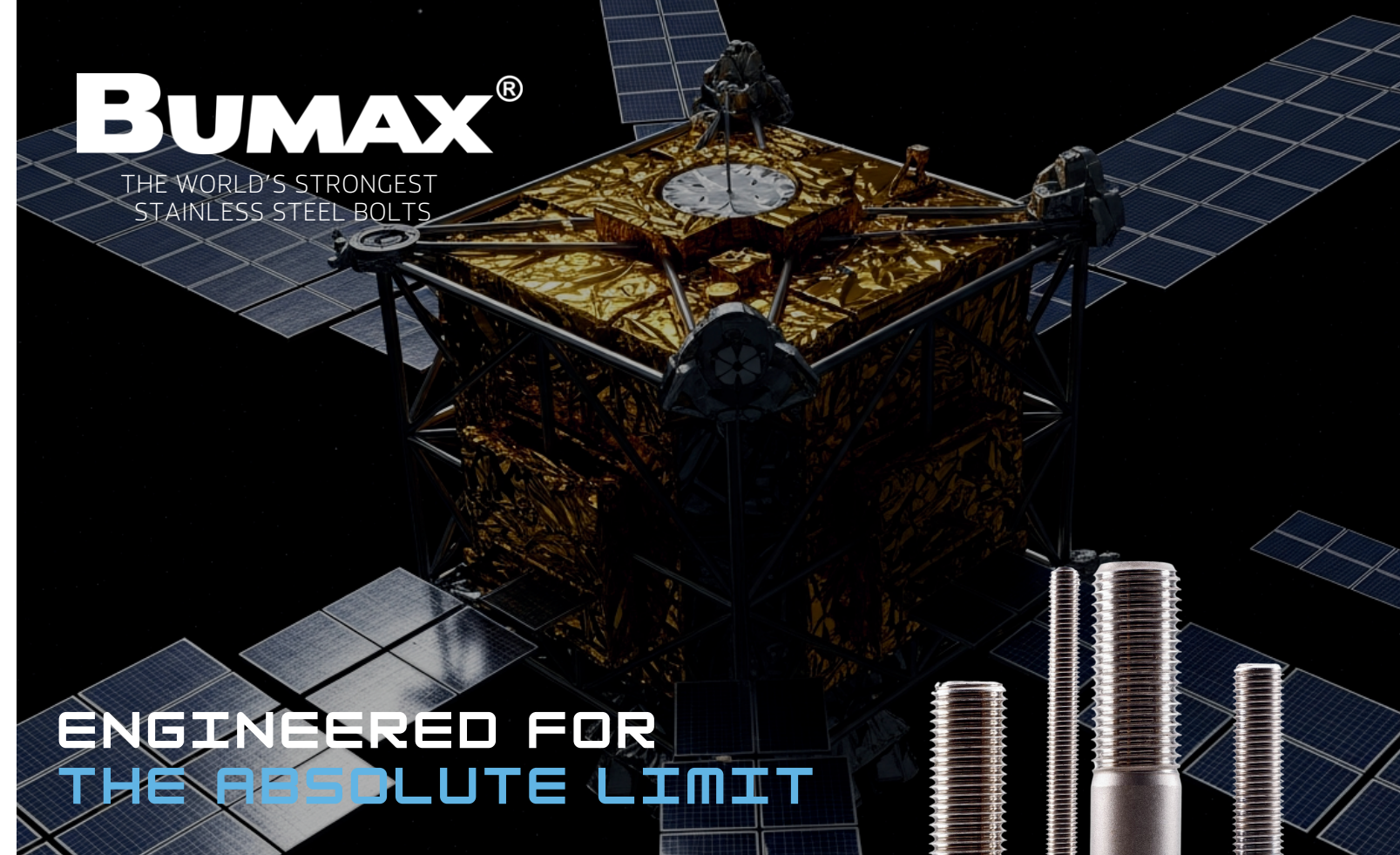
"It was really valuable for us to receive extremely rapid, helpful and professional support and advice from the BUMAX team."

Lukas Pfeiffer
(Project Manager & Systems Engineer)

ANITA-2 Trace Gas Monitoring System

ANITA-2 trace gas monitoring system simultaneously measures more than 40 gases every six minutes on the International Space Station (ISS) to ensure good air quality for astronauts. This system was developed by OHB System AG.

BUMAX® 88 fasteners were selected for their excellent quality and traceability. The ability to eliminate galling concerns and ensure accurate installation pre-loads was important, as well as full European traceability and product certification.



