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INDEXING FIXTURE FOR SQUARE OR HEXAGONAL WORKPIECE

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ABSTRACT

Manufacturing industries have brought lot of revolutions in manufacturing technology, as a consequences of which server development like CNC milling machines, HMC milling machines, VMC milling machines, flexible machining center, fabrication center, robotics, etc. took place. Even with thus advancements in the manufacturing industries, there is continued used of jigs and fixture in some from or the other either independently in combination with other system.

Fixture is a device for locating, holding and supporting a component or work piece securely in different position for a specific operation but it does not guide the cutting tool. Fixture is required in various applications. The various methodology uses for clamping operation use in different application by author required in these paper. This paper present.These paper present design and development of fixture for real industrial hexagonal and square blocks components. The operation to be performing is hexagonal shape cutting. Actually four jaw chuck is the best solution but four four jaw chuck costing approximately Rs 85000, where hexagonal indexing fixture cost about Rs 3000. Fixture reduces the operation time and increases the productivity and good quality of operation is possible.

(Keywords :-Fixture, square component, hexagonal components, four jaw chuck, angle cutting)

I.INTRODUCTION

A faster and more profitable method called for a device (fixture) on which component can be quickly positioned in the correct relationship to the cutting and quickly clamped before machining.

Fixture are designed to hold, support, and locate every part to ensure that part is machined within the specific limits.

II.CONSTRUCTION OF A INDEXING FIXTURE FOR HEXAGONAL OR SQUARE COMPONENT

The project consists of Base plate, Bottom half, Top half, Ball Bearings, chuck nut, Stud, Thrust bearing as shown in fig. 1. The fixture's base is welded to bottom half. The arc welding is done. The ball bearing is placed between Top half and Bottom half for smooth rotation but Bottom half is stationary and Top half is rotating.

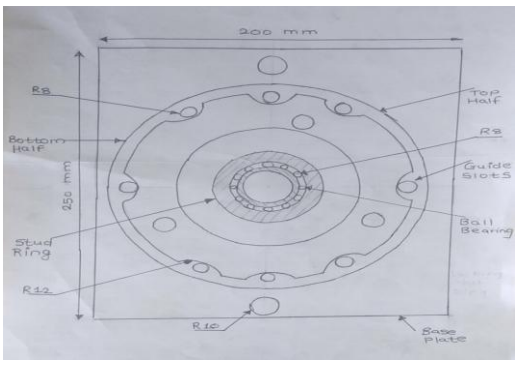

Fig. 1

III.WORKING OF AINDEXING FIXTURE FOR HEXAGONAL OR SQUARE COMPONENT

As shown in fig.2 firstly the fixture is mounted on milling machine bed, then the bottom half which is fixed to base plate, the top half is mounted on bottom half. Between the Top half and bottom half the ball bearings are used to rotate the top half freely in 360 degree. Then the stud is placed between the top half and bottom half and two lock nuts are used to tight or lock the stud. Then the three jaw chuck is mounted on fixture and locking pin are used to tight the chuck.

For hexagonal components:

The top half is rotated to 60 degree at different hole for a single cut.

For square components:

The top half is rotated to 90 degree at different hole for single cut.

Fig.2

IV.APPLICATIONS

- For manufacturing hexagonal and square components.

V.ADVANTAGES

1. Time saving.
2. Increase in productivity.
3. Simple in construction.
4. Maintenance cost is low.
5. Multi use purpose.
6. Not required skilled person.
7. Easy to use and easier to install.
8. Manufacturing cost required is less.
9. Needs less space.

- **MAINTENANCE:**

The periodic maintenance is required after 2 months for greasing, changing ball bearings if required.

- **FUTURE SCOPE:**

• It is beneficial in cost saving as there is no need of skilled labour to operate these fixture as it's not so complicated so unskilled labour can operate.

• Instead of spending more money on four jaw chuck for milling machine they can use this fixture at minimum cost.

VI.CONCLUSION

- Saving money of industry by giving them new idea about the fixture.
- We had learned how to design fixture and problem occured during manufacturing.
- Getting a practical knowledge about different machining operations.

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