

# **DOWEL ROD CUTTERS**

*Kanmor*

**(SHARPENERS)**

## **USER'S MANUAL**

Dear Customer!

The team of creators of Dowel Rod Cutters congratulates you on the purchase our advanced tools and thank you for trusting us!

Dowel Rod Cutters are designed to replace the dowel milling machines in some cases, because occupy much less space, are easier and cheaper than the machines and have quite comparable performance.

Having the ability to cheaply produce the dowel rods, round balusters, shafts, hinging and sliding joints, round plugs, levers and handles, surely you will go further and improve the technology of your products!

Please read this manual carefully, follow our tips to avoid embarrassing mistakes and learn to operate with your new tool as soon as possible.

We sincerely hope that you will get a significant profit in business and the joy of work having mastered this simple but beautiful tool!

## TABLE OF CONTENTS

<b>OVERVIEW .....</b>	<b>page 4</b>
<b>GETTING STARTED .....</b>	<b>page 7</b>
<b>BLADE INSTALLATION AND ADJUSTMENT.....</b>	<b>page 7</b>
<b>LET'S BEGIN .....</b>	<b>page 10</b>
<b>BORING TO THE CLAIMED DIAMETER.....</b>	<b>page 11</b>
<b>Y-ADAPTER.....</b>	<b>page 12</b>
<b>SAFETY.....</b>	<b>page 13</b>
<b>STORAGE AND CARE .....</b>	<b>page 13</b>

## OVERVIEW

Dowel Rod Cutter consists of two major parts (see fig.1):

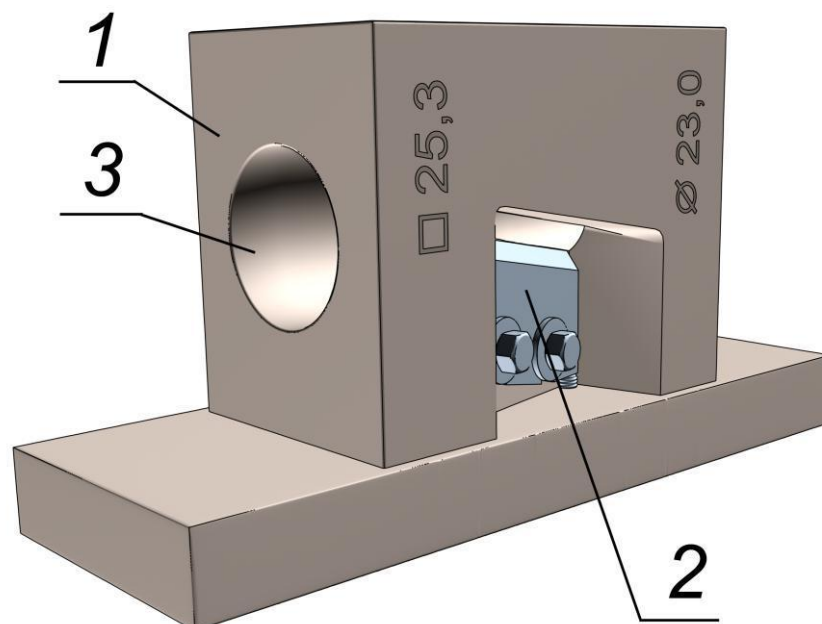
- **1 body**
- **2 blade**

The body has the foot at the bottom side for attachment to a workbench. There is through channel along the body.

- **3 channel**

Looking closely you will soon realize that it is a simple pencil sharpener in front of you but slightly larger. There are two markings on the body at the side of the blade bay:

