



# Engineered Parts

Your Design – Our Competence

**BOSSARD**

**Engineered Parts by Bossard** – Your Design – Our Competence



**Competent Partner**

**Proven Quality**

**Highest Supply Reliability**

**Optimum Price-Performance-Ratio**



## Competent Partner

There are thousands of manufacturers around the world who produce engineered parts by a variety of different methods. The problem is not how to find a manufacturer, but how to shortlist the manufacturers who will produce your products continuously, to top quality, at the appointed time but nonetheless at low cost.

Our specialists at Bossard travel all around the world, day in, day out, in order to find, evaluate and continuously supervise the most adequate sources of supply for our customers.



## Proven Quality

All suppliers, current ones as well as new ones, are continuously subjected to strict quality testing. The required quality is ensured by regular audits of the manufacturing processes and by professional testing in Bossard's own accredited test laboratories.

Only after successfully passing all tests will the supplier and the product be released for deployment. Our incoming materials inspection confirms that each delivery will exactly match customer requirements.



## Highest Supply Reliability

Dealing with different replenishment deadlines - ranging from several days to several months - is one of Bossard's key competencies.

Thanks to our world-wide procurement network, our most modern logistics along the entire value-added chain, and decades of know-how, Bossard has a continuously

high ability to deliver. And our anticipatory, individual stockholding ensures uninterrupted deliveries, even during peaks of demand.

Bossard means supply reliability - whether for standard or for engineered parts.



## Optimum Price-Performance-Ratio

Price doesn't equal cost! If seemingly cheap parts cause additional work and expense in control or assembly, lead to manufacturing problems or if the necessary components are simply missing, they often cause a multiple of the planned cost.

Cheap prices and short delivery dates are often in conflict. Similarly, high quality often goes along with an exorbitant price.

At Bossard, we master this challenge by means of an ingenious, world-wide procurement network of audited and certified manufacturers, in which European and Asian sources complement each other perfectly.

The result: Optimum product quality, at prices that are in line with the market, and delivered quickly off the shelf from Bossard's stock.



# Engineered Parts by **Bossard** – Turned and Milled Parts

## Turned and Milled Parts

Where high precision, tight tolerances and complicated forms are required, a metal-removing process which involves turning, milling and drilling is to be recommended. These methods are suitable for prototypes and all batch sizes, from the smallest series to high volume production.

### Materials:

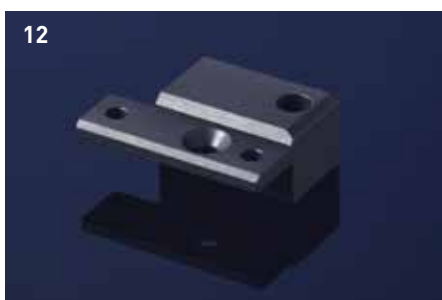
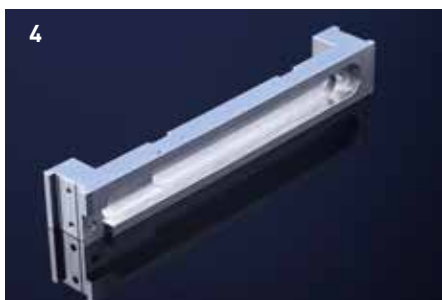
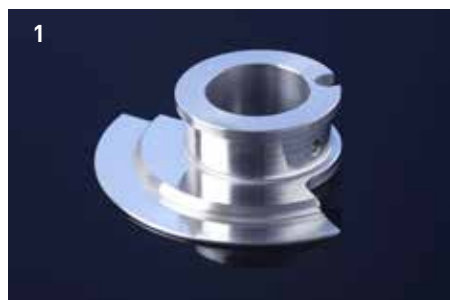
- All machinable steels
- Non-ferrous metals and plastic
- Many special steels

### Dimensions:

- Diameters from 0.5 to 600 mm
- Lengths from 2 to 650 mm

### Quantities:

From prototypes to high volume production, depending on part type and machine type.



