ICEGPS Excavator Guidance System User Manual（智能挖掘机导航系统两传感器使用说明书）

1. Overview

The intelligent excavator navigation system is developed to meet the needs of the modern construction and engineering industries, focusing on improving the accuracy and efficiency of excavator operations, and is particularly suitable for fine operation scenarios such as slope finishing and ditch excavation. It enhances the excavation accuracy of fine operations, improves the work efficiency and quality of novice operators, reduces reliance on external measurement support, enhances operators' environmental awareness to improve safety, supports multiple working modes such as slope setting, height setting, and line setting, and enables convenient import and management of project data, facilitating the transformation of excavation operations towards precision, efficiency, and safety.

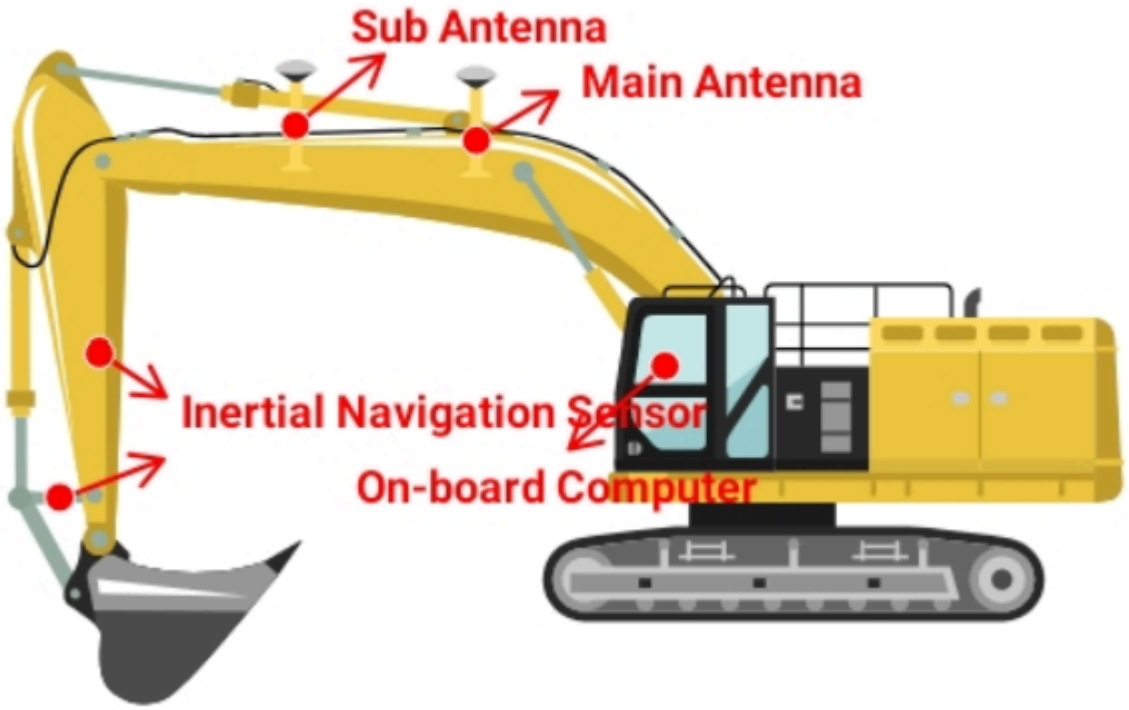
2. Packing List

Packing List for Intelligent Excavator Navigation System Instruction Manual		
Number	Name	Quantity
1	Satellite Antenna	2
2	Angle Sensor	2
3	Sensor feeder	2
4	Satellite antenna feeder	2
5	3588 car machine	1
6	Car power cord	1
7	WiFi Antenna	1
8	4G antenna	1

9	Product manual	1
10	Installation kit	1

III. Installation and setup instructions

1. Product installation diagram



2. Differential Settings

2.1 Glacier network difference

- The car computer needs to connect to the network
- After recharging by scanning the QR code with WeChat, click [Refresh] - [Save] to start using.