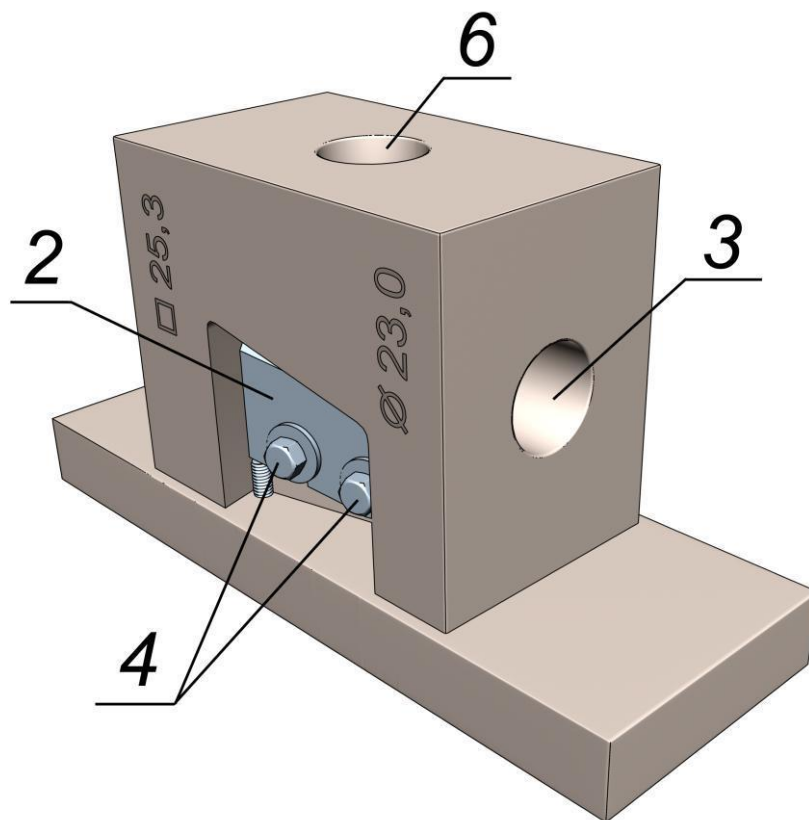
- "Square" shows the maximum side of a square cross-section billet in millimeters.
- "Diameter" indicates the diameter of the part after processing, also in millimeters.



*fig.1*

The blade is mounted on the bottom of the bay. The bay communicates with the channel through a narrow window for chip discharge. To hold the blade there are (see fig.2) two screws with hexagonal heads,

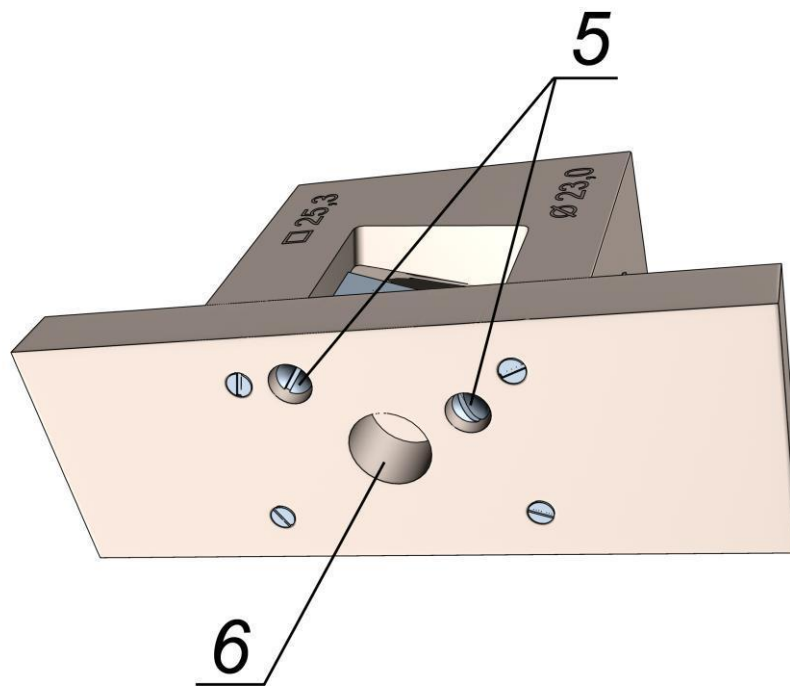
- 4 screws with hexagonal heads.



*fig.2*

whereas two adjusting screws on the bottom side of the foot are used to adjust and lock the blade relative to the workpiece (see fig.3).

- **5 adjusting screws**



**Fig.3**

In the case of using the lathe and 4-jaw chuck for rotating the workpiece you can mount two dowels from Kit into the blind holes at the top and bottom sides of the body on glue. The dowels will serve you as handles (see fig. 2, fig. 3).