1. Washer  $\text{Ø } 80 \times 19 \text{ mm}$ , aluminium alloy
2. Valve nut  $\text{Ø } 33 \times 14 \text{ mm}$ , stainless steel
3. Bearing  $\text{Ø } 30 \times 45 \text{ mm}$ , brass
4. Connector L 170 x 24 mm, aluminium alloy
5. Anchor  $\text{Ø } 45 \times 21 \text{ mm}$ , free cutting steel
6. Retainer  $\text{Ø } 73 \times 25 \text{ mm}$ , stainless steel
7. Plastic flange  $\text{Ø } 31 \times 30 \text{ mm}$  with inch thread, PMMA
8. Bushing  $\text{Ø } 62 \times 68 \text{ mm}$ , stainless steel
9. Lever L 50 x 34 mm, vibration polished, aluminium alloy
10. Collet  $\text{Ø } 12 \times 9 \text{ mm}$ , copper-plated brass
11. Coupling  $\text{Ø } 25 \times 65 \text{ mm}$ , stainless steel
12. Slider L 40 x 30 mm, aluminium alloy, anodised black

# Engineered Parts by Bossard – Extrusion Parts

## Extrusion Parts

Material, form, production tolerances and similar performance targets decide whether an engineered part can be produced by the more economic extrusion process. Since special tools are required for the forming process, batches will, as a rule, need to be correspondingly large. Depending on part geometry and material, smaller batch sizes are also possible.

### Materials:

- Diverse steels
- A2 and A4 grade rustproof steels
- Aluminium, brass
- Special steels and titanium upon request

### Quantities:

Extruded parts and multistage parts from approx. 50,000 pieces, depending on part geometry and size

## Hot forged parts

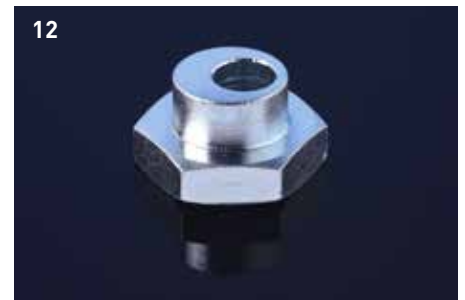
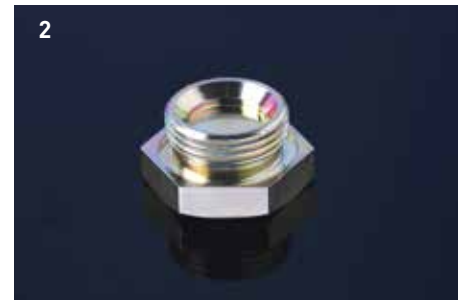
### Materials:

- All established materials, including rust-proof and acid proof stainless steels
- Special materials, e.g. Inconel, upon request

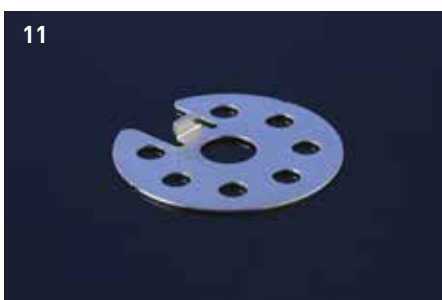
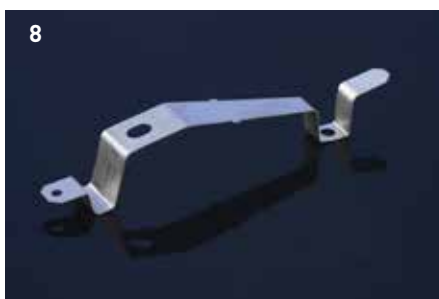
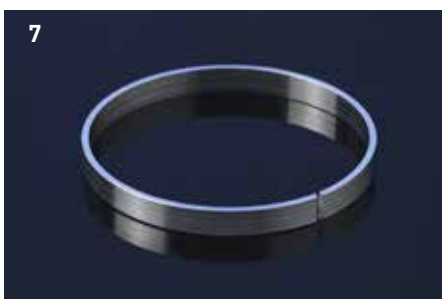
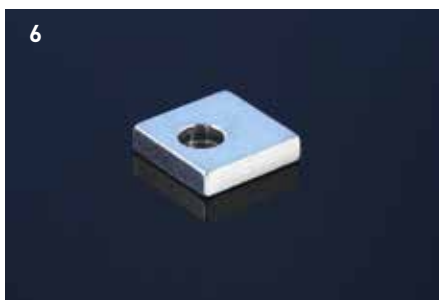
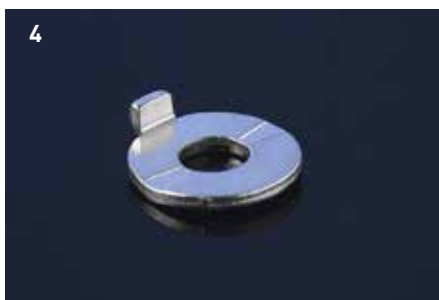
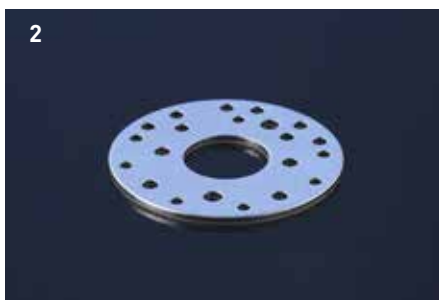
### Quantities:

