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MACHINING SMALL HOLE WITH SMALL DIOMETER

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Abstract:

This article covers the process of treating various hollow hole surfaces with dorns. This process improves surface cleanliness, the quality level will be higher.In the design of deep holes of small diameter, it is desirable to use methods that provide high animosity and surface purity, the ability to work the details, as well as their rigidity, which is not less than HRC≤445. These include dornamon, flashing methods.

Praised. Identification of technological deficiencies and defects in dornasiums and improvement of techniques and technologies of advanced methods of improvement and implementation in production are a means of increasing the efficiency of work efficiency.

Methods. The article uses the Dornes in a variety of processes.

1.Analysis of methods for processing deep holes of small diameter;

2.Material analysis of tools used in the processing of deep holes of small diameter;

3.To offer an optimal variant of methods that provide high precision and cleanliness in the processing of holes.

Results. The dornization process can be beneficial by applying to various areas of production. In particular, deep holes of small diameter can be used in the automotive industry, various branches of machinery enterprises, light and chemical industries.

Conclusion. By applying the Dornization technological process, it is possible to improve the useful working coefficient. At the same time, it can increase surface cleanliness, lower waste output, increase working efficiency. Widespread use of dornovka process in machine-building, milk-making, as well as in the manufacture of military weapon equipment ensures that our products meet the standards.

Keywords

Dornovka , Drilling, Punches, Zenkers, Cutters Lathes.

Introduction

In cases with a diameter d = 1...10 mm and a depth of up to 10 d[1], spiral fastens made of high-angle steels with a special construction are used. The difference between these fasteners and standard ditches is that the angle of deviation of screw ditches in it is ω=45° and their cutting edges are specially chiseled. It is possible to reduce the release of the bud

from the hole when drilling is performed with the help of such barbs. The biquity of parmas increases by 1.5...2 times compared to standard parmas [2].
Screw ditches with an angle of 60° are used to make holes in steel and sheet sheets with a diameter of d≥3 mm, the depth of which is up to 50 d. With a special construction [4] can perform drilling at a depth of 50 d or 15 d using drills with a diameter of d>1.5° mm. The basis of the cross-sectional shape makes them higher in strength and rigidity, it is easy to break the waste out of the work zone.
Detection of holes using the above-mentioned fingers is reduced to 9...14, surface thickness Ra = 1.25....1.5 µm.
The Swiss firm "Mikkon" manufactured special drills with the diameter d = 0,8...3mm. With their help you can drill a depth L≤7 d. Processing accuracy reaches 7...8 quality. Bikra 4....8 times higher than that of standard parmas. Hard alloy plugs with the ability to supply cooling and lubricants from the inner side of the deep holes of a small diameter are used in the drilling of holes up to ≥2 mm in diameter and up to 100 d deep.
1.Work with dornacular.
Dornaching (deforming compression, stitching) is the deformation of a zagatowka in a cold state as a result of the effect of pulling a special instrument through a hole under a certain comb.

