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# Design and Fabrication of fixture for support flywheel housing

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**Abstract -** ***Support fly wheel housing is the name of the component and is used for diesel generators. The necessity of carrying this project is, after manufacturing of the component,the sprue,runner and gate will be attached to the component. These sprue, runner and gate are unwanted and waste parts. At the time of manufacturing of the component,it is very difficult to remove the sprue,runner and gate. Using trial and error methods may cause accidents and some times component may break. For holding the component fixtures are necessary. Because component is heavy and having some weight. So the component is not flat and having some intricate profiles. Such kind of components must and should requires some holding equipments. With the help of holding arrangements we can easily remove the waste parts from the component.***

***For this reason designing of a fixture is very much essential. The fixture is very much essential for support fly wheel housing. The designed fixture will hold the component firmly without any shake or vibration. With the help of this fixture we can easily remove the unwanted parts from the component.***

***Key Words:*** *Diesel generator, wedge feed breaker, Fixture, intricate profile*

## 1. INTRODUCTION

For this component designing of a fixture is very much essential. Why because, the component is heavy. Large in size and is more weight. This is not possible to carry by hand. After producing the component the sprue, runner and gate will be attached to the component. Removing of these unwanted part is not that much easy. This waste part is removed with the help of wedge breaker. We cannot remove by hammering also. It requires lot of energy and consumes more energy. But safety will not be there. Sometimes component may get damage. So to avoid all these things, designing of fixture is very much essential. The fixture is holding the component firmly. After fixing the component in fixture, component will not vibrate. So that easily we can remove the waste part from the component. It saves the operator's time and it reduces the cost of production. It is increasing the rate of production and maintaining the quality.

## 2. MATERIALS AND METHODS

For fixture design we can use any type material. But it depends on nature of work, work piece etc. Some fixtures are designed from wood material, some fixtures are from metal, some are from plastic materials, and some are from composite materials etc.

According to support fly wheel housing component, it is selected mild steel material, for designing of fixture. Mild steel material is very much use full for designing of a fixture.

**Figure 1:**support flywheel housing

Support fly wheel housing is made up of gray cast iron material. It consists of 4 to 5% of carbon. This is manufactured in foundry with the help of core and cavity. The gray cast iron molten metal is having around 600 degree centigrade. The material will be under the furnace, and is directly poured into the mould. After 3 to 4 hours the component will become dry. After dry, the component is allowed to atmospheric air for cooling purpose. After cooling, the component is removed from the mould, the component consists of sprue, runner and gate, and these are attached to the component. Such parts are unwanted. We have to remove unwanted parts with the help of removers. These components are bit large in size and the weight of the component is around 3kgs.

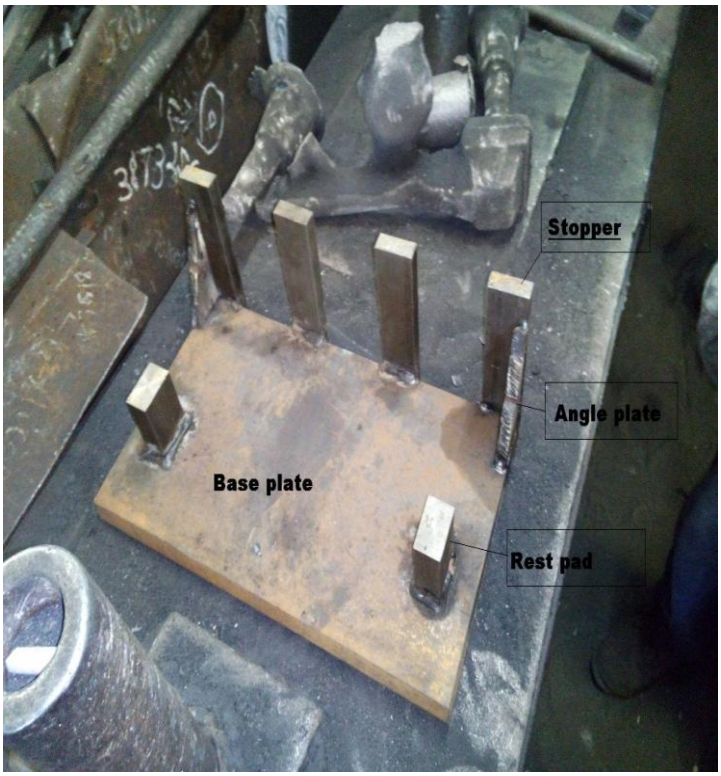


**Figure 2:**Fixture Assembly

## 3. RESULTS AND DISCUSSIONS

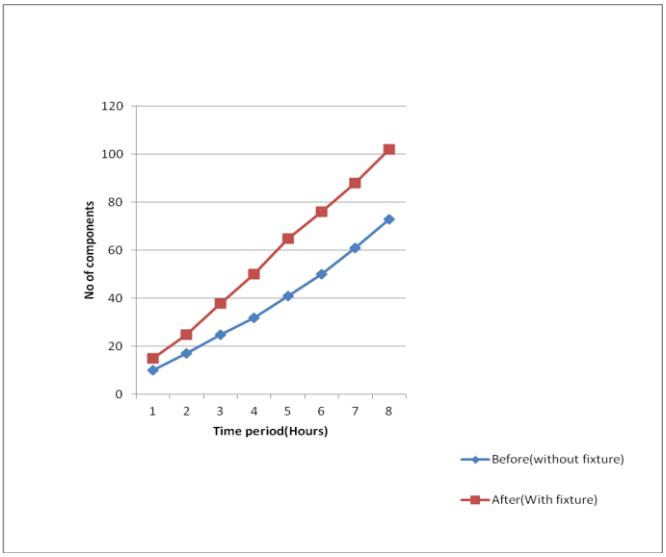


**Table 1:**Before production[without fixture]

| Time period (Hours) | Number of components |
|---|---|
| 1 | 09 |
| 2 | 13 |
| 3 | 20 |
| 4 | 27 |
| 5 | 43 |
| 6 | 55 |
| 7 | 63 |
| 8 | 72 |

**Table 2:**After production[Using fixture]

| Time period (Hours) | Number of components |
|---|---|
| 1 | 18 |
| 2 | 27 |
| 3 | 38 |
| 4 | 51 |
| 5 | 64 |
| 6 | 77 |
| 7 | 89 |
| 8 | 103 |

## 4. CONCLUSIONS

Such kind of components requires fixture for holding purpose. It is very difficult to hold the component by hand at the time of machining. Because this component is large in size and is more weight. It needs suitable holding arrangements. Designing of fixture is very much important and it is necessary. After designing of the fixture, production rate is increased. It avoids maximum accidents. Life of the tool will be more and can be use for longer period of time. It is only one time tool manufacturing investment. It saves the operator's time and produces good quality products.

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