

# PASSION FOR ENGINEERING



**BLAJ**  
FASTENERS

# PASSION



## A short description of the process

**Our bolts and other fasteners pass through a proven manufacturing process marked by hot forging technology to ensure long life, high reliability, and safety at high capacity utilisation. Our automated and robotized machinery ensures that the products are delivered to our customers on time and at a consistently high quality in accordance with our customers' requirements.**

**Forging from M 6 to M 72:** induction heating and determining the heating parameters by using the pyrometer in order to improve the mechanical properties and the structure of the material.

**Heat treatment:** we perform heat treatment processes such as hardening, normalisation, self coloured, soft annealing, solution annealing, and precipitation hardening.

**Conventional turning** of workpieces with diameters between 5 mm and 100 mm on CNC lathes and specific turning of longer workpieces with diameters between 8 mm and 70 mm and a maximum length of 1,000 mm.

**Grinding between centres and centreless grinding.**

**Thread rolling,** including after hardening, up to a property class of 12.9 (metric threads, UN, UNC, UNF, BSW or customised) to reduce the friction coefficients, preserve the steel quality and increase the life expectancy of the fasteners.

# FOR

# ENGINEERING

For five decades, Anton Blaj has been synonymous with engineering achievements and reliability. We have established ourselves as a reliable partner through our many years of experience in manufacturing complex connecting elements. We have managed to integrate quality awareness into our way of working by combining traditional knowledge with state-of-the-art technology and developments. Our company's market position and global competitiveness are based on the manufacture of highly specialised fasteners that are subjected to high loads, in which the management of risks that expose the fastener quality is of utmost importance. We have built our own brand, which is now recognised as a guarantee of quality and reliability throughout Europe. The strength of our family business is poured into the strength of our promises – which we keep. Fasteners that last. Made in an environment of strong engineering culture and innovation.





At Blaj we constantly introduce new technologies and technological processes. With our own toolmaking department, hot forging technology, heat treatment, and modern laboratories, we provide products of the highest quality level.

# PRODUCTS

## **Our products:**

### **Hot forged, special, and standard bolts and screws (size range M 6 to M 72, length up to 900 mm):**

All head shapes according to customer requirements as well as standard screws (square, hexagonal, 8-point, 12-point, cylinder, countersunk, internal and external TORX or internal and external hex, also in combination).

### **Extended connecting parts (size range M 6 to M 120, length up to 1,200 mm):**

According to customer drawings and in accordance with DIN, featuring deep-hole drilling, ground shanks, smooth rolled surfaces.

### **Stud bolts (size range M 6 to M 64, length up to 4,000 mm):**

Bolts, threaded parts, threaded rods and double end studs (bolt compliant with DIN and customer drawings).

### **Nuts (size range M 6 to M 120):**

Turned from forged blanks or from solid material.

### **Thread types:**

Metric threads, metric fine threads, Whitworth threads, UN threads, UNC threads, UNF threads.

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### Sectors

We are direct supplier for General Electric, Andritz, Rud, Siemens, Dana Group, ThyssenKrupp, Knorr Bremse, Geislinger, Schottel, Oerlikon Barmag, Renk, Alfin Kessler, as well as other international corporations. We provide development and manufacturing of specific fasteners.

### The Blaj fasteners are used in the following areas:

- Diesel and gas engines, marine engines, compressors, turbines
- Energy
- Marine technology, railway technology
- Offshore and
- Construction Industry

### Surface Protection

Additional surface treatment gives our products their characteristic greater corrosion resistance, lower friction coefficient, greater surface hardness or resistance to abrasion and protection against unscrewing, all of which increase their life expectancy. Our services:

- self coloured
- electroplated zinc coating according to ISO 4042
- flZn according to ISO 10683
- hot-dip galvanized coating according to ISO 10684
- phosphate conversion coating according to EN 12476
- black oxide coating according to DIN 50938
- electroless nickel plating
- passivation of stainless steels
- induction hardening
- plasma nitriding
- gas nitriding
- case hardening
- TUFLOK adhesive coating

