Volvo Construction Equipment
Building Tomorrow

HOW TO USE GRADE CONTROL FOR EXCAVATORS- VOLVO DIG ASSIST

Part 2: Dig Assist In-field Design and 3D

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In Part 1 of our Dig Assist series, I covered the three basics of Dig Assist Start — “Level,” “Slope” and “Quick Measure” — plus the additional features you get with 2D: lines, layers and saved projects. These features are easy to set up and use for improved operator performance. In this post, I’ll cover some of the advanced features you get with an upgrade to Dig Assist In-field Design and 3D.

In-Field Design

This app uses GNSS and RTK navigation technology to offer incredible accuracy for excavation jobs. You can dig trenches and more complicated shapes in three dimensions, which you easily define on the Volvo Co-Pilot display. This eliminates the need for surveyors to mark out your excavation site.

With In-Field Design, you can use the display to quickly design your own project, right there in the cab in a matter of minutes. You have the option to design a trench “Profile” or to draw an excavation “Plan” — these include depth, shape, slope, etc. Whichever you choose, once you set it up and save it, you’re ready to dig.

Here are examples of how In-Field Design works for each option:

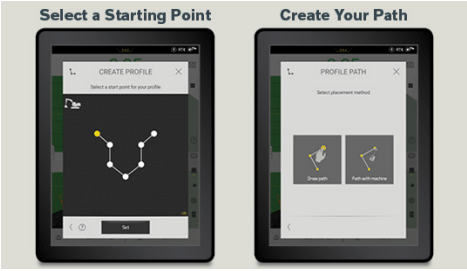
Profile: These are the simple steps to create a profile (i.e. a custom-shaped ditch) using In-Field Design:

1. Select a profile for the type of trench you want to dig.

2. Modify your profile by dragging the hot spots on the Co-Pilot display.

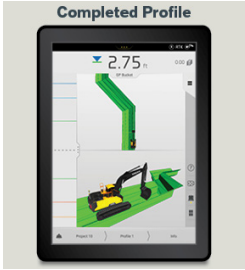
3. Add in your dimensions.

4. Select a starting point for your profile (i.e. the path of your trench). You can draw the path with your finger or set the path up with your machine.



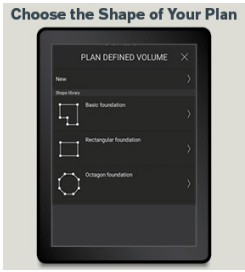
5. If you elect to draw the path, you simply assign the distances and direction of your trench profile.

6. Press the Set button to save your profile and you're ready to start digging. Here's what a completed profile looks like on the Co-Pilot display.

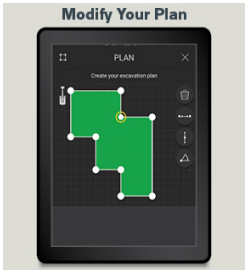


Plan: A plan (essentially a flat surface with boundaries) can be anything you need to excavate in an open field or yard. For this example, we'll demonstrate how to plan a dig for a swimming pool. At some of our past shows, I've actually talked to some grade school kids who are attending with their parents and asked, "Wouldn't you like a pool? How about you draw a pool for your dad?" I get them to go through the screen, and in two and a half minutes, they have their pool drawn. That's how easy it is to use. To do it:

1. First, choose one of the starter plans, and then modify it into the shape you want on the Co-Pilot touchscreen.



2. Draw the shape. Just touch the dots and drag them where you want them.



3. Set the depth and slopes.
4. Identify the exact location for the pool by orienting your excavator to your design and touching your bucket to the ground. That way the system knows where you are in relation to your pool plan.
5. Save your plan. Now you're ready to start digging, and you know exactly where the pool will go.

In-field Design allows you to draw plans with a wide range of shapes, depths, slopes and more. As I mentioned, it only takes minutes, and it will make quick work of your excavation project.

3D is a good option for complex or larger projects. With excavators, upgrading to 3D involves running either the Topcon 3D-MC or Trimble Earthworks apps on the Volvo Co-Pilot. If you're already using Topcon or Trimble on other pieces of equipment, you can do the same thing on a Volvo excavator. You buy a license for the software of your choosing and run that program on the Co-Pilot — both systems will operate using the Volvo sensors and utilize the Co-Pilot screen.

If you aren't currently using Topcon or Trimble, you would simply make a call to get an access code, put it in Co-Pilot, and then you'd have access to the 3D software. When you buy the basic 2D package, all of the equipment is loaded on the machine: all your initial measurement sensors, the laser catcher on the back of the machine that will be your two satellite antennas and a smart receiver. So, when you buy the basic package, everything you need for 3D is already there, but if you don't need it, you don't pay for it. If you want it, you just upgrade the software to where you need it for the types of jobs you're doing.

What's Next for Dig Assist?

The beauty about the Dig Assist platform and the Co-Pilot display is that we can continue to add new apps and functionality over time, and the system can be updated wirelessly. In the near future, we'll be adding a new **On-Board Weighing app**. If you're loading trucks with an excavator, both your manager and your truck driver are generally wondering, "How much material was just put in my truck?" The most common size of excavators (the 220-300 range) typically load highway trucks, which don't have a load weighing system like some brands of articulated haulers do (including Volvo). But with the upcoming On-Board Weighing app in Dig Assist, you'll know. You won't be sending out trucks that are 2/3 full and costing you money in lost productivity, nor will you send out trucks that are overloaded, risking expensive fines. With On-Board Weighing, you'll know the weight of every load, every time.

How is Dig Assist Different?

Some OEMs offer similar systems but sell them as an all-or-nothing offering. Meaning, if you want Dig Assist-type features, you'll pay one price for a fully-loaded machine, regardless of how many of those features you'll actually use. In some cases, the added costs outweigh the benefits, so owners simply opt out altogether. Other OEMs outsource various parts of the complete system (the display, software, machine components, etc.) which creates added costs and glitches as their software evolves.

The Assist programs at Volvo involve technology and machines that are Volvo designed, so they're built to work together seamlessly. Our programs are the simplest to operate with easy-to-understand graphics and live animations of the machine in action — any time the bucket is moving, you see a live display on the screen of what your excavator is doing.