



## Customer

Engine Manufacturer

## Part

Governor Weight

## Manufacturing Issue

Unable to consistently attain the specified gram weight of this integral engine part.

Unable to accurately produce this part with both legs in their designed position.

## Customer's Goal

Select a supplier that can consistently manufacture the governor weight to its design print and meet the weight specifications.

Establish an inspection system that ensures defect-free parts are delivered to their production facility.

## Manufacturing Process

Material thickness was key to controlling the weight of the part and this is a challenge because of the natural variation that occurs in metals. Ultra established two methods to control this variation and meet the weight requirements.

1. Utilize a tighter tolerance material to minimize the degree of variation.
2. Ultra's Die Designers developed a plan that allowed for an adjustment in the stamping die to ensure the correct weight was attained during production. The tab feature on the governor weight, located between the two legs, can have its length changed to meet the required part weight.

The second phase of this manufacturing process focused on establishing a productive and low-cost method to verify the weight of the parts and inspect each leg.

A team of Designers, Engineers and Toolmakers designed and built an innovative **Governor Sort Machine**. This is an automated process that precisely inspects **1,000 parts per hour**.

- The governor weights are introduced into the inspection system through a large bowl feeder. This process verifies the two legs are positioned correctly by aligning the governor weights as they would be placed in an engine. A governor weight identified as a defect is removed immediately.



[Watch this automated process.](#)

- The approved parts then move on for weight verification. One by one each part is placed on a scale in an enclosed area; removing defective parts as needed. Acceptable governor weights are then packaged for delivery.

## Customer Outcome

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Currently, we metal stamp and inspect **700,000** of the governor weight components each year.

For 10 years, this automated inspection process has been ensuring defect-free parts are delivered.

We produce and inspect two additional parts from this manufacturer with a similar design, including the leg features and weight requirements.