- **6 blind holes**

## GETTING STARTED

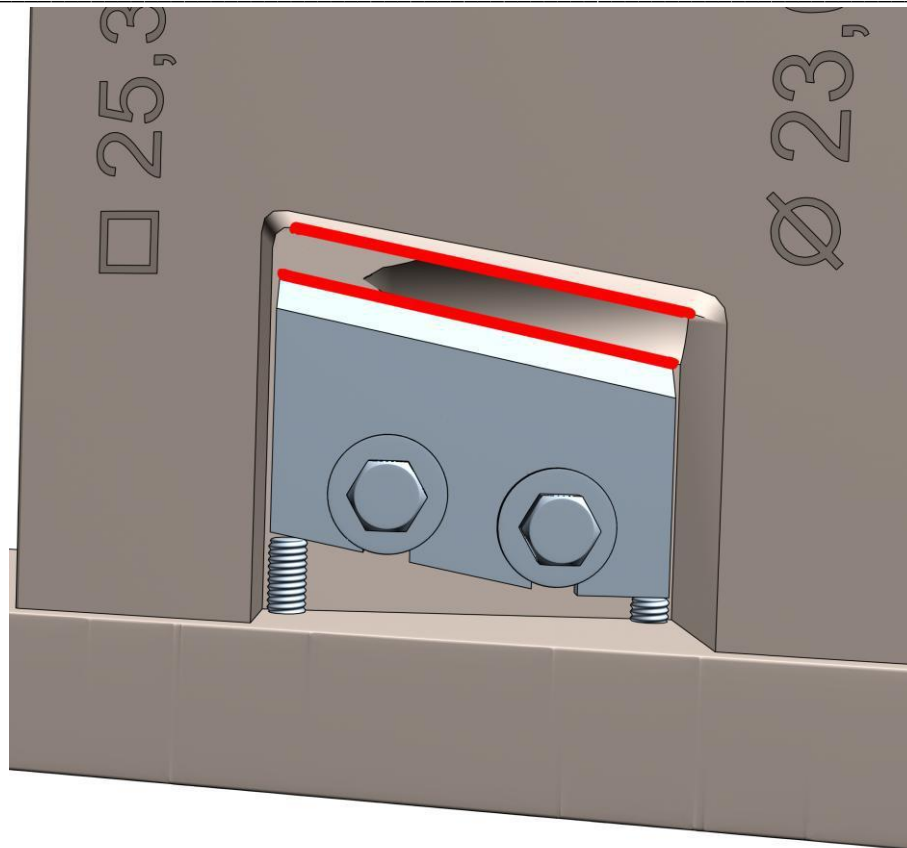
It should be understood that the blade require periodic sharpening as any cutting tool. Fortunately, we have improved blades. There is the carbide alloy on the cutting edge of our blades. Due to this fact the life time increased dozens of times. Need for frequent sharpening reduced drastically.

Preparation of our simple tool consists of checking sharpness of the blade, the sharpening if necessary, installation and correct adjustment. Check the sharpness as usual. Remove the blade and explore the cutting edge through a magnifying glass. The new blade does not need for sharpening, it is suitable for a job.

## BLADE INSTALLATION AND ADJUSTMENT

Dowel Rod Cutter is a close relative of a good old wooden planer, so it requires adjustment like its older brother.

Remove two **screws with hexagonal heads**, put the blade into the bay and move it to the edge of the chip discharge window by turning of **adjusting screws** so that the cutting edge became the parallel to opposite (oblique) side of the bay (see fig.4).

