

Manufacturing of Multi-Saddle Clamp

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Abstract— Today's engineering world more competition of product produce in very less time, at the same time the products are becoming smaller but smarter more powerful effective, so we can designing multi saddle clamp die. Previously a single cavity die is used for manufacturing saddle clamp. In that die at time of a bending only one clamp is manufacture and another die the blanking operation are carried out at the blank sheet of a saddle clamp is produced and both end of these sheet having circular hole are formed with help of punch. But during this single cavity die the bending operation is performed at one clamp hence more time is required for manufacturing saddle clamp and for another die the blanking operation only one producing hole but as per requirement they require both circular and cylindrical holes in one die hence die is design in such a way that the both holes are produced in a blanking die. In another die the bending operation is carried out first or previously a single bending operation is performed then one saddle clamp is bending but the requirement is that in bending operation multi-saddle clamp is produced.

Key words: Die Manufacturing, Bending and Blanking, Operation and Design, Manufacturing Multi-Saddle Clamp

I. INTRODUCTION

A die is a specialized tool used in manufacturing industries to cut, shape and form a wide variety of products and components. Like molds and templates, dies are generally customized and uniquely matched to the product they are used to create. Products made with dies range from simple paper clips to complex pieces used in advanced technology.

A. Problem Definition

The current situations of Manufacturing of saddle clamp following problems are found out.

- 1) Only one hole produce.
- 2) More time required for manufacturing.
- 3) Low mass production rate.

Because of this, there is possibility of reduction in production rate and efficiency of manufacturing die. Hence there is need to replace present single saddle clamp die into multi saddle clamp die. Previously a single cavity die is used for manufacturing one saddle clamp. At time of blanking die operation only one hole are produced and another bending die operation only one saddle clamp is bend.

Due to this single saddle clamp dies lost productivity result from various inadequacies of the paper record this affect the misfiled chart waste of time. Due to this manufacturing die they require continuous monitoring to ensure that each transaction is accounted for and that product are maintained. This result in needless additional orders that increase the company's product carrying cost.

B. Solution & Die Design

The selection of material for a particular application involves consideration of factor like service requirement (strength, the manner in which load is applied-

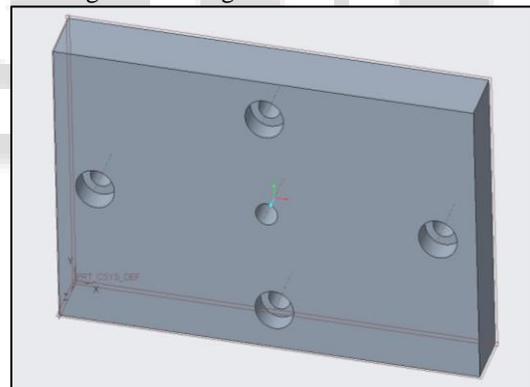
steady/fluctuating/sudden, wear, corrosion resistance, electrical properties, aesthetic consideration etc.), manufacturing requirement's (ease of machining, finish desired, fabrication technique to be adopted, casting, molding, welding etc., method of forming-hot or cold, method of joining various sub-assemblies, need of heat treatment to achieve or restore properties), cost of raw material. More than obtained one may have two or three possible solutions in selection of an appropriate material. The final decision then should be best on preference and experience of designer and user and considerations like ease of repair on occurrence of faults, availability of repair facilities, skill of personal, use full life, etc.

C. Description of die Plates and Its Function and Various Plate Designs Which is Used in Saddle Clamp Die Design:-

1) Top Plate:-

To hold punch holder plate which is located with 2-dowels pins with fastens with Allen screws. 2-bushes are mounting at two corners.

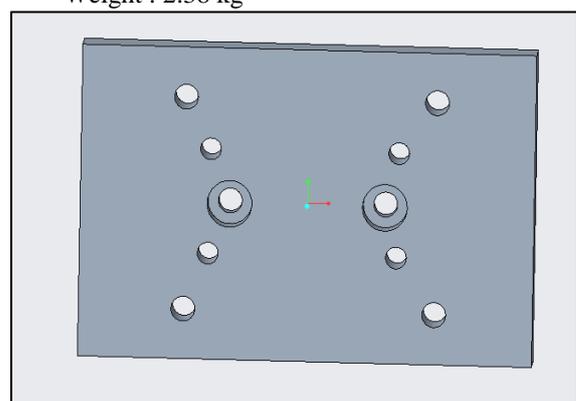
- Part name : Top Plate
- Material size : 270×150×25
- Material : Mild steel
- Weight : 7.934 kg



2) Punch holder plate:-

To hold punch block by allen screw. Two standards pins are fasten in same plate.

