IMPROVING ACCURACY AND PRODUCTIVITY FOR WHEEL LOADERS- VOLVO LOAD ASSIST

Part 1: 1% vs. 2% Accuracy Modes
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With Load Assist now standard on new L150H to L260H wheel loader modelsfrom Volvo, I thought I'd takesome timeto share severalways the program is actively helping operatorsbe more accurate with each load. That accuracy is improving their productivity and efficiency —and its simplicity is at the heart of its widespread use.

Part one of his three-part series focuses on the differences between the 1% and 2% accuracy modes. Part two covers how the On-Board Weighing functionality improves site performance and profits. And part three unveils the benefits customers get with our new Operator Coaching app.

Load Assist terms

Before we jump into part one,though,I want to make sure you understand the differencesbetween some of the Load Assist terms we use:

1. Volvo Co-Pilotis the physical display that'sin the cabof a Volvo loader—it looks and works like a tablet. Built on an Android operating system, it's designed in a way that makes it easily scalable as future software updates, additional functionality and new applications are developed. **Load Assist** is our intuitive platform that hosts a variety of apps that help operators improve their performance. It's displayed on the Co-Pilot touchscreen and the labels below show you what information it provides.

CO-PILOT
LOAD ASSIST

1. Tons currently in bucket
2. Tons already loaded to truck
3. Tons remaining to complete job
4. Progress bars
5. Current angle of bucket
6. Angle of machine positioning
7. Work order / job name
8. Truck being loaded
9. Material being loaded
10. Activate rear view camera

A couple of the apps we talk more about in this series include On-Board Weighing and Operator Coaching, shown below. This image also displays the Screen Recorder app (I won't go in-depth on it inthis post) which is used if you want to be able to playback and analyze your loads. We plan to launch additional Load Assist apps in the future to continually enhance what the program does for our customers.

Now, let's take a look at how the two Load Assist accuracy modes work for you.

1% accuracy vs. 2% accuracy

When you're using Load Assist, you can set it to weigh within 1% or 2% accuracy. Maybe you're thinking, "Why set it to 2% when 1% is better?" The reason is because there are variables on different sites (landscapes, people, attachments, etc.) that alter how accurately a wheel loader can measure each load. To work within 1% accuracy, the tolerances are extremely tight:

1. **It's available for buckets only.** If you're using forks and grapples, you'll have to operate in 2% mode because your center of gravity changes as you lift different loads. For example, you may lift a pipe with a center of gravity of 3 feet, then one that has a center of gravity of 4 feet—so it moves all the time. With a bucket, your center of gravity is the same with every load, which is more stable and therefore can stay within the 1% accuracy range.

2. **A known weight calibration is needed.** When you do an empty weight calibration, it's a simple,step-by-step procedure, and the Co-Pilot tells you exactly what to do. You take an actual known weight, put it in the

bucket, then raise and lower the boom. The system will then pop up a window so you can type in the weight. You're essentially telling the system that the pressure it took to raise and lower the boom equaled 10 tons, for example. The system remembers that number and automatically calculates the pressure into weight. It's important to note that not every customer will have a known weight to do this, so what you can do is fill the bucket, raise the bucket up and down, and then you have two choices:

1. Dump the bucket into a truck where you've already taken an empty weight measurement, drive the loaded truck over a scale, deduct the empty weight and type in the difference.
2. For a smaller loader, you can drive an empty machine over the scale and weigh it. Then fill the bucket, raise it up and down, and drive over the scale with your material in the bucket. Then do the same math as above to determine the weight of the load and type it in. Either way, it's extremely simple. In 2% mode, a known weight calibration isn't needed.

3. **Your operators should beskilled.** An unskilled operator might tend to be a little aggressive, potentially spilling material—especially shifting between forward and reverse. This would make him less accurate, so he'd need to operate in 2% mode.With an experienced operator, you can guarantee the 1%.

4. **You're operating in normal ground conditions.** Accurate weighing requires "normal" ground conditions: flat, smooth surfaces are the best to lock the load. Potholes, rocks, uneven terrain and mud are some of the scenarios that can compromise the data and require the 2%mode.

5. **You're weighing on an incline no more than 5 degrees.** For 1% accuracy, your slope —side, uphill or downhill —can be no more than 5 degrees. Beyond that, you have to operate in 2% mode. An icon will light up red on your left-hand side indicating why it didn't lock in.You may just need to back up a little bit to get on more level ground.

6. **Get within 1% for every bucket.** In these tight tolerances, you can expect ±1%. If site conditions don't allow you to achieve 1%, or if you're changing the type of attachment (for example,from a bucket to a fork), then you have to operate in 2% mode, which is measured over 10 attachment passes. When we sell a machine with an attachment bracket and deliver two or three buckets with a machine, we work with your Volvo dealer to set these up for you, in both 1% and 2% modes. Load Assist modes help make it easy to ensure every wheel loader operator is as productive and safe as possible. It only takes minutes to set up, and once that's done, you'll see productivity maximized to its fullest potential.

VOLVO

Volvo Construction Equipment