From prototypes to production quantities

1. T-head bolt, M 20 x 145 mm, forged steel
2. Plug M 22 x 15 mm, zinc-plated steel
3. Positioning pin  $\varnothing$  6-h11 x 30 mm, 8.8 grade steel, extruded
4. Breaker bolt M 30 x 120 mm, head 50 x 50 mm, hot forged
5. Double bolt  $\varnothing$  18 x 47 mm, steel
6. Thin shank bolt M 8 x 80 mm, 8.8 grade steel
7. Adjusting bolt M 6 x 46 mm, A4 grade stainless steel
8. Solar bolt with milled thread, M 10 and M 12, Inox A2
9. Fixing bolt M 6 x 11 mm with internal and external hex, 8.8 grade steel
10. T-Bolt M 6 x 62 mm, b 48 mm, A2 grade stainless steel
11. Pin with square end, M 5 x 68 mm, W 13 mm, 8.8 grade steel
12. Eccentric bushing,  $\varnothing$  15 x 13 mm, wrench size 22 mm, steel



# Engineered Parts by **Bossard** – Punched and Bent Parts



## Punched and Bent Parts

Fastening elements, washers and many other parts for machinery and equipment construction are formed by punching and bending technologies.

### Materials:

- All established steels
- Non-ferrous metals
- A2 and A4 grade rustproof steels
- Alloys

### Quantities:

Single parts, small to large batches, depending on parts geometry. Small batches may also be cut by laser or water jet.

## Bent wire parts

### Materials:

- All established steels
- Non-ferrous metals
- A2 and A4 grade rustproof steels

### Quantities:

Small to large batches, depending on design and dimension. Quantities depend on tools and on parts geometry.

1. Clamp 30 x 30 x 0.8 mm, spring steel
2. Punched washer  $\text{Ø} 25/9 \times 1\text{mm}$ , stainless steel
3. Bracket L 36 x 8 x 0.9 mm, stainless steel
4. Gib washer  $\text{Ø} 15/6 \times 1.5\text{mm}$ , stainless steel
5. Tab washer  $\text{Ø} 12,5/5 \times 0.5\text{mm}$ , nickel-plated steel
6. Square washer 16 x 16 x 4 mm eccentric hole, steel
7. Spreading ring,  $\text{Ø} 31-33 \times 1.5\text{mm}$ , stainless spring steel
8. Contact spring, 47 x 6 x 0.2 mm, nickel-plated stainless steel
9. Contact rivet,  $\text{Ø} 3 \times 1 \times 0.7\text{mm}$ , fine silver
10. Spring clamp, L 18 x 20 x 0.5 mm, stainless spring steel
11. Punched washer with tab,  $\text{Ø} 24/6 \times 0.6\text{mm}$ , nickel-plated steel
12. Retaining spring, L 20 x 8 x 0.5 mm, stainless steel

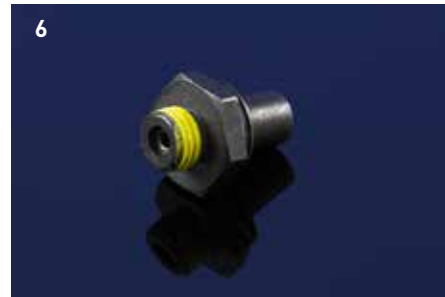
# Engineered Parts by Bossard – Finishing Treatment

## Finishing Treatment

Custom solutions with specific requirements are often caused by the finishing treatment of norm or engineered parts.

- Customer-specific set
- Mechanical treatments like shortening, thread-cutting, drilling of fastening and split-pin holes, lathing of thin shanks and grooves
- Heat treatments
- Tribological dry coating  
Bossard ecosyn®-lubric
- Colour coatings
- TufLok® grip coating
- Precote® adhesive coating
- Nystay® retaining ring / protection against loss
- Underhead seals  
Nyseal® and Nyplas®
- Nickel-Teflon-coatings
- Anodising
- Zinc-aluminium slat coatings  
(e.g. Geomet®)
- All kinds of zinc plating  
(incl. Cr(VI)-free coatings)

