



**KAMAZ**  
PUBLICLY TRADED COMPANY

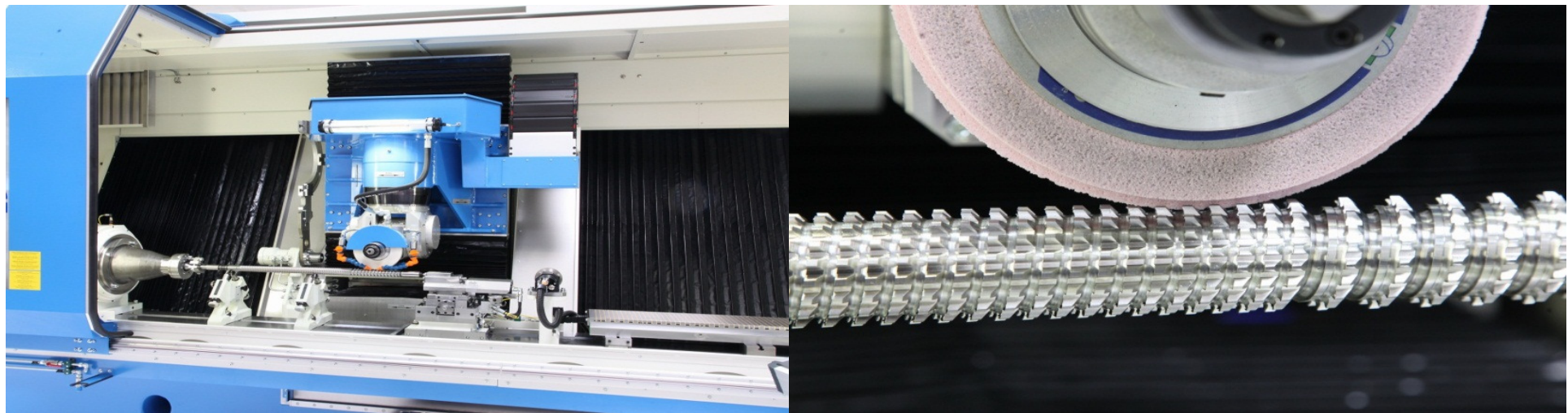
# **REPAIR AND TOOL MAKING PLANT**

## **Broach tool manufacturing**

Technical capabilities of KAMAZ Repair and tooling plant allow to manufacture both round broaches, and flat broaches with the required dimensions, including those which differ from a standard range covered by GOST, with a front face sharpening angle from  $0^{\circ}$  to  $18^{\circ}$ . The broaches are manufactured as solid high-speed steel parts.

There are also tailor-made special broaches and piercing tools manufactured as per customer drawings, including:

- Cylindrical broaches (diameters up to 200 mm);
- Spline broaches with any number of splines;
- Cylindrical and spline calibration broaches;
- Spline broaches for the spline triangle profile;
- Broaches for hexagonal and other hole profiles.



| Broach types                                   | Parameters   | Design as per GOST, OST   | Material         |
|--|--|---|------------------|
| Spline broaches for straight-sided flank holes | D - 14...200 mm<br>L - up to 2000 mm<br>Number of splines - 6,8,10 | 24818-81, 24819-81, 24820-81, 24821-81, 24822-81, 24823-81, 25969-83, 25970-83, 25971-83, 25972-83, 25973-83, 25974-83, 2430-7, 2430-8, 2430-9. | High-speed steel |
| Spline broaches for involute profile holes     | D - 12...90 mm;<br>L - up to 2000 mm<br>Modules 1...5 mm           | 25127-82, 25158-82, 25159-82, 25160-82, 25161-82<br>Technical requirements as per GOST 28442-90.  | High-speed steel |

| Broach types                        | Parameters  | Design as per GOST, OST                                      | Material         |
|-------------------------------------|---|--|------------------|
| Keyway broaches                     | B - 5...40 mm<br>H - 10...80 mm<br>L - up to 1500 mm  |  | High-speed steel |
| Round broaches                      | D - 14...120 mm<br>L - 150...1950 mm                  | 20364-74, 20365-74<br>Specifications as per GOST<br>28442-90 | High-speed steel |
| Flat broaches                       | B - 8...100 mm<br>H - 8...100 mm<br>L - 150...1300 mm |  | High-speed steel |
| Polygonal<br>broaches.<br>Hexagonal | S - 8...100 mm<br>L - 150...1300 mm                   |  | High-speed steel |