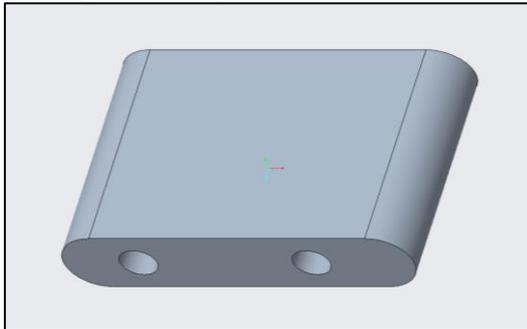
- Material size : 190×80×20
- Material : Mild steel bright
- Weight : 2.38 kg



3) **Punch block:-**

To punch and remove materials form given raw materials.

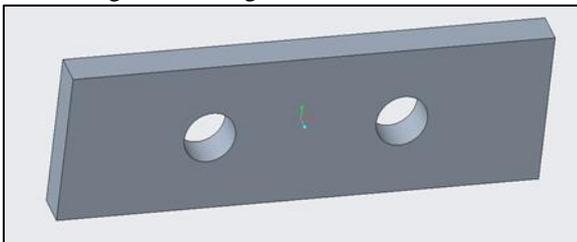
- Material size : 65×70×31
- Material: O.H.N.S.
- Weight : 1.037 kg



4) **Liner plate:-**

To guide the row materials, which were developed as a tunnel lining materials, are corrugated thin steel sheet with flanges attached on four sides. It provided stability to die.

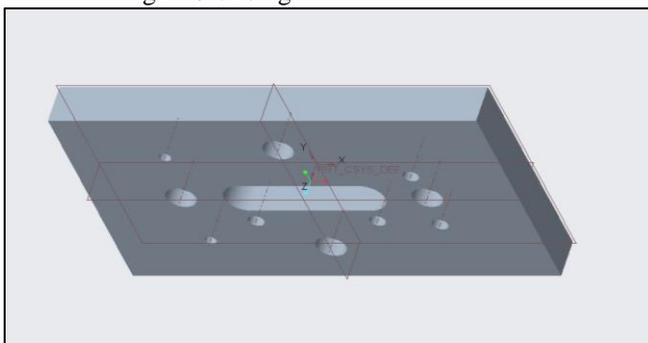
- Material size : 270×28×10
- Material : Mild Steel bright
- Weight : 0.250 kg



5) **Bottom plate:-**

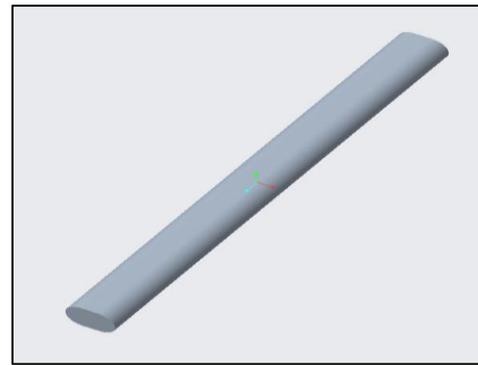
To holds cutter plate which is located with 2-dowel pins with fasten with allen screws, The plates placed at bottom and the whole die is make on on these plates or the horizontal plates on which the studs of a partition rest.

- Material size : 270×150×30
- Material : Mild steel
- Weight : 9.520 kg



6) **Standard punch:-**

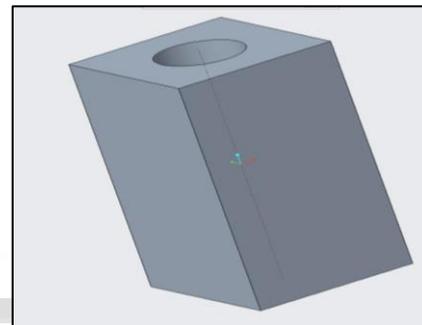
To punch the holes, the most common standard dimensions and location of filing holes punched in paper is international standard ISO 838.



7) **Dowel Guides:-**

Hardened and precisely shaped dowel pins are used to keep dies components in accurate alignment, they are also used as location guides for adjacent machine parts and to keep the sections of a punch and die in alignment.

