

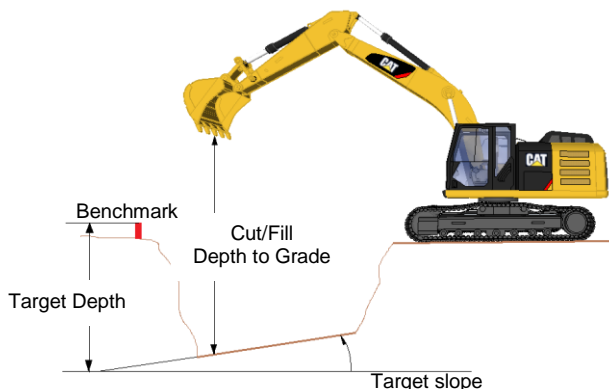
Cat® Grade Control for Hydraulic Excavators

Depth and Slope | without Laser System

Operating Guide

Definitions

Cat® Grade Control is designed to calculate bucket tip position and provide visual and audible feedback to the operator.



Operations

Once the system is configured with the correct bucket, the operator is able to use Cat Grade Control.

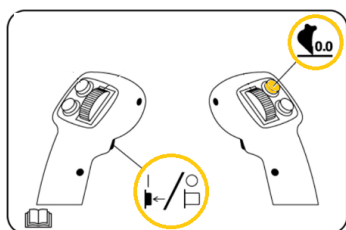
⇒ Set the Bench

Position the machine within reach of a known elevation reference. Examples are a grade stake or a hub. Use the bucket focus point.

Note: Make sure that you touch the reference point gently in order not to affect the position of the grade stake or hub.



Or



- Hold the left trigger
- Press and release button to set benchmark
- Release the trigger

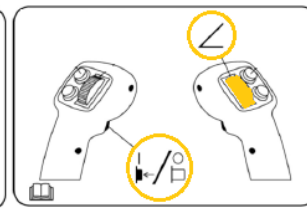
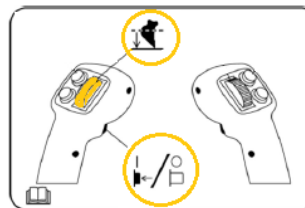
Note: To clear the bench:

- Hold left trigger
- Press and hold button to clear benchmark
The display will reflect new bench status
- Release button
- Release trigger

⇒ Adjusting the Target Depth and Slope

To adjust the target **depth**

To adjust the target **slope**



- Hold left trigger
- Roll the thumb up or down to increase or decrease target depth or slope
- Release thumb
- Release trigger

While adjusting depth and slope, target values are displayed.



⇒ Excavating

After determining the benchmark and setting any target depth or slope values, the operator is ready to start excavating.

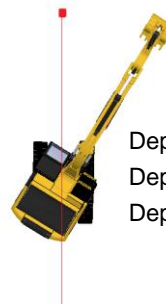
The depth to grade data (Cut/Fill) area and the light bars will indicate to the operator when the operator has achieved the desired grade (the bucket is "on-grade").

Excavate what is necessary within reach of the machine **without moving the machine**.

If any significant movement of the machine has occurred while working in one position, a bench will have to be performed again.

► IMPORTANT

Bench



CAB ROTATION

Depth only (Slope = 0%)	Yes
Depth and Slope	No
Depth and Slope with heading sensor	Yes

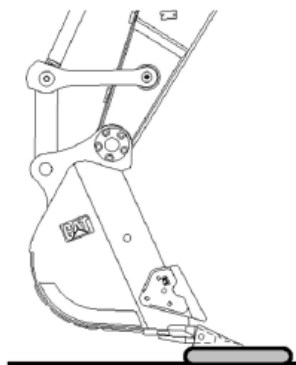


⇒ Moving the machine

When the machine is moved from one point to another, the system needs to be referenced by the "touch point" method. This technique allows carrying the bench using a site feature.

1. Before you move the machine from its benching location, touch the bucket focus on a point you can reach from both your current and next working position.