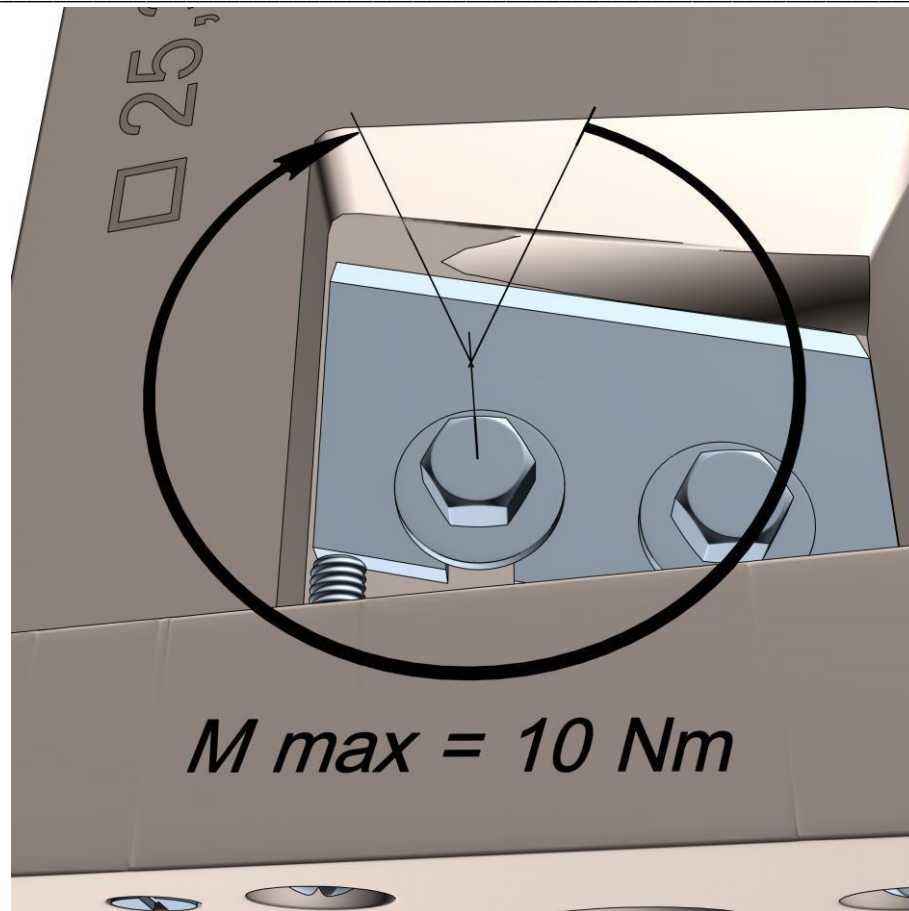


**Fig. 4**

Pressing the blade to the bottom and simultaneously pressing it with its back to the **adjusting screws** carefully (so as not to move the blade) slightly tighten the **screws with hexagonal heads**, and then check their tightness with an 8 mm hex head.

Cordless drill of average power with intact ratchet gives the desired tightness to our **screws with hexagonal heads** in points 3 or 4 of ratchet. Do not force more! It will not bring benefits, but will bring the risk of damage of wooden parts. (see fig. 5)



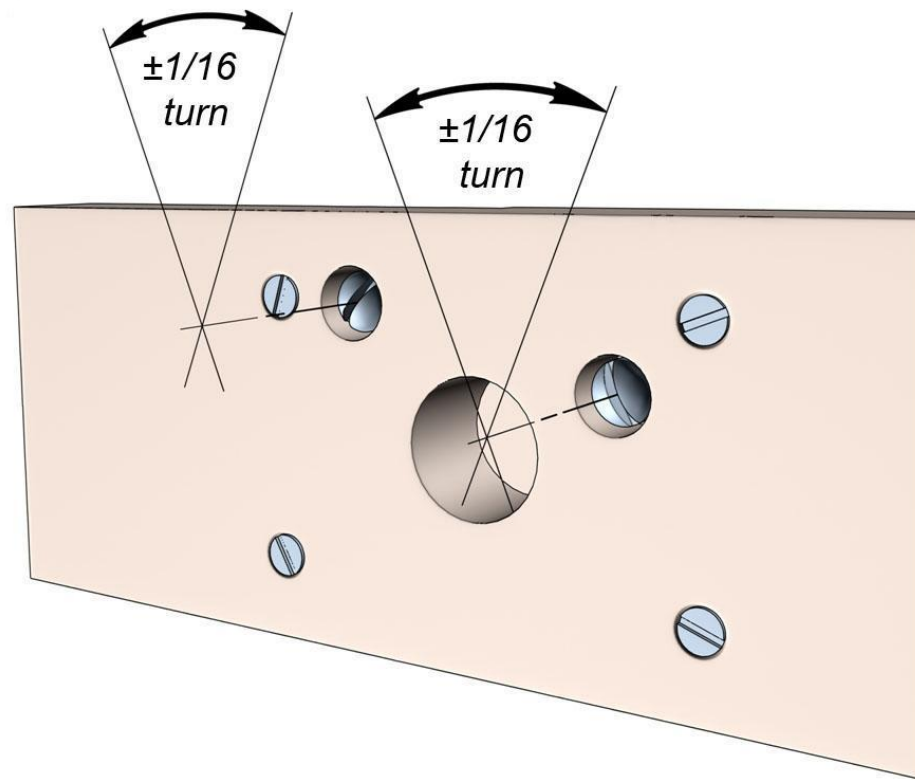


**Fig. 5 Torque limit**

Process the trial workpiece of the proper cross-section clamped in a vise manually without any actuator. As the result, the finished part should be effortlessly inserted into the exit hole of the channel from the back side, but without radial backlash.