1. Completion kit with bolts, washers and assembly instructions
2. Completion kit in customer pouch with bolts and pin wrench
3. Tribological dry coating, ecosyn®-lubric silver and black
4. Tribological dry coating, Bossard coating
5. Adhesive coating, Precote® 80/85, high-strength
6. Adhesive coating, Precote® 30, low-strength
7. Grip coating, Polyamide TufLok®, spot and round
8. Grip coating, Polyamide Nytemp®, spot and round
9. Sub-head seal, Polyolefin Nyseal®, green and grey
10. Sub-head seal, soft Plastisol, Nyplas®
11. Retaining ring / protection against loss, Polyolefin Nystay®
12. Coloured surface protection



# Engineered Parts by **Bossard** – Logistic System Integration



## Logistics

Guaranteed supply reliability, independent of whether C-, B- or even A-parts

Bossard collaborates with more than 2600 specialized manufacturers, which have been selected by strict quality criteria. For each fastening element and each engineered part, Bossard has the optimum supply sources. That way, maximum supply reliability is guaranteed – so there will never be a standstill in the customer's assembly line.

Bossard helps customers to substantially reduce or even eliminate procurement costs along the entire supply chain. Logistic systems simplify procurement, reduce storage costs and prevent bottlenecks in supply. Modern systems automatically trigger orders at the right time and with the right quantities – solutions in logistics which Bossard customers rely on all over the world.



1. *Bossard guarantees maximum supply reliability for more than 20 billion fastening elements all over the world.*
2. *Modern technology and logistics centres allow us to keep up our customary high service level while at the same time embracing requirements of new customers.*
3. *Ingenious logistics systems, according to customer requirements, prevent bottlenecks in supply and expensive production interruptions.*



## Quality Assurance

### Bossard Quality: Global Tradition and Innovation.

Highest quality standards, qualified employees and investments in the future make Bossard a globally recognised supplier of bolts and fastening elements.

«High quality fastening» along the entire value-added chain, from manufacturer to end user, is an important prerequisite for the direction of tomorrow. Bossard knows and utilises the global procurement market first-hand.

### Mature Global Testing System

Early verification and validation of processes helps to recognise errors in time and to avoid technical, human or process-based communication losses. Therefore, Bossard pursues the globally recognised status as an accredited testing and measuring laboratory according to ISO/IEC17025 «General requirements for the competence of testing and calibration laboratories.»

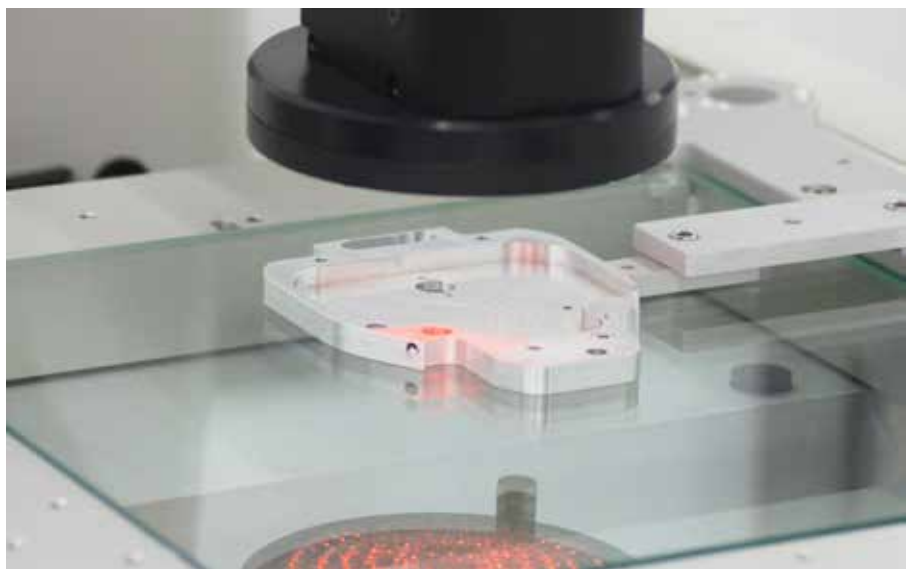
### Recognised Test Certificate

The relevant test results will be specifically documented according to ISO/IEC17025 and independently verified by the laboratory.

### Designated test performance

- Dimensional control
- Tensile testing and proof load testing
- Testing for tightening and over-torqueing
- Hardness measurements
- Coating thickness measurements
- Corrosion testing
- Spectral analyses

1. *Grind tests show the hardness distribution under a microscope*
2. *Spectral analyses determine the chemical composition of metallic materials*
3. *3D coordinate measuring machine for measuring length, width and diameter as well as form and positional tolerances according to customer specifications*



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