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INTERNAL CYLINDRICAL SURFACES ARE MACHINED USING A GRINDER

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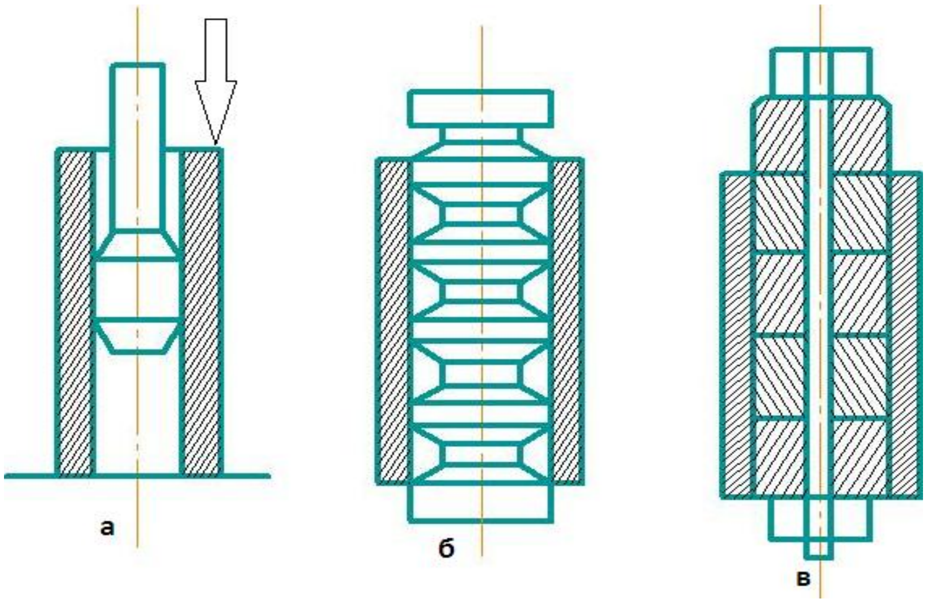
A B S T R A C T	K E Y W O R D S
This in the article different kind Internal cylindrical to surfaces thorns with processing to give process own inside. For continuous machining of holes, the following methods are used: boring and milling. Depending on the number of teeth (rings) of the straightening and tightening dies, boring dies are divided into single-ring and multi-ring. Figure 333 shows the types of straightening and tightening dies. Single-ring and multi-ring boring dies (rings) by their design allow boring holes only within certain values of tension (the difference between the surface diameter of the tool and the inner diameter of the hole) **Objective**: To identify technological deficiencies and defects in mandrels and recommend advanced techniques and technologies for their improvement, as well as to increase labor efficiency by introducing them into production and increasing their service life. **Conclusion**. Machining internal cylindrical surfaces using a grinder The use of the boring technological process can improve the efficiency of the workpiece. At the same time, it is possible to increase surface cleanliness, reduce waste, and increase productivity. The widespread use of the boring process in mechanical engineering, aircraft construction, and the production of military weapons ensures that our products comply with these standards.	Prototyping, presses, smoothing, Drill bits, drills, taps, countersinks, drills turning machine tools.

Introduction

Machining internal cylindrical surfaces using a grinder

For continuous machining of holes, the following methods are used: broaching and boring . Depending on the number of smoothing and compacting teeth (rings), broaches are divided into single-ring and multi-ring. Figure 1 shows the types of smoothing and compacting broaches. Single-ring and multi-ring broaches (broaches) by their design allow broaching holes only within certain values of tension (the difference between the surface diameter of the tool and the inner diameter of the hole). Depending on the ratio of the hole length to the diameter, the material being machined, and the roughness of the workpiece, the tension value for a single-ring broache (broache) is about 0.02-0.2 mm. It is recommended to provide plenty of lubricating and cooling fluid during broaching. Machine oil is used as a lubricating and cooling fluid when machining steel blanks, and kerosene is used when machining cast iron blanks. The speed of boring and broaching reaches 8-12 m/min. Boring of holes is performed on presses, engraving machines and other machine tools, and broaching is performed on broaching machines .

Smooth cylindrical holes can be calibrated using a ball or a smooth fixture. Holes that are not very deep are usually calibrated in presses. A ball (Fig. 1 , a) or a smooth fixture (Fig. 1 , b) is pulled into the press, creating a tight fit. As a result of plastic deformation of the metal, the roughness of the hole surface is smoothed out and the cleanliness and accuracy of the machined hole are increased. When calibrating deep holes, the method of pushing the fixture or pulling the fixture is used. In this case, the holes are most often calibrated on drawing machines.