Adjust if necessary:

- a. Release the **screws with hexagonal heads**
- b. Loosen or tighten both adjusting screws , but not more than  $\pm 1/16$  turns at one adjustment step, thereby moving the blade parallel ( fig. 6).
- c. Pressing the blade to the bottom and simultaneously pressing it with its back to the **adjusting screws** carefully (so as not to move the blade) slightly tighten the **screws with hexagonal heads**
- d. Check tightness of the **screws with hexagonal heads** with cordless drill, as described above.



**Fig. 6 One adjustment step**

- e. Check the operation of the device. Rotate the workpiece mechanically using a lathe or electric drill. During operation it should not occur any smoke in any case, this would indicate the extremely high angular speed and / or insufficient processing depth. Also, there should not be the radial gap between the part and the exit hole (the lunette of working channel). In addition, you should to assess visually the roughness of machined parts, since it is known that only properly adjusted Dowel Rod Cutter provides maximum surface quality. Repeat the adjustment procedure completely when it is necessary.

## LET'S BEGIN

Dowel Rod Cutter has a wooden body, which you should to protect from moisture. For this reason, you should work with a timber of not more than 20% relative humidity. The drying for a long time under a canopy in a summer time provides this figure.

For the best surface quality the most preferred are brittle, hard wood species: mahogany, walnut, oak, beech, ash, alder. Less suitable are birch, pine. Not a good idea the choice of fibrous species such as fir, poplar. When you sort the timber prefer more dense boards without cracks with thin annual rings and ignore the boards with the angle of the fibers more than 20 degrees.

Read the markings on your device and then prepare the required number of stocks. There may be any number of captive ingrown knots in the workpiece, while the each one takes no more than 50% of the cross sectional area of the workpiece. Any cracks are not allowed.

If you need a cylinders of very high quality, for example, for facial furniture parts without flats and perfectly straight, choose the workpieces with the implementation of further following conditions:

- The local thickness of the workpiece may not be decreased more than 5%
- The curvature along the workpiece is allowed but with deflection no more than 5% of the side of square cross section.
- Knots are not allowed in this case.

Dowel Rod Cutter can be operated manually by rotating around the fixed workpiece. This method is good to taper the edge of the workpiece when it is not required to process the entire length.

The workpiece can be rotated using a power drill or a lathe. Secure the unit on the edge of the workbench or lathe tool holder.

The angular speed of the workpiece affects the performance but to a much lesser degree it affects the purity of the processing. Besides it, the increment of the angular velocity will inevitably increase the amount of heat from friction.

According to our observations, the convenient angular speed for all our Dowel Rod Cutters is from 400 to 1500 rpm.

Excessive angular speed leads to unnecessary wear and premature failure of Dowel Rod Cutter, less reduces your productivity, so the smart choice is yours! When working with the long-length use additional stops in a form of plywood with a hole to limit freedom of long tail.

Do not push along the workpiece. It does not work to increase the feed this way. You just got minimal chip thickness and the excellent surface! What do you say about the performance now? Our performance is a few meters per minute! This is just as an expensive dowel milling machine works. Well, maybe just a little bit more slowly.

Add that our Dowel Rod Cutter correctly configured with a sharp blade shows tangible self-motion along axis of part without overtaking and catching.

**!!! The appearance of smoke, even a smell, dictates an immediate stop of rotation and indicates the following possible faults:**

- **blunted blade,**
- **incorrect settings.**

**The work can be continued only after the elimination of the causes listed above.**

## **BORING TO THE CLAIMED DIAMETER**

When you'll measure the diameter of dowel produced with our new Dowel Rod Cutter, it will be slightly less than indicated on the marking, only a few tenths, up to half a millimeter. Fresh dowel of new Dowel Rod Cutter certainly will be "in a

minus" and not suitable for glue connections into the holes made by the appropriate drill bit.