ENGINEERED FOR
THE ABSOLUTE LIMIT



APPLICATION AREAS

- Satellite & Rocket Structures
- Propulsion Systems
- Separation Rings
- Antennas
- Actuation & Control
- Sensors & Optical Instrumentation

BUMAX® 88

A premium A4/316L stainless steel range that out performs standard A4-80 fasteners in both corrosion and mechanical performance. BUMAX 88 delivers excellent ductility, accurate installation preloads and is capable of operating at cryogenic temperatures. All round high performance for most fastening applications, offering predictable performance, high consistency and peace of mind. Available in a wide range of fastener types from stock.

BUMAX® 109

BUMAX 109 is based on the same high-performance austenitic stainless steel grade as BUMAX 88 but with increased strength, equivalent to carbon steel class 10.9. Suitable for applications where additional strength is required but with minimal compromise on mechanical properties in very low temperature applications. BUMAX 109 is a stock product available in a range of fastener types.

BUMAX® DX129 & 149

DX 129 is an advanced high-strength duplex stainless stock product grade that combines excellent corrosion resistance, with very high mechanical strength, equivalent to 12.9 carbon steel. DX 129 does not suffer risks commonly associated with high-tensile carbon steel fasteners, such as low ductility and internal hydrogen embrittlement.

DX 149 is a manufactured to order option, for applications where even higher strength is required.

BUMAX® HE

BUMAX HE is a manufactured to order material grade designed for high temperature applications. HE is an A286 material, precipitation hardened for moderate strength and creep resistance at operating temperatures to 700°C/1,300°F. An austenitic stainless steel material, BUMAX HE exhibits good toughness at very low temperatures and benefits from low magnetic permeability.

FASTENER TYPES



ISO 4014 Hex Head Bolt

BUMAX 88 M3 - M36
BUMAX 109 M3 - M20
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 4762 Socket Cap Screw

BUMAX 88 M3 - M36
BUMAX 109 M3 - M20
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 4017 Hex Head Bolt

BUMAX 88 M3 - M36
BUMAX 109 M3 - M20
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 10642 Socket Counter-Sunk

BUMAX 88 M3 - M20
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 14581 Hexobular Counter-Sunk

BUMAX 88 M3 - M36
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 14583 Torx Pan Head

BUMAX 88 M3 - M36
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



DIN 938 Double Ended Stud

BUMAX 88 M6 - M20
BUMAX 109 Enquire
DX 129 Enquire
DX 149 Enquire
HE Enquire



ISO 4032 Hex Nut

BUMAX 88 M3 - M36
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



BUMAX LOCK All Metal Locking Nut

BUMAX 88 M3 - M36
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire



ISO 7089 Flat Washer

BUMAX 88 M3 - M36
BUMAX 109 M3 - M16
DX 129 M3 - M20
DX 149 Enquire
HE Enquire

Imperial sizes available from stock in DIN 931 / 933 / 934 / ISO 4762. Sizes ¼" to 1" diameter
Some fastener types and dimensions are manufactured to order- contact BUMAX for information

READY TO ENGINEER YOUR NEXT MISSION?

contact engineering →

Further BUMAX material grades and design options are available. BUMAX engineering, manufacturing and field based teams are able to provide application support and manufacturing advice, which includes material selection, custom manufacturing, product evaluation, testing and certification.



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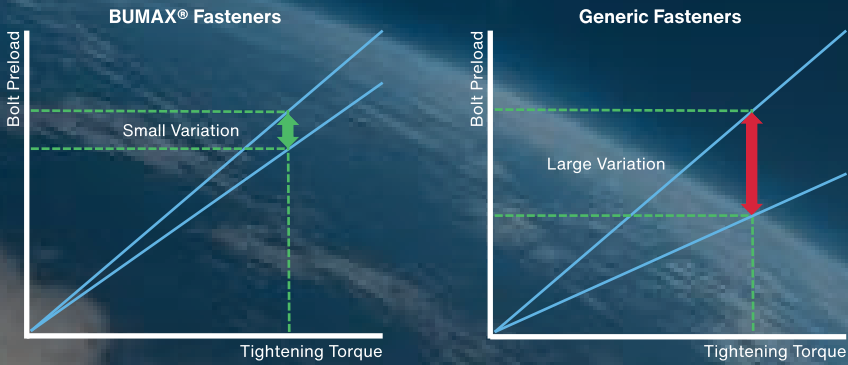
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Accurate Installation Pre-Load

Excellent product quality and highly tuned material properties help to ensure stable friction coefficients, allowing for accurate, predictable and consistent installations.