# PRODUCTS



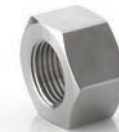
12 point head bolt M 39X3X225, 30CrNiMo8



Adapter 3/4"-27UNS/ SW24X55, 42CrMo4



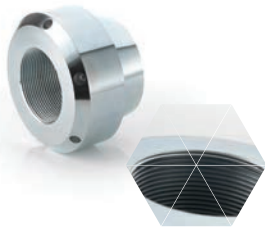
Reduced shank bolt M 24X170, 42CrMo4, Br



Nut M 36X3, TiAl6V4



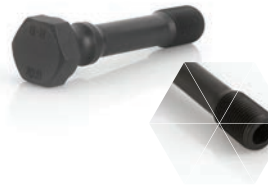
Nut M 42, 10



Nut M 110X4X130, 30CrNiMo8



Fit bolt M 22X1,5X108, 10.9 Mnph



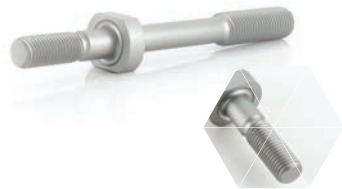
Connecting rod bolt M 18X1,5X96, 10.9 Mnph



Connecting rod bolt M 18X1,5X132, 12.9 Mnph



Screw M 6X9, 12.9



**Bolt M 20/1"-8WwX260,  
42CrMo4, flZnnc**



**Bolt M 24X1,5X115, 42CrMo4**



**Bolt M 30/A83, S355J2G3C+C**



**Screw M 30X120, 10.9 flZnnc**



**Bolt M 90X6X525, 8.8 A2B**



**Countersunk head screw  
M 16X40, 40CrMoV46**



**Stud bolt M 36X3/M30X2X424,  
TiAl6V4**



**Torx screw M 12X136-E18,  
1.6582**



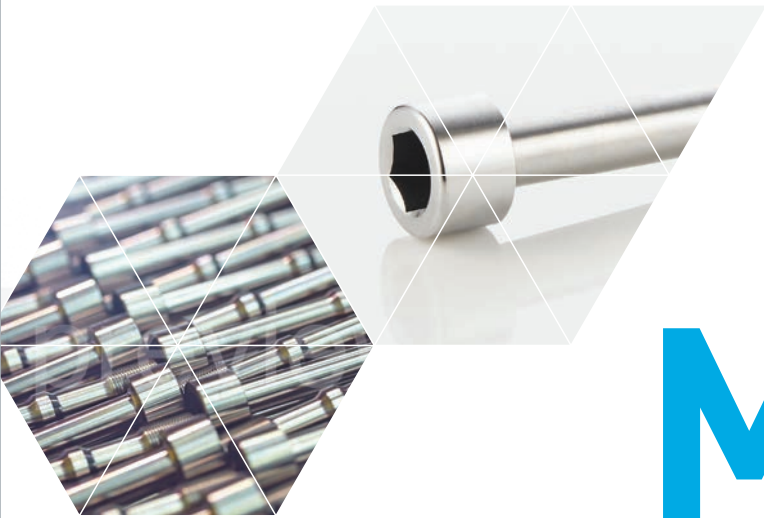
**Cylinder head bolt M 20X275,  
42CrMo4**



**Cylinder head bolt M 36X265,  
C3-80**

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We produce fasteners from materials of different property classes supplied by certified steel producers.

# MATERIALS

<b>Property classes according to ISO 898-1</b>	4.6
	5.6
	8.8
	10.9
	12.9
	(14.9)
<b>Property classes according to ISO 898-2</b>	6
	8
	10
	12
<b>Property classes of stainless steel fasteners according to ISO 3506-1 and ISO 3506-2</b>	C3-80
	A2-50
	A4-50

**Steel for fasteners with specified elevated and/or low temperature properties according to EN 10269, DIN 267/13 (DIN 17240, DIN 17280)**