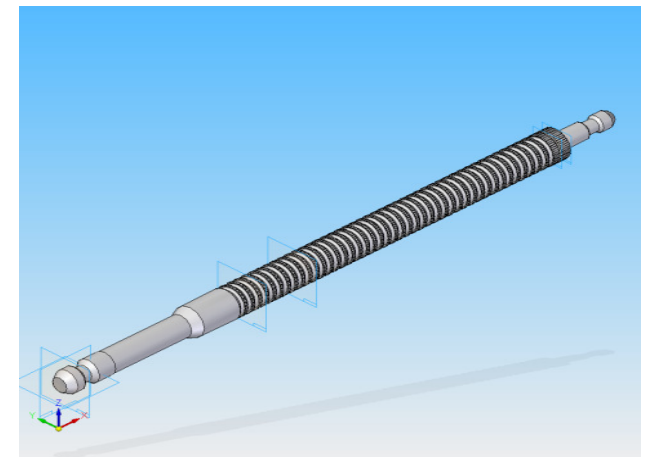
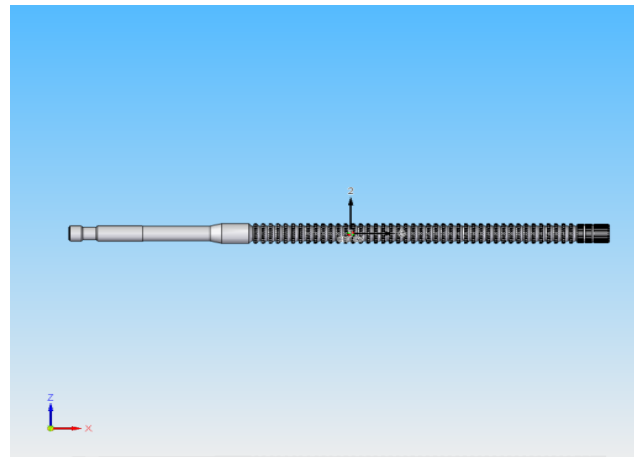
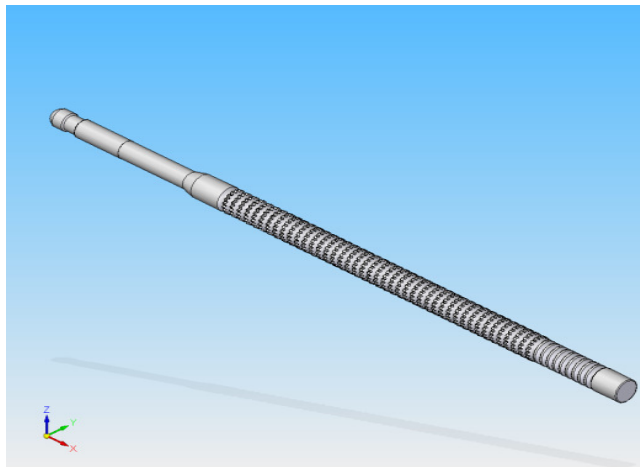


| Broach types                   | Parameters   | Design as per GOST, OST  | Material         |
|--------------------------------|--|--|------------------|
| Polygonal broaches.<br>Square. | B=H - 8...100 mm<br>L - 150...1300 mm<br>Accuracy of 0,01 mm | 26478-85, 26479-85, 26480-85<br>Dimensions as per Technical design assignment or customer drawings.<br>Specifications as per GOST 28442-90 | High-speed steel |



Design engineering is done by a design office based on CAD/CAM/CAE system as per the drawings and mathematical models. 3D engineering is also possible based on customer schematic drawings. Within the frame of this concept KAMAZ Repair and tooling plant develops and approves the drawings and hands over a tool manufactured thereunder to the customer. Broaches can also be manufactured as per customer drawings.

The tools are manufactured using high-performance domestic and foreign equipment made by ELB-SCHLIFF, STEINEL, and in 2013 a BN-3000SMF ARTUR KLINK state-of-the-art spline grinding machine was put into operation. All this ensures a high quality of our products.



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