This circumstance does not indicate a malfunction or manufacturing defect, it means that you have the opportunity to match Dowel Rod Cutter to your drill. Do this in the following order please:

- Stock up on an electric drill with reverse and speed control. You will also need a drill bit of the same diameter, as indicated on the markings of Dowel Rod Cutter.

- The drill bits according to DIN 338 are the most suitable for boring the diameter, DIN 7487 are less suitable, not suitable are drill bits according to DIN 6444.

- Turn out two **screws with hexagonal heads** and remove the blade.

- Set Dowel Rod Cutter on the edge of the workbench with clamps, with inlet on your side, just as for to work.

- Set the drill to "reverse" and plunging the drill bit to the stop into the inlet channel, start slow reverse rotation, controlling the concentricity and alignment of drilling by the gap around the drill bit on your side.

Continuing to drill through, you will feel the drill bit aligns in the channel, in obedience to the factory hole, let's align, don't hinder.

- Switch the drill from the "reverse" to the "norms", turn the drill on at normal speed, and treat the diameter.

**!!! Do not remove the drill from the channel before a complete boring and/or before stop of rotation!**

- Set the blade and adjust as described above. It may require to turn out the adjusting screws, thereby dragging the blade back from the workpiece.

## Y-ADAPTER

Y-adapters are used for test works during adjusting Dowel Rod Cutters, in some cases they reduce the need to use a lathe and allow you to work with a drill. Omit the description of Y-adapter because of its simplicity, however, we present here the necessary advice on its use. Our Y-adapters are four sizes:

Size 1 10.0 – 17.0

Size 2 16.0 – 27.0

Size 3 26.0 – 38.0

Size 4 37.0 – 50.0

Size notes what square cross-sections can be processed using this Y-adapter. Y-adapters of all four sizes are provided with hex shank of 13 mm. This means that they may to be clamped in the drill chuck of 16 mm (not supplied). Get the 16 mm chuck at your local hardware store if your power drill is provided with smaller one. Do not unscrew completely the steel flange with shank from wooden body! Do not change their mutual factory settings in order to avoid imbalance.

Do reasonable tightening of clamps and screws of flange from time to time. Do provide a slight axial force towards Dowel Rod Cutter to control the reliable workpiece clamping in Y-adapter.

## SAFETY

All the safety is usually required when dealing with rapidly rotating parts and the mechanical wood processing are valid when dealing with Dowel Rod Cutter.

- No gloves, mittens, neckties, scarves,
- Carefully buttoned clothes,
- Carefully hidden in a headdress long hair, if the beard then only a short,
- Protective glasses,
- Check workpieces to the absence of any cracks,
- Thoroughly mounting and fastening all gear,
- More of - all general and electrical safety specifications when working with your lathe and electric drill (read the manuals of the equipment).

## STORAGE AND CARE

- Keep our Dowel Rod Cutters indoors at a temperature between 0 and 20 degrees Celsius, avoiding sudden changes at a normal relative humidity.
- Do not expose the product to moisture and strong sunlight. After working outside bring it to the workshop. Do not leave Dowel Rod Cutter outside in a rain, snow, dew, frost and prolonged exposure of the summer sun.
- Remember! The body of Dowel Rod Cutter made of wood, it is prone to fissuring and swelling with sharp changes of humidity and as a consequence the loss of geometric shapes and milling accuracy.
- Do not place Dowel Rod Cutters near a heat point in the dryer, do not dry them with the directed heat. The water from their surfaces must be removed immediately. It is enough to carefully wipe them with a dry cloth, chips or dry sawdust.
- Sharpen the blade only with the diamond tools. Before sharpening be sure to remove the blade! If you are going to sharpen the blade with a diamond file manually, you can do it without water but in a case of sharpening with a machine, usage of the coolant should be mandatory!
- Sharpen the slope face only with compliance of the factory angle!
- After sharpening the blade should be wiped dry.
- In a case of upcoming long-term storage without a job, apply the grease on all sides of the blades and install blades in their places.

Adhering to the tips and advice outlined here, you will prolong the life of your Dowel Rod Cutters, you will save your health, you will raise your productivity to a new level and increase revenue in your business!

We reserve the right to make changes to this document and re-design Dowel Rod Cutters without notice. More information about Dowel Rod Cutters can be found by clicking the following links:

<http://geosstep.ru/nagel.html>

<https://vk.com/club74948955>

We wish you success in mastering your Dowel Rod Cutters!  
Developers and manufacturers.