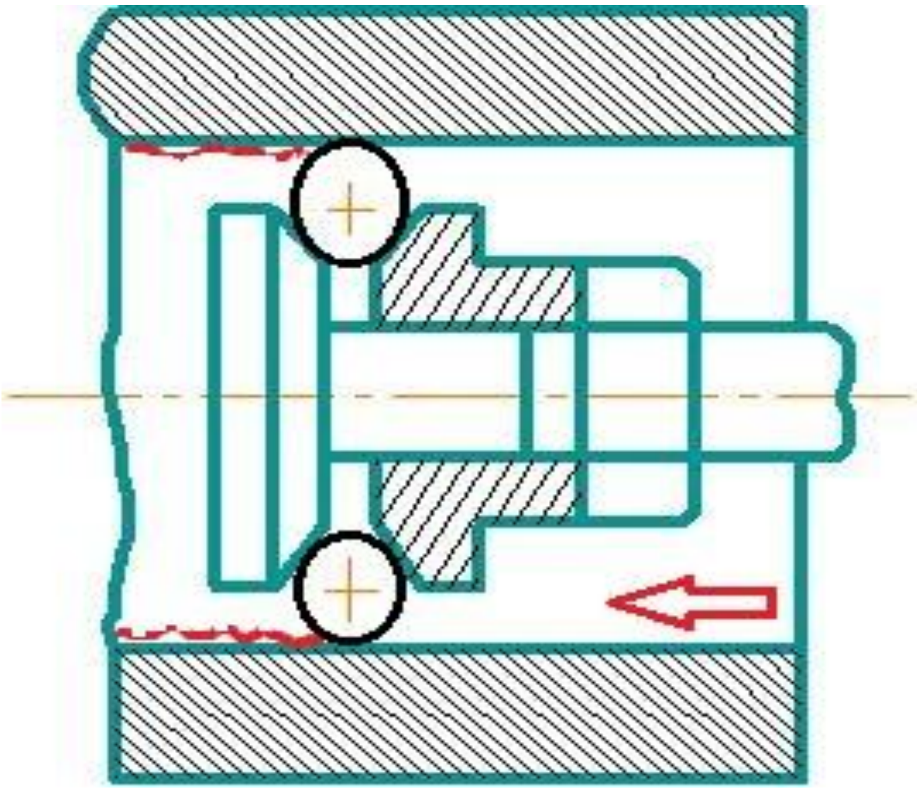
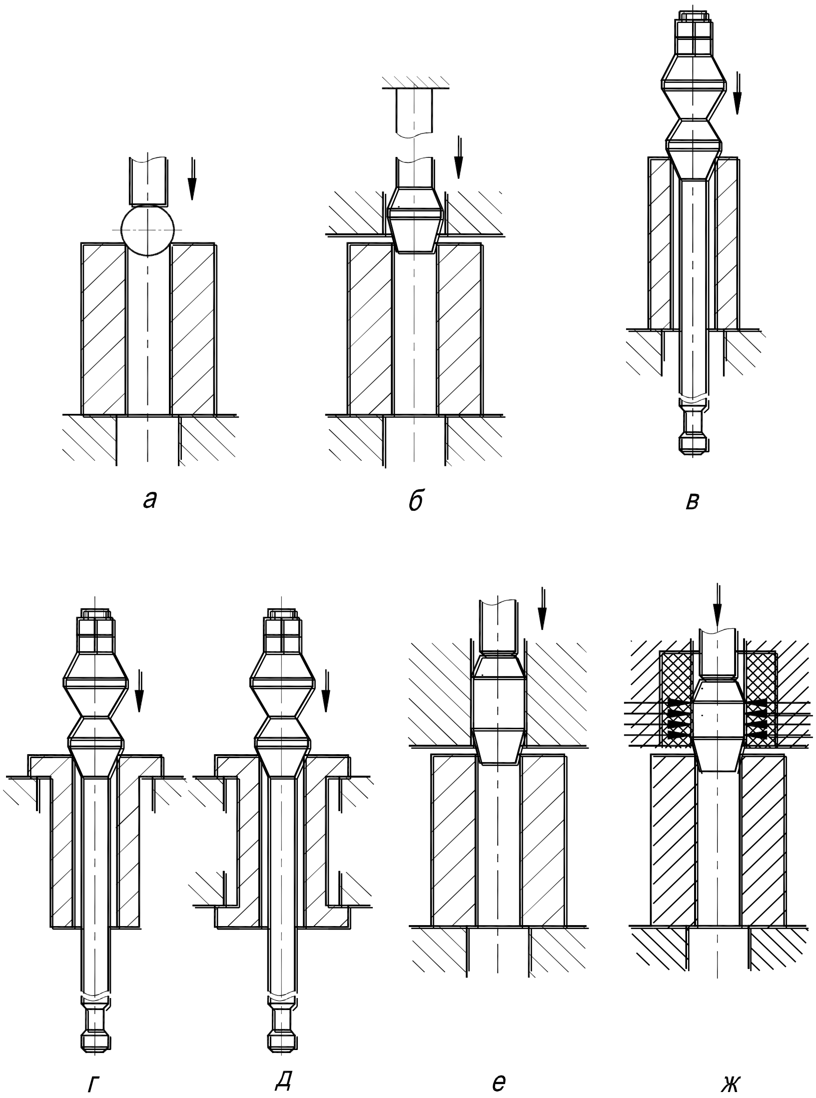


Figure 1. Schematic view of the Hydro press (3400 mPa) bench level.
Specimen 1 to be processed.2 is a flattener .
3-The basis of the device that makes the device. 4-Device holding the ball of the darving.

