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Methods of Manufacturing Technology for Active Compounds Plates of Stamps and Molds

Industrial fields that assume series production of various assembly parts tend more and more to apply as manufacturing method cold stamping and moulding. At current level of development, this processing method compared to others comes with important advantages. Present paper describes methods applied in active boards manufacturing technology of moulds and stamps.

Keywords: *active board, component, mold, stamping*

1. Introduction

Worldwide the market is reoriented towards a heavy development of designing and executing stamps and moulds, especially in machine constructing industry, thus insuring replacement of casted parts that demand a high material and energy consumption. The precision increase up to 8 to 10 precision class is made through a dimensional decrease of stressed components, stamped parts being more rigid and resistant due to using materials with high mechanical features.

In the large series production, are using more often stamps and molds with successive action for blank processing successive action for the mechanical presses in the fast lane. For an economy of material are processing more pieces simultaneously with the same thickness so that the blank to be used rationally often resulting a small amount of waste. To achieve this, the active plates will be complex, the punching force required is very high.

2. Methods of manufacturing technology

To reduce these costs should be using an alternative technology, making the active board turn more active segments made of materials listed above and a support plate from a material with affordable cost, example XC 45.

Rings (pills) active will be positioned by cylindrical spikes and other fasteners to ensure precise positioning in the support plate and the assembly of the stamp. Pills are processed initially on the outer surfaces and are following the compliance of parallelism and perpendicularity of the surfaces.

Making negative stamped parts is made on special machines manufactured by electro erosion, lathes and 3D millings.

Processing by electro erosion is using the electrical discharge of very short duration. Due to the high value of the electric field is produced by electrons emitted from the negative pole and an electric discharge between the part and tool, a phenomenon accompanied by transport of material from the workpiece surface.

When processing the interior of the active compound plate are used generators with capacitors that provide a high dimensional accuracy and a surface roughness in the corresponding plate.

By the procedure can be processed all electric conductive materials, regardless of their hardness, achieving dimensional accuracy of $\pm 0.05\text{mm}$. The processing environment is oil or petroleum.

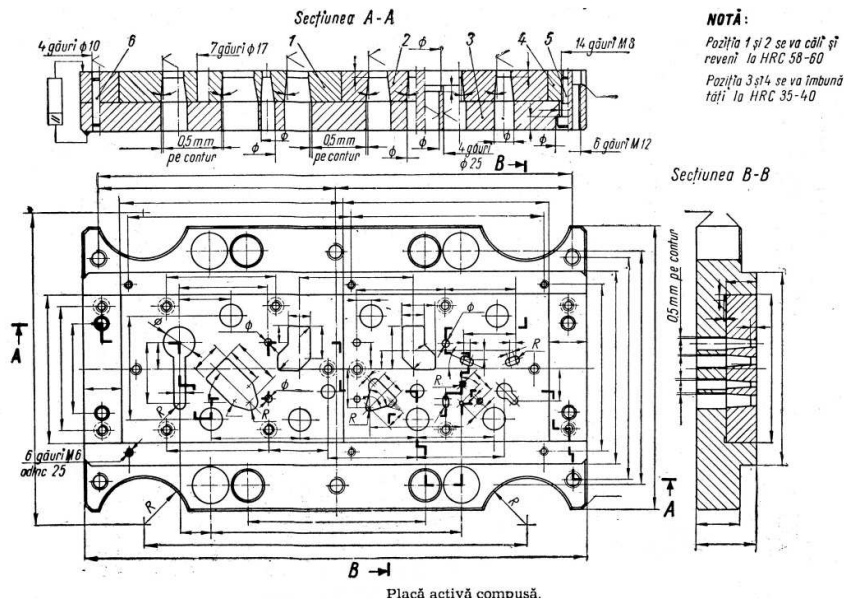


Figure 1. Compound active board.

Another method is to process the milling forming tool that compels the stylus through the kinematic chains to describe a path identical to the pattern generating the desired shape with appropriate precision. As an improvement of this method is the using of the photoelectric tracking orders. The piece design is executed in

black lines on a white background and a light beam is sent to the paper surface that will reflect light in different intensities in the photocell tool movement command.

One of the most frequently used methods that ensures highdimensional accuracy and the possibility of manufacturing the active plate, die or pellets in tempered condition to 65 HRC by eliminating further processings of the modern mills in 3D.

In the computer processing program are eliminating all the shortcomings of previous methods, active piece is made on a machine tool, most times in one set up, and when it is processed in several enterprises, is used the same settlement area, eliminating the occurrence of errors.

Among the methods used to save expensive alloy steels are used:

- a) a method of hardening the cutting surface by electric sparks
- b) deposition method by welding the cutting portions

Method (a) is made by depositing a thin layer of very hard material in the active portion of the plate. The operation is done by electrical discharge of short duration 1/1000s at shorts intervals 1/100s between hard metal electrode as anode and the active plate (punch,chip) as the cathode.

Trough this process on the active side are resulting 3 layers, a very hardwear and corrosion resistant exterior, an intermediate layer and a inner layer who remains practically unchanged.

The thickness of the deposited layer on an active part is 8-25 μm with Ferrochromium and provides a number of uses of 10000-20000 times.

Method (b) is the active side face shear loading by welding alloy steel with a variable thickness of the layer.

The method is very advantageous because it allows the body of a cheap material.

Filler material are alloy steels, hard alloy as: stellite and sormait as electrodes. Provides a large number of resharpenings of the cutting parts.

3. Conclusion

As seen from those set forth,the execution capabilities of the active parts of the stamps and molds are with many advantages and disadvantages to the discretion of each manufacturer of stamps and molds, depending on technical possibilities, financial and execution of each to achieve this active complex, the heart of every stamp and mold at a lower price in good condition of functioning and endurance resulting compliant components, cheaper and easy to execute.Text of the section. Text of the section. Text of the section. Text of the section. Text of the section. Text of the section. Text of the section. (Tahoma, 10, Normal)

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