



Excavator Calibration Tricks

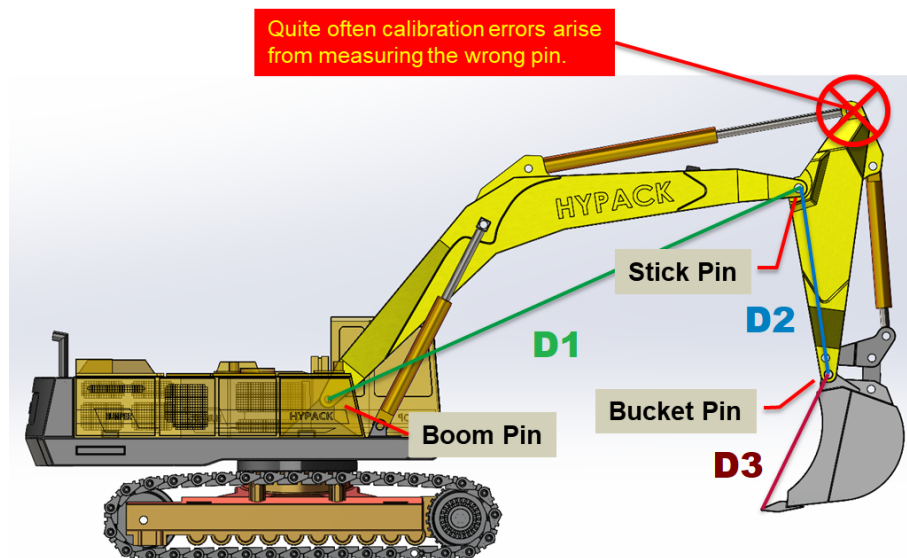
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The excavator system calibration is critical for getting the desired performance. In this article I am going to provide an explanation of the critical points during the calibration.

OFFSETS AND MEASUREMENTS

Before starting the calibration, it is necessary to measure the different segments accordingly. In the next image the blue, green, and dark red represent the segments of the excavator we use for calibration.

FIGURE 1. Excavator Segments Measurement



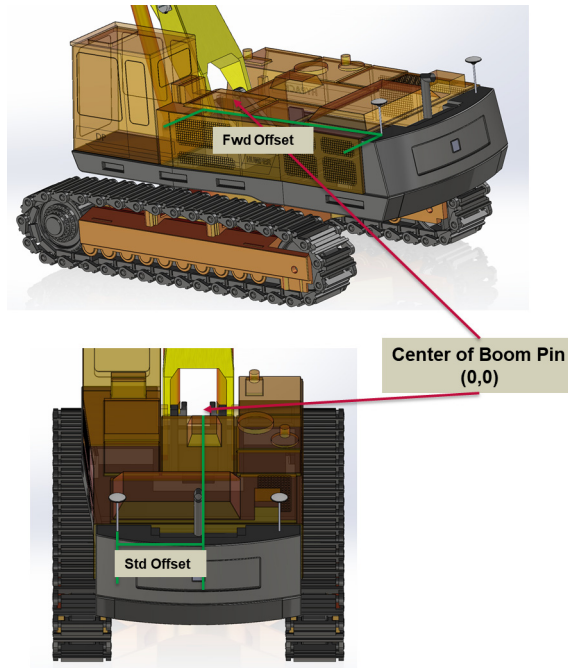
D1 is the length of the boom from boom pin to stick pin.

D2 is the length of the stick from the stick pin to the bucket pin.

D3 is the length from the bucket pin to the digging blade of the bucket.

It is important to select the correct reference point for the system. We suggest using the boom pin, all of the calculations are going to be computed relative to that point. That's why it is necessary to measure the distance of the position antenna with respect to the boom pin.