Material number	Marking according to DIN 267/13	Material name according to EN 10269
1.1181	Y	C35E+N
1.1181	YK	C35E+QT
1.7218	KG	25CrMo4+QT
1.7225	GC	42CrMo4+QT
1.7709	GA	21CrMoV5-7+QT
1.7711	GB	40CrMoV4-6+QT
1.4923	V	X22CrMoV12-1+QT 1
1.4923	VH	X22CrMoV12-1+QT 2
1.4913	VW	X19CrMoNbVN11-1+QT
1.4980	SD	X6NiCrTiMoVB25-15-2+AT+P
<b>Titanium alloys according to DIN 17 851, DIN 17862</b>		TiAl6V4 / W.Nr. 3.7165 (Grade 5 – titanium alloy according to ASTM B 348)

**Stainless steels according to EN 10088-3 (DIN 17440)**

Material number	Material name
1.4021	X20Cr13+QT700
1.4021	X20Cr13+QT800
1.4057	X17CrNi16-2+QT800
1.4057	X17CrNi16-2+QT900
1.4418	X4CrNiMo16-5-1+QT760
1.4418	X4CrNiMo16-5-1+QT900
1.4301	X5CrNi18-10+AT
1.4305	X8CrNiS18-9+AT
1.4571	X6CrNiMoTi17-12-2+AT
1.4462	X2CrNiMoN22-5-3+AT

**Alloy steel and stainless steel bolting for high temperature or high pressure service, according to ASTM A193/A193M**

- B7
- B7M
- B16
- B8
- B8M

**Alloy steel and stainless steel bolting materials for low temperature service, according to ASTM A320/A320M**

- L7
- L7M
- B8
- B8M



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Our state-of-art testing facilities include proper laboratories for dimensional inspection and testing of materials following destructive and non-destructive inspection methods. Our own equipment and thoroughly trained personnel with extensive experience are there to ensure continuous monitoring of processes and inspection of all important characteristics of the fastener. This is how we provide high responsiveness to your needs and assure a high reliability of Blaj products for which we issue a certificate, on request.

# INSPECTION AND TESTING



## We perform the following inspections:

### Dimensional inspection:

- Checking of dimensions using conventional measuring tools such as calipers, micrometers, gauges, etc.
- Checking of dimensions using a measuring projector
- Checking of dimensions and positional tolerances using the MAHR measuring device
- Checking of surface texture parameters (roughness)

### Inspection of mechanical properties:

- Hardness testing (HV, HBW, HRC)
- Microhardness testing (HV0.3 ... HV0.5)
- Tensile testing of bolts on machined test pieces (Rm, Rp0.2, ReL, A, Z, etc.)
- Tensile testing of full size bolts
- Proof load testing of nuts
- Impact strength testing (Charpy)
- Mix-up checking with the UCI method (hardness)

### Inspection for surface defects:

- Magnetic particle inspection up to a length of 4,000 mm
- Inspection using penetration test

### Ultrasonic inspection for internal defects of materials

### Inspection of microstructures of materials

### Inspection of chemical composition of materials

### Inspection of surface coating thickness

## Certification of the inspection of fasteners

### We issue the following certificates and organise inspections:

- Declaration of compliance with the order 2.1 – EN 10204
- Test report 2.2 – EN 10204
- Inspection certificate 3.1 – EN 10204, Inspection certificate 3.2 – EN 10204
- Inspection by TÜV, DNV-GL, ABS, LR, BV, NKK, CCS, purchaser's authorized inspection representative

# QUALITY

At Blaj, quality is devoted a specially important place. Our constant goal is to fulfil customer requirements and expectations and justify the trust placed in us. In this way, we ensure that our products and services are continually improving.

### We run our business in compliance with the following standards:

- Quality Management System ISO 9001:2008 – TÜV SÜD Management Service GmbH
- Pressure Equipment Directive PED 97/23/EC
- Approval of the manufacturer for the production of fasteners in according to AD 2000 - Merkblatt WO
- Approval of the manufacturer for the production of fasteners by DNV – GL (Approval of Material Manufacturers)
- Approval of the manufacturer for the production of fasteners by BV Marine Division – Recognition for BV Mode II Scheme





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