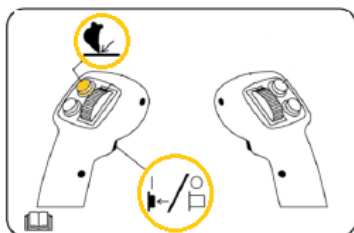
Note: For Depth and Slope mode, choose a point you can touch with the cab in its "as benched" orientation. For Depth only mode, you can rotate the cab.



2. Press **Touch Point**



Or



- Hold the left trigger
- Press and release button to set touch point
- Release the trigger

A message with "**Touch point initiated**" appears.

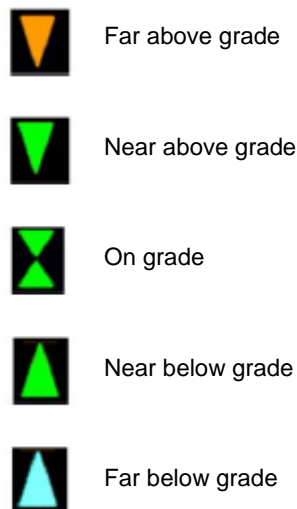
3. Move the machine
4. Touch the focus of the bucket to the point you touch previously and Press **OK**.

The system is now benched against the original benchmark elevation. The guidance screen re-appears.

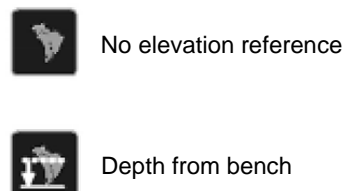
Repeat this operation each time you move the machine to a new location.

GLOSSARY

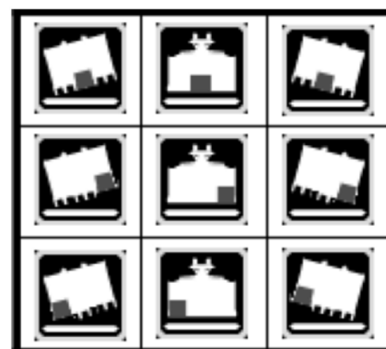
The following icons are depth to grade arrow indicators that indicate direction and relative distance from the target depth:



The following icons are system status icons that show status of and type of benchmark that is set:



Bucket icon states that show direction of bucket slope when a tilt bucket is installed and selected bucket focus point (Left, Center, Right). The Cut/Fill values refer to the blade focus point.



Cat® Grade Control for Hydraulic Excavators

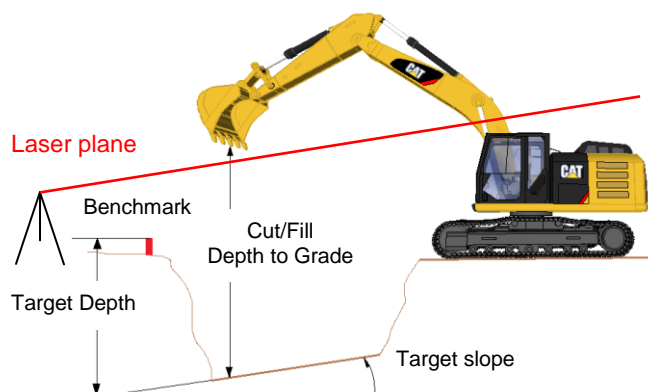
Depth and Slope | with Laser System

Operating Guide

Definitions

Cat Grade Control is designed to calculate bucket tip position and provide visual and audible feedback to the operator.

The use of a laser transmitter will establish a site-wide elevation reference between the laser plane and the original ground elevation reference. Once this laser reference is established, the machine can be moved anywhere on the site within range of the laser transmitter without having to use a ground reference to reset the system benchmark.



The laser transmitter must be positioned and configured so that the laser plane generated by the laser transmitter is in the same magnitude and direction as the sloped surface to be excavated. Otherwise, guidance will be incorrect after each time the laser is referenced.

Operations

Once the system is configured with the correct bucket, the operator can start using Cat Grade Control.

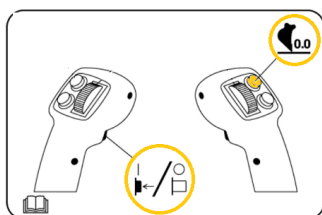
⇒ Set the Bench

Position the machine within reach of a known elevation reference, such as a grade stake or hub.