Minimal Galling Risk

BUMAX fasteners are at minimal risk of galling on installation. Rolled threads, tight tolerances, high surface hardness and pre-applied lubrication ensures thread seizing does not occur on installation.

Special cleaning and alternate anti-galling options are available if lubricants are not permissible.

Vacuum Applications

High strength, low risk of galling, accurate pre-loads ensure that the integrity of critical vacuum applications are not compromised.

Special variants such as vented screws offer even greater security on vacuum assemblies.

Low Magnetic Permeability

BUMAX material grades such as 88 & 109 exhibit very low levels of magnetic permeability which makes it especially suitable for sensitive electronics and scientific instrumentation.

Radiation Impact

The premium composition of BUMAX 88 & 109 A4/316L material helps to reduce the risk of material age hardening and embrittlement as a result of exposure to high levels of radiation.

Structural Bolt Assemblies (Non-Preloaded & Preloaded)

BUMAX are one of the few companies that are able to offer non-preloaded stainless steel structural bolting assemblies in accordance to EN 15048 in BUMAX 88.

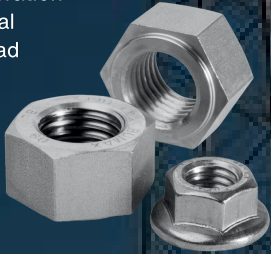
Pre-loaded slip-critical bolting assemblies can also be offered in BUMAX 88 & 109 and DX 109 in diameters M8 - M20. Contact the technical team for further information.

Overcome Vibration and Fatigue

High mechanical strength coupled with excellent ductility allows for greater reliability in maintaining joint integrity. All metal locking increase security and minimise long term risk of failure.

BUMAX® Lock

Added security when severe vibration threatens the integrity of critical assemblies. Direct thread-thread locking mechanism creates even stress distribution across the full height of the nut, ensuring bolt preloads are retained, even under harsh vibration and dynamic conditions.



Available from stock in sizes M6 - M16.

Alternative to Titanium and Nickel Based Fasteners

The high strengths of BUMAX stainless steel material grades have made them a potentially viable alternative against more traditional Titanium and Nickel alloy fasteners, giving engineers even more choice and flexibility when it comes to certain applications.

Advantages can include greater consistency in supply, short lead times by utilizing standard off the shelf stock products and significant cost-efficiencies (especially where larger volumes are involved).

Contact the technical team to discuss your application.

Full European Traceability, Testing & 3.1 Certification

BUMAX products are manufactured exclusively from premium European materials and manufactured in Europe to ensure product quality, consistency and peace of mind.

All BUMAX products are fully tested in accordance with ISO 3506 and available with full 3.1 certification to EN 10204.

BUMAX fasteners are traceable down to the individual box label and can easily be cross referenced against the 3.1 certificates.

High & Low Temperature Applications

BUMAX's range of stainless grades can cater for operating temperatures ranging from -273°C to over +700°C, making them suitable for a wide range of fastening applications. BUMAX 88 & 109 is capable of cryogenic temperatures with minimal impact to mechanical properties, while BUMAX HE is optimised for high temperature applications with minimal risk of gas oxidation, age hardening or creep deformation.

Product Performance, Quality & Consistency

BUMAX products are valued for their dependable performance, quality and high consistency. BUMAX material specifications and production processes are highly tuned, so that engineers can be confident that fastening applications with BUMAX products will perform as intended. This is unlike standard/generic fastener specifications such as 'A4-80', where material quality, production methods, country of origin, manufacturer, product performance and quality can all vary significantly from one procurement order to another. BUMAX products reduce risk of variation and uncontrollable specifications.

BUMAX Product Grades- Properties

BUMAX Material Grade	Material Standard	Tensile Strength (min.)	Yield Strength (min.)	Elongation (min.)	Operating Temp.
	(EN)	(MPa / ksi)	(MPa / ksi)	(mm)	°C / °F
BUMAX® 88	1.4432 / 1.4435 / 1.4436	800 / 116	640 / 93	0.3d	-273 to 400 / -459 to 752
BUMAX® 109	1.4432 / 1.4435 / 1.4436	1,000 / 145	900 / 130	0.2d	-273 to 400 / -459 to 752
BUMAX® DX 129	1.4462	1,200 / 174	1,080 / 156	0.3d	-50 to 250 / -58 to 482
BUMAX® DX 149	1.4462	1,400 / 203	1,260 / 182	0.2d	-50 to 250 / -58 to 482
BUMAX® HE (A286)	1.4980	900 / 130	600 / 87	0.25d (or 15%)	-195 to 700 / -320 to 1,300