

HOW TO USE GRADE CONTROL FOR EXCAVATORS- VOLVO DIG ASSIST

Part 1: Dig Assist Start and Dig Assist 2D
Matt McLean

The basic package in our Dig Assist portfolio of apps is now standard on new Volvo models ranging from EC220E to EC480E. We believe it's a powerful tool for both new and experienced operators. It's incredibly easy to use and has a very short learning curve, but I know some of you may be skeptical of this kind of technology. That's why I wanted to put together this two-part series — to show how easy it is to use and how much of an impact it can have on your productivity.

In Part 1, we'll focus on Dig Assist Start and 2D — focusing on how to level, slope, quick measure and follow a line. To learn how to create digging profiles direct from the cab, head over to Part 2: In-Field Design.

Dig Assist Start

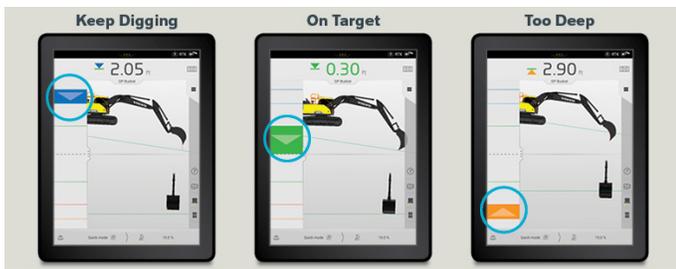
Dig Assist Start is the standard version on new Volvo

EC220E to EC380E models. It includes three simple features:

1. Level
2. Slope
3. Quick Measure

With Start, you simply touch the bucket to the ground and tell the machine how far down you want to dig and at what angle. The screen will show you how far away your bucket is from the target depth (the horizontal green line) and provide a light bar to help you gauge how close you're getting with each pass.

You don't have to actually watch the screen while you're working, you can simply reference how you're doing in your peripheral. When you see blue, keep digging. If you see green, you're on grade. If you start seeing orange or red, you've dug too far and need to back off.



But for the typical excavator operator, we've made the program almost as simple as taking a picture with your phone. To illustrate just how easy Dig Assist Start is to use, here are a few examples that show how the app works in real-world scenarios.

The first thing you'll do is measure the couplers and buckets and store them in the system. Adding buckets and other attachments allows the system to make accurate measurements while using the various features. Once that information is entered and stored (it only takes minutes), you're ready to start.

Digging a Trench with Slope: Let's say you need to dig a trench 10 feet deep at a 3-degree slope. First, you'll use the "Slope" feature to set your parameters:

4. Swipe up, and the screen will show you how far you need to dig to hit your target. Now, start digging — the light bar I mentioned earlier will let you know when you're getting close (blue = keep going, green = on target, orange/red = you've dug too far). Here, the operator started with 10 ft and now has 2.9 ft to go to hit his target.

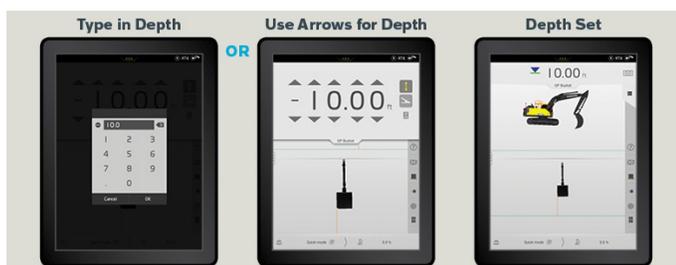


1. Touch the bucket teeth to the ground and hit "0.0" in the upper right to establish your bench.
2. Touch the dimension area, and on the pull-down screen, use the arrows (or type it in using the calculator icon) to select the depth you want to dig to. In our scenario, it's 10 feet.

If this particular job didn't require a slope, the "Level" feature would allow you to maintain a consistent depth for the length of the trench.

Quick Measure: This feature is used when you want to calculate the values of angle and/or distance using your bucket tip. Here's how you do it:

1. Set the bucket tooth on the starting point of your measurement.
2. Tap the symbol to start the measurement.
3. Move the bucket tooth to the end point of your measurement (values of distances and angles follow the movement).
4. Tap the symbol to erase the measurement.



