



Recent Change to the Excavator Driver

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THE QUICK TOOL ATTACHMENT

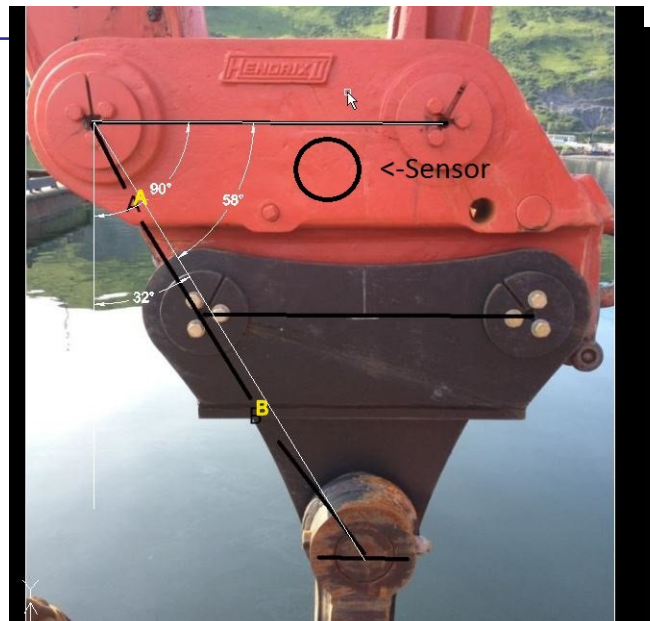
During a trip to Alaska to install an Excavator system, I encountered a different bucket arrangement. The bucket on this job was attached with a quick tool attachment that allows the operator to switch tools or buckets without getting out of the cab. The problem with the quick tool attachment is that the calibration for each tool would be different and sensors would have to be added to every bucket.

FIGURE 1. Excavator Configuration

To alleviate the cost of this and the pain of connecting a sensor cable, the sensor was placed on the quick attachment point at the end of the stick. Because most of the tools are rigid the sensor location reacts exactly as if the sensor were attached to the bucket or tool. In this case, there are two primary tools, an Xcentric Hydraulic Ripper and a Clamshell. In Figure 1 the quick attachment tool is displayed with the clamshell. I was able to make changes so the system could be calibrated in the normal manner with the XCentric Ripper on, then the operator can change the tool in the driver without exiting

DREDGEPAK®. The key to using the different tools is that *any tool that acts like a standard bucket will work by simply changing the length of the bucket.*

The critical part was to accommodate the 32 degree angle between the Xcentric Ripper and the Clamshell. There were a lot of changes to the driver to make this work but, in practice, it means that (after many hours of finding measurement errors) our client was able to switch on-the-fly.



NEW EXCAVATOR DRIVER SETUP OPTIONS

FIGURE 2. Excavator Device Setup Dialog

In the Options tab of the Excavator device window, the new **Tool Choice** option enables you to load up the shape that is appropriate for your bucket and adjust the size while in DREDGEPAK®

One other item that I added to the driver to make this easier was the **Display Pin Positions** checkbox. When you check that option, it will draw small circles at the pin points. We used this to determine where the source of our error was by physically lowering a pin to the water line and comparing it to the position in the driver.

I added a **Bucket Labels** option at the request of, HYPACK Technician, Christian Shaw. This will draw the selected label at the bucket to help you quickly identify the elevation of the bucket when close to grade. Christian asked that I display that number in the middle of the bucket or tool, but I haven't had time to make that change yet.

The best part of the changes affect the users with the quick attachments. The **Tool Choice** option lets you change the tool using a bucket shape that was previously built. The length of the bucket can be changed by entering the size of the bucket at this point. The **Use Knuckle** check box is used with the Clamshell configuration.

Calibrate Reset Sensors

☐ Display Pin Positions

Screen Displays

- ☒ Enable CUT/FILL BAR
- ☒ Enable REACH BAR
- ☐ Enable Volume Bar

Options

- ☐ Track Bucket
- ☒ Display Bucket Depth/FE
- Channel Line Thickness: 2

Colors

Mark1	[Red]	Dredge Above Channel	[Teal]
Mark2	[Dark Red]	Dredge in Overdepth	[Green]
Pontoon	[Red]	Dredge Below Ovd.	[Dark Green]
Channel	[Light Blue]	Survey	[Grey]
Bucket	[Olive]	Excavator	[Dark Olive]
Volume	[Yellow]	Volume Alarm	[Red]

Volume

Bucket Volume: 0 Alarm Percent: 80

Grid

Minimal Depth: 0 Profile Width: 200

Maximal Depth: 30 Boat Position: 30

Mark 1: 12

Bucket Labels

☒ None ☐ Cut/Fill

☐ Depth ☐ Reach

Cut Fill Bar

Ind [Red] Cut Color

[Green] Grade Color

[Blue] Fill Color

Cut Tolerance: 0.1

Fill Tolerance: 1

Source

☐ Channel Depth

☒ Mark 1 Depth

☐ Design Profile 1

☐ Design Profile 2

☐ Design Profile 3

☐ Flip Display

Tool Choice

Select: C:\HYPACK 2013\Boat Shapes\Shapes for the ExcavatorSM Driver\Clamshell2.shp

Size: 12.68 ☒ Use Knuckle Apply

FIGURE 3. Excavator Device Window in DREDGEPAK®

