Technical product data sheet

RIBE® ALUFORM HT – THE ALUMINUM BOLT FOR HIGHLY STRESSED CONNECTIONS

The connection solution for the lightweight manufacturing megatrend with increased strength and temperature stability

RIBE® – DEVELOPMENT PARTNER FOR ALUMINUM BOLTS

RIBE has been the market leader in the aluminum fasteners for more than 20 years with its Aluform AL9 bolt. Thanks to our wealth of experience and the unique heat treatment and surface coatings specially developed for aluminum alloys, RIBE Aluform bolts are now used in many lightweight automotive and industrial applications. Close collaboration with suppliers of raw materials has helped RIBE succeed in developing a new aluminum bolt, the RIBE Aluform HT, which is suitable for higher-loaded connections and fulfils all the known advantages of a lightweight metal connection with bolts made of aluminum.

THE RIBE® ALUFORM HT – STRENGTH OF 500 MPA WITH SIMULTANEOUSLY INCREASED TEMPERATURE STABILITY

Aluminum bolts in combination with lightweight metal tend to offer considerable weight advantages over steel bolts; they maintain a high preload level during thermal cycling, avoid galvanic corrosion and simplify recycling. RIBE Aluform HT's key innovation lies in the combination of increased strength with excellent temperature stability. Due to the high strength of the RIBE Aluform HT bolt of approximately 500 MPa, a high preload force can be achieved in the tightening process.

RIBE Aluform HT application examples
Lightweight power train components, e-drives, fittings for cylinder bases

In addition, the stability of the strength and thus also the preload force of the connection under elevated temperatures is increased due to the selected alloy. RIBE Aluform HT bolts still have a tensile strength of over 400 MPa after a thermal loading of 2,000 h at 150° C. RIBE Aluform HT bolts are always manufactured as thread-rolled after heat treatment to ensure excellent fatigue strengths. The manufacturing process is designed for bolts with external drives.

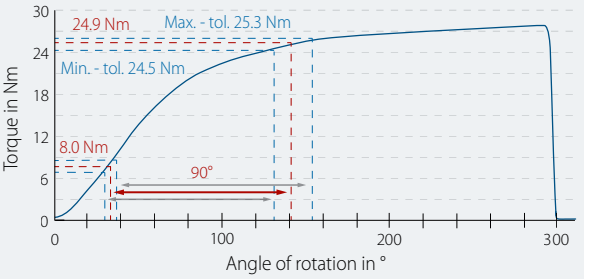
TECHNICAL DATA

Dimensions	M5, M6, M8	**Conductivity**	21 - 40 m / Ω mm²
Material	Patented Al alloy, EN AW 2209	**Application temerature**	max. 180° C
Yield strength	$R_{P0.2}$ min. 390 N / mm²	**Surface coating**	Al-phosphated + RIBE-Lub, RIBE-Lub IK+
Tensile strength	R_m min. 480 N / mm²		

ASSEMBLY WITH RIBE ALUFORM HT

RIBE Aluform HT bolts are provided with a dry-to-touch lubricant for assembly with maximum strength utilization. As standard, Aluform HT bolts are coated with the proven lubrication system Al-phosphated + RIBE-Lub. For additional protection against severe corrosion, the specially developed RIBE-Lub IK+ surface is used. Tightening with torque and rotation angle allows full exploitation of the mechanical properties.

Torque-angle curve with joining torque and angle of rotation
Safety to failure due to bolt breakage over 160°



RANGE OF APPLICATIONS

RIBE Aluform HT bolts stand out in lightweight construction, utilizing aluminum and magnesium components (for corrosion protection against Mg) when fitting similar materials. Due to the corresponding expansion coefficients, the aluminum bolts achieve a stable clamp load, especially at elevated temperatures.
Ideal applications for RIBE Aluform HT include lightweight fittings in thermally and dynamically stressed assemblies. These include weight-optimized engine applications such as oil pans, housings, and fittings for cylinder heads and bases in cases where it was previously impossible to take advantage of the benefits of material-compatible aluminum connections due to high operating temperatures.

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