3. Now touch the angle icon to add the 3-degree slope. If you prefer percentages, you can enter it as a percent gradient too.



In this side-by-side graphic, you can see that the left represents where you first activate Quick Measure and have touched one spot with the tooth but haven't moved it yet — the distances are 0. The right side

shows after you've moved the bucket (the screen gives you a live reading) — these dimensions represent the distance between point A and point B, etc.

One of the easiest ways to use **Quick Measure** is to check your work. For example, if you want to check that your trench is 8 feet deep:

1. Tap your reference at ground level.
2. Tap various places at the bottom of your trench to confirm it's 8 feet down. If you're digging a slope, it can measure that too.



Quick Measure is also handy when used in applications such as surface mining where you may need to remove 10 feet of overburden, for example. With Dig Assist, you program in that you're going to be digging 10 feet down, and then you always have that target to dig to. With Quick Measure, you'll be sure.

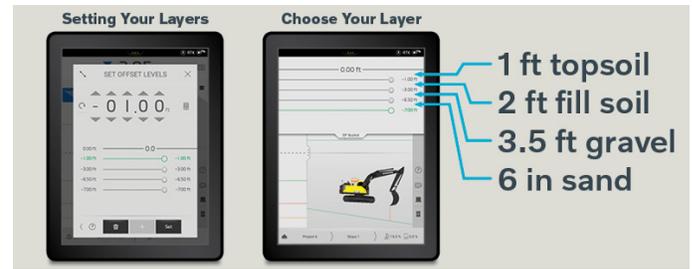
By upgrading to **Dig Assist 2D**, you get a few additional features to enhance performance:

- You can program up to 5 layers per task.
- You can create a line to follow.
- You can save your level and slope tasks.

Creating Specified Layers: For anything you dig, especially any trench or ditch, you can program up to five layers, which is incredibly handy for excavator operators. The accuracy of each layer is important, and Dig Assist makes that easy. Suppose you're putting in a water line that involves multiple layers with specific requirements for each. As an example, you could set up a line representing the bottom of the trench at 7 feet, then you can specify the layers on top:

1. 6 inches of sand as your base

2. 3.5 feet of gravel
3. 2 feet of fill soil
4. 1 foot of topsoil



With Dig Assist, you can program five different layers at any given time and the Co-Pilot display will help you stay accurate for each, preventing unnecessary rework.

Following a Line: Suppose you need to dig a trench and follow a line NNW for a quarter mile. Dig Assist makes it easy. When you use "Level" and "Slope," the machine tells you where and how far down you need to dig. When you use "Line," the machine shows you where to go (i.e. the direction to move your machine). For example, if you're digging a ditch with a 2-degree slope, the screen will show a sloped green line for you to follow. If you were required to dig that ditch in a NNW direction for a quarter mile, you simply enter that direction into the Co-Pilot display, and the screen will show a blue line indicating exactly where you need to steer your machine to hold the line.

There are two ways to do this:

"Attachment" is used to create a line from two bucket positions. If you don't have a particular direction you need to go (e.g., "out that way"), you can touch the bucket to two points on the ground to create your line.

1. Touch the ground once in front of you.
2. Then reach out in the direction you want to dig and touch the ground again. That's your line, and it'll project that line on the screen for as long as you need to follow it.

Using "Attachment," you don't have to type in 335° NNW. But if you do want to dig in the direction of

specific coordinates, just use the “Compass” feature.



Save Projects: With 2D, you can set up and save your projects, so any repeat jobs are even faster.



If you haven't yet used Dig Assist Start or 2D, give them a try. You'll find the features are very easy to program, and once you've used them a few times, Dig Assist will become an app you rely on every day to simplify and speed up your jobs. There are also multiple views you can use depending on your preference, including Volvo Smart View which allows you to toggle to a 360-degree bird's-eye view of the machine and its surroundings to improve jobsite safety.

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