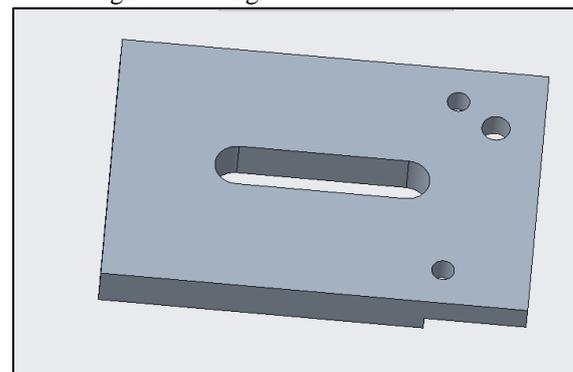
- Part name : Dowel Guides
- Material size : Dia 8×100
- Material : Mild Steel



8) **Guide Plate**

To guide the row materials,

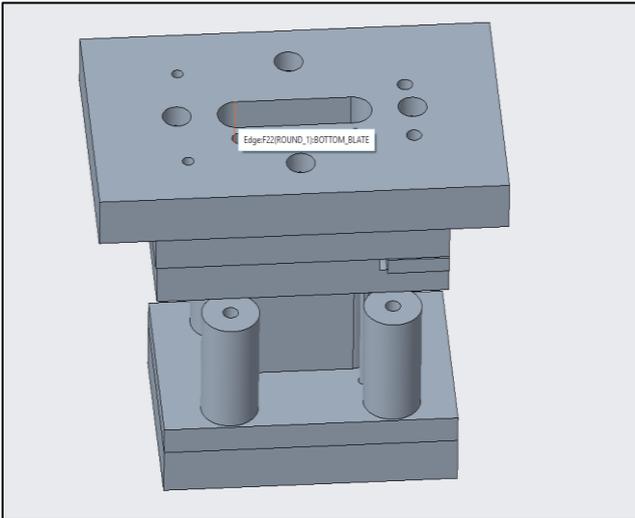
- Material size : 190×80×25
- Material : Mild steel
- Weight : 3.680 kg



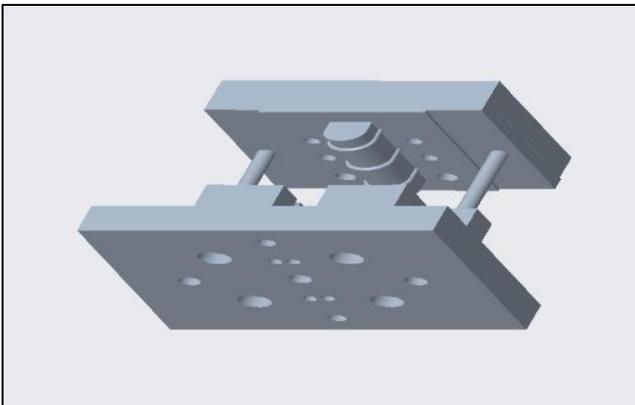
II. ASSEMBLY OF MANUFACTURING OF MULTI-SADDLE CLAMP DIE AND FUNCTION OF DIE

The both blanking and bending die are assemble as shown below. The blank sheet is punched in blanking die and during punching both side of blank hole are produced , hence in that die two operation carry out simultaneously , these blank are put on bending die hence in that die bending operation are carried out at that time three blanks are bends and lastly saddle clamp are produced.

III. ASSEMBLY OF BLANKING DIE



IV. ASSEMBLY OF BENDING DIE



A. Advantages

- 1) Die design cost is low.
- 2) Die manufacturing cost is low.
- 3) Semi skill worker can set die stroke.
- 4) Operating cost is low.
- 5) Maintenance cost is low.
- 6) Easy to operate.
- 7) Production time is very low.

B. Application of Multi-Saddle Clamp:-

- 1) Household application.
- 2) Electrical cable fittings.



V. CONCLUSION

While concluding this report, we feel quite fulfilled in having completed the project assignment well on time, we had enormous practical experience on fulfillment of the manufacturing schedules of the working project model. We are therefore, happy to state that the in calculation of mechanical aptitude proved to be a very useful purpose although the design criteria imposed challenging problems which, however were overcome by us due to availability of good reference books. The selection of choice raw materials helped us in machining of the various components to very close tolerance and thereby minimizing the level of balancing problem. Needless to emphasize here that we had left no stone unturned in our potential efforts during machining and assembly work of the project model to our entire satisfaction.

ACKNOWLEDGMENT

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