



Scienxt Journal of Mechanical Engineering & Technology
Year-2023; Volume-1; Issue-2, pp. 7-22

*Methods to speed up
assembly and improve quality by
designing and developing fixtures*

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<https://doi.org/10.5281/zenodo.10033024>

Abstract:

Fixtures are commonly used tools for assembly to hold workpieces proper position. The fixture's positioning accuracy is also an important factor impacting overall accuracy. There are two assembly fixtures one is for rod end bearing assembly and the other is for motorization block assembly fixture. In the assembly of rod end bearing parts, older fixtures had issues with ball alignment in more than 15% of the parts, and most of the parts showed flash, productivity, and low-quality issues. In the motorization block assembly old process fixture was not used and the assembly was manually performed. Manual assembly takes time, increases the chance of the wrong assembly, and damages bearings during hammering. After developing a new fixture, rod end bearing assembly problems with ball alignment, and flash were all resolved, and the product's quality and productivity both increased. In the motorization block assembly, problems with bearing damage during hammering, and wrong assembly were all resolved after developing a new fixture, and increased product quality and productivity both improved. In rod end bearing assembly 500 Qty, the old fixture produces them in 4.16 hours whereas the new fixture does it in 3.19 hours, and the motorization block assembly fixture resulted in enhanced quality, decreased cycle time, higher productivity, and zero bearing damage during hammering. In moto assembly 50 Qty was produced in total during 3.33 hours without fixtures and 1.25 hours of new fixtures.

Keywords:

Fixture design, Computer-aided fixture design, Assembly fixture, Accuracy, productivity, Cost, Production time, Production rate.