Note: Make sure that you touch the reference point gently in order not to affect the position of the grade stake or hub.



Or



- Hold the left trigger
- Press and release button to set benchmark
- Release the trigger

Note: To clear the bench:

- Hold left trigger
- Press and hold button to clear benchmark
The display will reflect new bench status
- Release button
- Release trigger

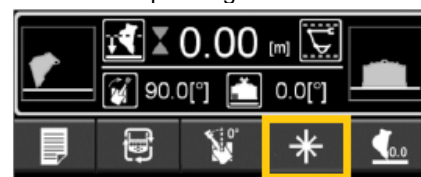
⇒ Catching the laser beam

After a benchmark has been established, rotate the cab into its "as bench" orientation and pass the laser catcher through the laser plane.

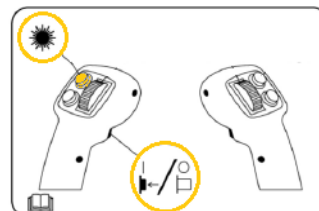
Slowly raise or lower the boom until the laser catcher receives strikes.



Press the button corresponding to the laser-accept soft key.



Or



Note: The laser-accept soft key is only shown after a valid laser signal has been detected and remains visible for 3 seconds and the following icon will appear:

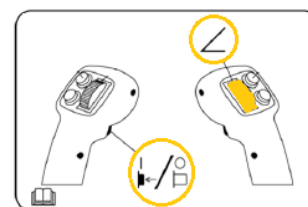
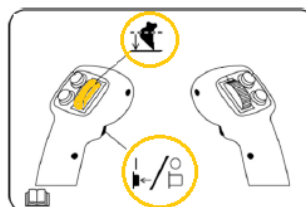


Depth from bench - Laser referenced

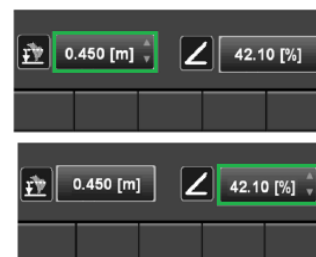
⇒ Adjusting the Target Depth & Slope

To adjust the target **depth**

To adjust the target **slope**



- Hold left trigger
- Roll the thumb up or down to increase or decrease target depth or slope
- Release thumb
- Release trigger



While adjusting depth and slope, target values are displayed.



Slope indication



Remark:

When the depth to laser plane is known, it is also possible to reference the system directly by catching the laser beam without benchmark. The following icon will then be displayed:



Depth from laser

⇒ Excavating

After determining the benchmark, catching the laser beam and setting any target depth or slope values, the operator is ready to start excavating.

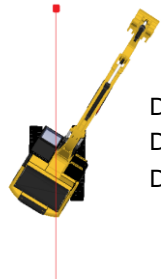
The depth to grade data area and the light bars will indicate to the operator when the operator has achieved the desired grade (the bucket is “on-grade”).

Excavate what is necessary within reach of the machine **without moving the machine**.

If any significant movement of the machine has occurred while working in one position, the laser catcher should be passed through the laser plane and the laser signal accepted after the machine has been repositioned.

▀ IMPORTANT

Bench



CAB ROTATION

Depth only (Slope = 0%)	Yes
Depth and Slope	No
Depth and Slope with heading sensor	Yes

⇒ Moving the machine

1. Move the machine to the new position, and rotate the cab into its “**as bench**” orientation.
2. Slowly raise or lower the boom until the laser catcher receives strikes.
3. Accept the laser (3 seconds), and then the system is ready to continue the excavation.

Repeat this operation each time you move the machine to a new location.

GLOSSARY

The following icons are depth to grade arrow indicators that indicate direction and relative distance from the target depth:



Far above grade



Near above grade



On grade



Near below grade



Far below grade

The following icons are system status icons that show status of and type of benchmark that is set:



Depth from bench – Laser referenced



No elevation reference



Depth from laser

Bucket icon states that show direction of bucket slope when a tilt bucket is installed and selected bucket focus point (Left, Center, Right). The Cut/Fill values refer to the blade focus point.

