

DESIGN AND MANUFACTURING OF GUN DRILLING FIXTURE FOR STEERING ARM

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Abstract - For drilling of different types of holes at different position steering arm, we generally require to change fixture for every different hole. This is time consuming process and requires more material handling. This leads to inaccuracy in the operation. Due to inaccuracy the rejection of the product increases. For reworking of this inaccuracy, machining cost increases. For the same reason we manufactured a fixture, which can be useful for drilling different size of holes at different position on steering arm. Because of this work set up time is reduced & material handling also. In this project we manufactured the fixture in which different locators are located on bottom base to drill the holes on steering arm. Thus there is no need to change the fixture for every different size of hole. As single fixture can be used for different size of holes, cost of fixture is reduced, productivity of the operation is increased and manpower required for manufacturing is reduced.

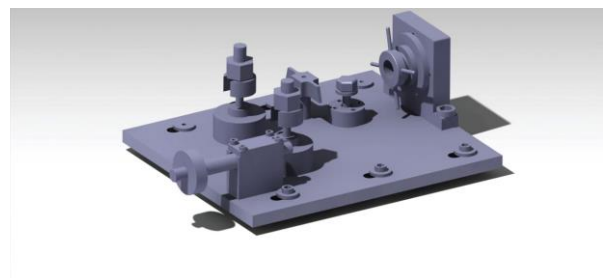
Key Words: Drilling, Time reduced, Material Handling reduced, man power reduced.

1.INTRODUCTION

In today's modern and competitive world quality must be very high, beside this we should not forget the rate of production as well as golden mean between the quality and productivity should be achieved. A fixture is a work holding or support device used in a manufacturing industry. This fixture is designed for the machine named VADDIGIRI-HYDRAULIC MACHINE. The VADDIGIRI- HYDRAULIC MACHINE improves the productivity, save manufacturing time, increases the production rate and reduces man power requirement. Safety precautions are provided with the VADDIGIRI- HYDRAULIC MACHINE. In our project, we are going to manufacture a fixture which can be used for drilling a straight hole by using hydraulic means. Because of this we are going to reduce manufacturing time as well as accuracy of operation.

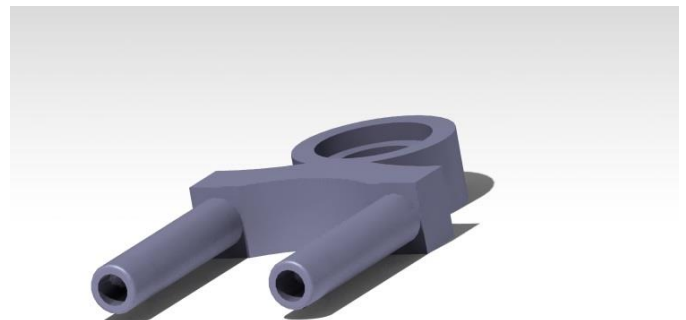
2. Design of the component

Figure -1: Design Model



2. Design of Steering Arm

Figure -2: Steering Arm



3. Material Selection

3.1 Design of Base Plate:

Material: Mild steel

Size: 345×224×25 mm

Diameter of 1hole: ø58mm

Diameter of 1holes: ø46 mm

Diameter of 8 holes: M6

4. Calculations

Figure -3: Calculation

Drilling	Denoted By	Unit	Calculations
Material			S.S
Diameter of cutter	D	mm	8.1
Cutting speed	v	m/min	14*D
Revolutions per minute	n	rpm	1180
motor RPM	n1	rpm	n*1.5
Material Factor	K	Table	272
Power at the spindle	N	kW	N=1
Efficiency of	E	%	0.85
Power of the motor	Net	kW	Net=
Torque at spindle	Ts	kgf.m	75
torque at motor	Tm	kgf.m	Ts=8
Thrust	Th	kgf	Th=1
			284.01

5. Fabricated Model

Figure -4: Fabricated Model



4. CONCLUSIONS

- I. At the end we conclude that we designed and manufactured a time reducing fixture for drilling.
- II. Overall cycle time is reduced.
- III. Easy to drill the steering arm

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