This in turn leads to an increase in the accuracy of the hole, the flattening of the groove and the increase in the consistency of the surface layer. In the optimal state after dornation, residual compressive stresses are generated on the surface layer [1.3.].

Steel and alloy balls as dornade tool -



In general, the accuracy of the holes when the technological process of dornaching is performed (UT6... UT7), is around the surface density (Ra=0.05...0.1 μm).

At the same time, the limit of application of the technological process of dornization by the ratio of the diameter of the outer surface of the sheet to the diameters of the holes (D/d) is determined. In turn, the boundary state of the parts processed in the technological process of dornaching is divided into 2 types: D/d≤3 is the smallest point D/d≥ 3 is the largest, i.e. thin and thick-walled parts.

When dorsing holes, the plastic passing Zagatov in <the D/d state is deformed. Zagatovka material is in the state of volumetric compression in the circular layer. The rest of the zagatovka will be in a deformed state. The actual value of the working cone thickness of the instrument with the zagasms is determined by Lr=a/2 synα (Fig. 1.2a). Here a- tarnglic,

the half angle of the working cone of the α-instrument; D/d≥3 is not possible to make a hole through .

In case D/d<3, the dorsal of the holes is carried out with great difficulty. For example, in cases D/d = 1.2...16, the total tension is selected by 0.1....0.2d.

This in turn entails the variation of all dimensions of the zagatovka. Hole diameters can increase (from 16...17 to 8...11 qualities). Holes where high precision is required (UT6... UT7) It is advisable to perform threading expansion or zenking processes before dornaturing. [4]

It has been observed that the productivity of fingers with unilateral shear ability is 2...3 times higher than that of spiral fingers [2].

Vibration drilling technique is used for machining hard-to-work materials where there are hole holes of small diameter (d≥2mm).

With the help of this method, a surface layer with an accuracy of 8...11 square meters, with a purity of Ra = 0.63...2.5µm can be obtained.

In hard-to-work steels, the electrochemical flashing method is appropriate to form deep holes (d = 1...2 mm, L≤200 mm) [5].45 p. The accuracy of the holes in this method is 12 qualities. The deviation of the arrow of the hole at a depth of 100mm is 0, 12mm, the eating of the barbs is observed. The method of electro-erosion flashing is also showing good results when forming deep holes of small diameter. It is desirable that the flashers and shakers are made of hard alloys. This is because the tools made of this material have a high bicity and in many cases it is possible to spread the tool and the material to be processed. Tools with a diameter of d≥10 mm are made prefabricated. The material of the instruments is made of solid-state VK (VK6, VK8, VK15, VK20). The dorsal process has been used in machining holes of deep precision.

The dorsal process is being used in the final processing of rifles in arms manufacturing enterprises. The accuracy of the diameter of the hole in it is 15N6, the depth is 135 mm.ni

With this method, parts with a depth of 100 d are processed d≥1 mm.

The accuracy of the holes is 12...14 qualities, and the thickness of the holes is Ra = 3...5 µm.

When working on holes with a diameter of 1...3 mm in non-finished steels, the working push is S = 5...20 mm/min.

When forming the holes using electromelting fastening technique, small cracks and tensile residual stresses are generated in the inner surface layer of details.

Conclusion

In hard-to-machine steels, electrochemical flashing technique is suitable for formation of deep holes (d = 1...2 mm, L≤200 mm) [5]. The accuracy of holes in this method is 12 quality

The radial force can be as small as the weight of the scavengers. In this case, it is important to base the tool through the built-in non-behavioral slots holes.

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