1 Hole calibration

As a result of calibration, not only the cleanliness and accuracy of the machined surface of the hole increases, but also the shape of the hole is corrected. Before calibrating the holes of the workpieces, they are cleaned, aligned and reamed. By means of calibration, it is possible to obtain dimensions of accuracy classes 1 and 2. It is about Δ8–Δ10. To increase the wear resistance of the calibrating tools, their working parts are chrome-plated or hard alloy is deposited on the working parts.

Studies have shown that as a result of the deviation of the workpiece from the central axis, it is jammed between the support and the tool. The increase in the axial force has its effect on the tool, and the further increase in this force depends on the rigidity of the boring process. If hardened inserts or dies with high rigidity are used when boring holes, then the axial deflection of the workpiece decreases as a result of the increase in the axial force. The decrease in the deflection is observed until the holes are completely eliminated before the boring process begins.

When the axial force is removed, the workpiece and the tool return to their original position (Fig. a). βSince the tool deflection is not very large, the errors in boring the holes are also not large.

The technological process involves pushing a single-threaded cylindrical tape firmware through a small slot using a pusher.

At the beginning of the machining process, the technological accuracy of the workpiece is high. The increase in the axial force reduces the deviation of the workpiece from the center. This is due to the loss of clearance between the firmware and the guide bushing, resulting βin a smaller angle.

In turn, the workpiece is not allowed to deviate from the axis (until it exits the guide bushing), which leads to a large bending load on the tool and an error in the cross-sectional profile of the machined holes.

This means that jamming in the workpiece can lead to bending and breakage of the tool.

These conditions are especially evident in small-diameter hard alloy tools.

If the horizontal axis is mandrel-shaped using the compression method, the process of basing the workpiece is different.

When the tool is moved to the left and the factors affecting it are taken into account, the workpiece slides relative to the support and moves upward until the axes of the holes to be machined with the tool's working cone are aligned. Forces acting on the workpiece

$$P_o = \frac{G}{K - f_1};$$

$$P_v = \frac{GK}{K - t_1}$$

As can be seen from these equations, the value of the forces in the horizontal axis is greater than in the previously considered cases.

If the inequality is not satisfied $h \leq \frac{D-d}{k+t_1}$; 2

In this case, the workpiece is rotated about point A when basing.

The workpiece deviation is also determined for this case using formula (2.1).

The inequality analysis shows that small, not very tall blanks do not rotate during basing.

In this case $\alpha = 5^\circ$, $f = 0.2,\ t_1 = 0{,}3$ the diameter of the workpiece is $d = 10$ mm, $D = 30$ mm, the limiting height $L \leq 5.4$ is mm, the diameter is $d = 3$ mm, mm $D = 10$ for the workpieces $L \leq 1.9$.

Experimental studies of horizontal-axis-mounted, based blanks can be performed in the apparatus shown in Figure 2.4.

The studies conducted have shown that

$$\frac{D-d}{K+f_1} \langle L \leq \frac{D-d}{2K} + \frac{D(k-f_1)}{2f_1 k}$$

During the initial stage of basing the workpieces, their deviation from the axis is eliminated by moving the tool to the left, ensuring the workpiece is fixed.

If inequality (2.1) is not satisfied, the workpiece will deviate from the axis due to its jamming between the support and the tool.

Figure 1 shows the tool movement from bottom to top when boring workpieces mounted vertically.

In this method, two stages can be distinguished in the preparation of blanks.

The upward movement of the workpiece in the first stroke occurs as a result of the alignment of the axes of the hole being machined with the working cone.

In the second stage, the tool lifts the workpiece until it touches the upper support.

The force exerted by the tool on the workpiece in the first stage

$$p_o = \frac{Gf}{k + f_1}$$

$$p_o = \frac{Gf_1 \cdot k}{k + f_1}$$

For self-installation of the workpiece

$$\frac{D}{D + d} \geq \frac{f_1}{k + f_1};$$

Based on the analysis of this inequality, regardless of the size of the workpiece, it does not turn over f_1 and k does not occur at real values of .

At the same time, during the second stage of basing, cases of workpiece deviation from the axis due to vibration may also be observed.

Conclusion

Electrochemical etching is suitable for making deep holes (d=1...2 mm, L≤200 mm) in difficult-to-machine steels [5]. The accuracy of the holes in this method is 12 qualities.

Radial force can be quite large for heavy workpieces. In this case, it is important to base the tool on a fixed workpiece bore.

References

1. Suslov AG increases the surface cleanliness of machine parts.
2. M.E.Gorov – « Mechanical Engineering Technology » 1976.
3. Odintsov – « Metalworking under pressure »
4. Lakirev SG holes Processing manual (Spravochni). M.: Mechanical Engineering, 1990.
5. Gul ь danaev RS, Ovechkin FT Hole-turning machine.