FIGURE 2. Position Offsets



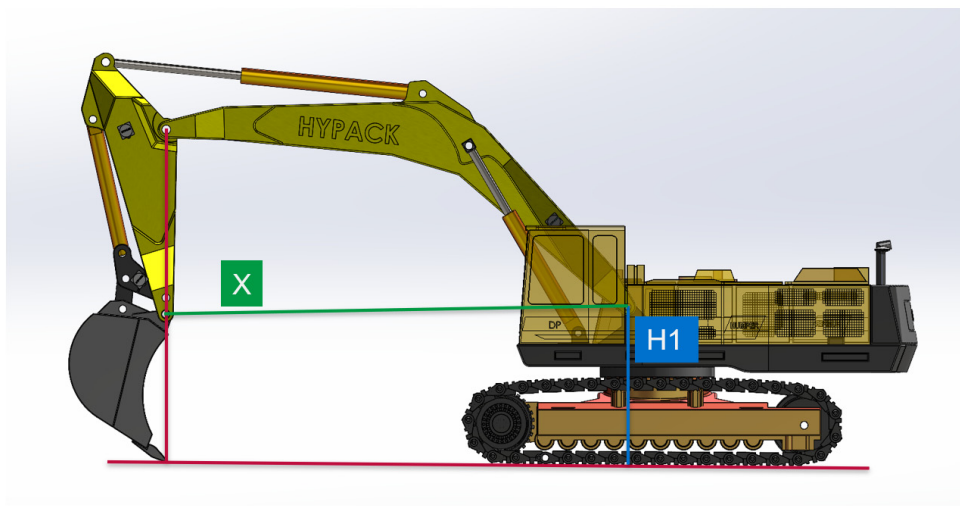
CALIBRATION

The calibration requires two measurements, the H1 and X measurements come into play.

The H1 measurement is the vertical distance from the trunnion to the level that the teeth of the bucket are touching. This can be the deck of the barge, or a position on land or the water.

The X measurement is harder to achieve. The normal method is pulling a measuring tape, however another way is to use a laser distance tool to measure this value.

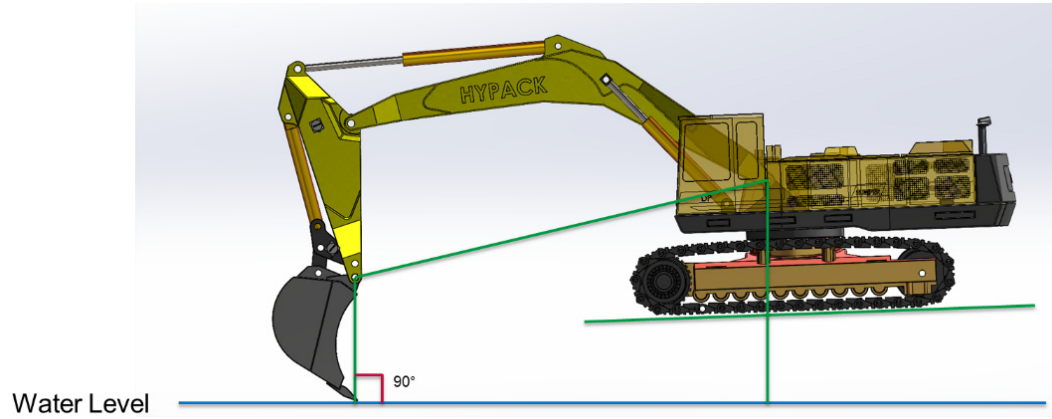
FIGURE 3. Calibration Position



The bucket is required to be vertical like the bucket in the picture. If the bucket is a clamshell, the bucket should be closed and resting on the surface.

It is important to mention in the previous example, we are assuming the barge is leveled, that's why the imaginary segment for the bucket is perpendicular to the deck. There are some cases when the barge cannot be leveled and in this scenario, we recommend carefully measuring the vertical difference from the boom to the bucket teeth, or using a different surface for the calibration.

FIGURE 4. Calibration Position Using the Water Level



In the previous example the water level is what we use for the calibration. We need to measure the X value and the H1 value, which is going to be the vertical distance from the boom with respect to the water level.