
Causes for assembly failures and remedies

Objectives: At the end of this lesson you shall be able to

- **state the poor assembly**
 - **list out poor service conditions**
 - **state the cost of operation.**
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Poor assembling

Error in assembly can result due to various reasons such as ambiguous, insufficient or inappropriate assembly procedure, misalignment, poor workmanship. Sometimes, failures are also caused by the inadvertent error performed by the workers during the assembly. For example, failure of nut and stud assembly (used for holding the car wheel) by fatigue can occur owing to lack of information regarding sequence of tightening the nuts and torque to be used for tightening purpose; under such conditions any sort of loosening of nut which is subjected to external load will lead to fatigue failure.

Poor service conditions

Failure of an engineering component can occur due to abnormal service condition experienced by them for which they are not designed. These abnormal service conditions may appear in the form of exposure of component to excessively high rate of loading, unfavourable oxidative, corrosive, erosive environment at high or low temperature conditions for which it has not been designed. The contribution of any abnormality in Service conditions on the failure can only be established after thorough investigation regarding compatibility of the design manufacturing (such as heat treatment) and material of the failed components with condition experienced by them during the service.

Weight of raw material

Calculate theoretically weight of material, calculate volume of material and multiply with density of material. It gives you exact weight of raw material required.

While calculating weight do not consider final dimension always consider plus size for machining and other operation.

Cost of operation

Decide each operation to be performed on flanges like Drilling, machining and boring. While selecting the process do take care of sequence of operation as it matters a lot on costing.

You need to allot time required for particular operation considering all factors of machine. On their basis of price of machine, depreciation and cost of electricity consumed you need to finalise cost of machine running per hour.

Now multiply time required for particular operation and machine running cost/hour

Tools Cost

- **Cost of Labour:** For each piece calculate total working time consumed and calculate total cost need to pay to labour.
- **Accidental/Risk/Rejection cost:** As manufacturing of flange is a manual process, there may be chances of rejection of material, so this cost should be considered.

The simple method is add 1 piece's rate if manufacturing 100 qty in bulk

- Packaging and handling cost: Generally 2% of basic cost
- Profit: Approx 5 to 15% to basic cost
- Admin and depreciation cost