2.2 NTRIP Network Differential

- The car computer needs to connect to the network
- After entering the relevant NTRIP content, click Save to use it

2.3 ICECORS NTRIP

- Network Base Station: Power on and wait for network signal, satellite signal, Bluetooth, and battery level to light up;

- Car computer: To use a network base station, you need to connect to the network, select "ICECORS NTRIP" for the differential method, click "Refresh", and then select the green base station number. Red indicates that it is outside the base station coverage area;

2.4 ICECORS MQTT

- Network Base Station: Power on and wait for network signal, satellite signal, Bluetooth, and battery level to light up;
- Car computer: To use a network base station, you need to connect to the network, select "ICECORS MQTT" for the differential method, click "Refresh", and then select the green base station number. Red indicates that it is outside the base station coverage area;

2.5 MQTT Network Differential

- The car computer needs to connect to the network
- After entering MQTT-related content, click Save to use

2.6 Dual Modulus Transmission Differential

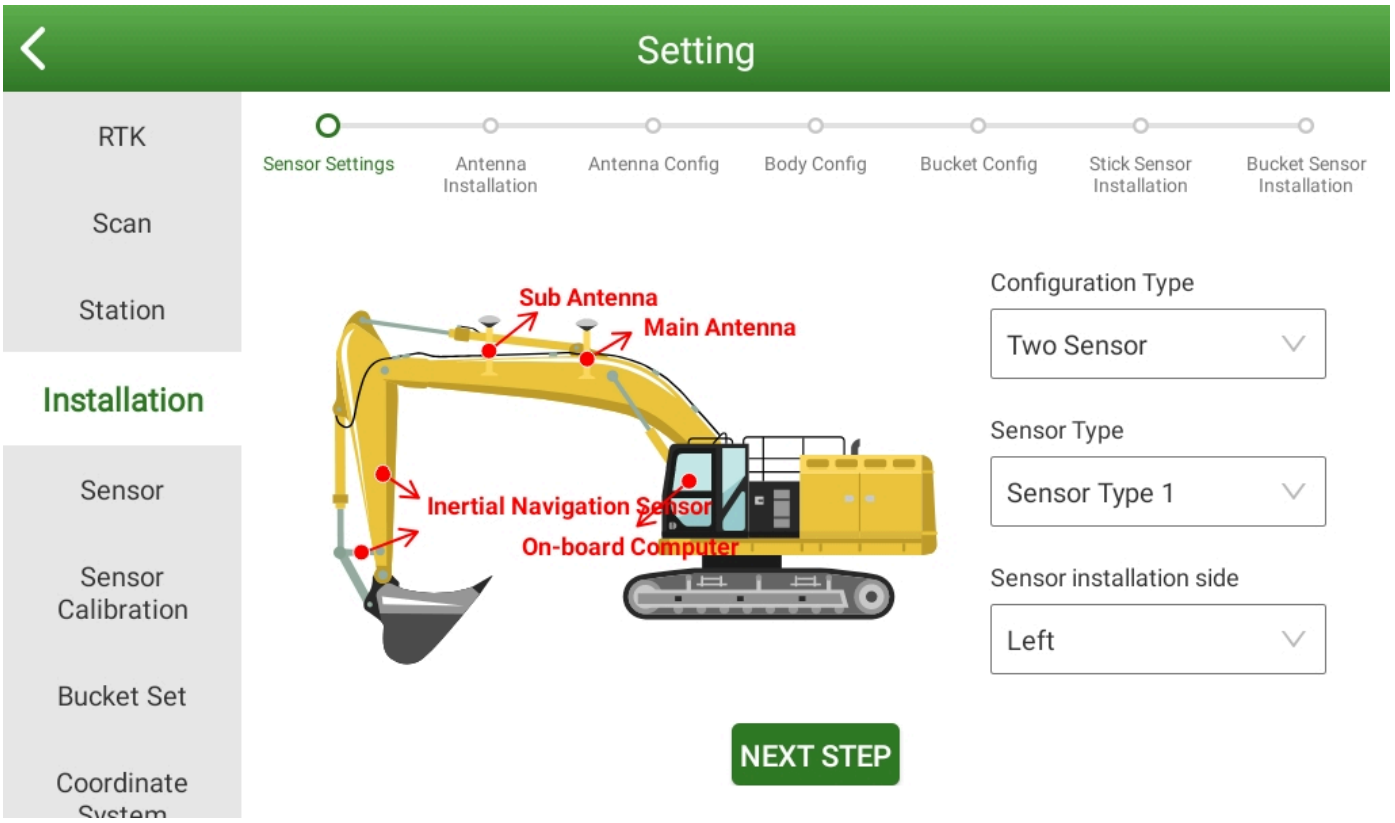
- Base station: Power on and wait for the upper left corner of the base station screen to stabilize;
- Vehicle computer: Select "dual-module data transmission differential" for the differential mode, set it to be consistent with the base station, and then click "Use" to proceed;

2.7 Laura Data Transmission Differential

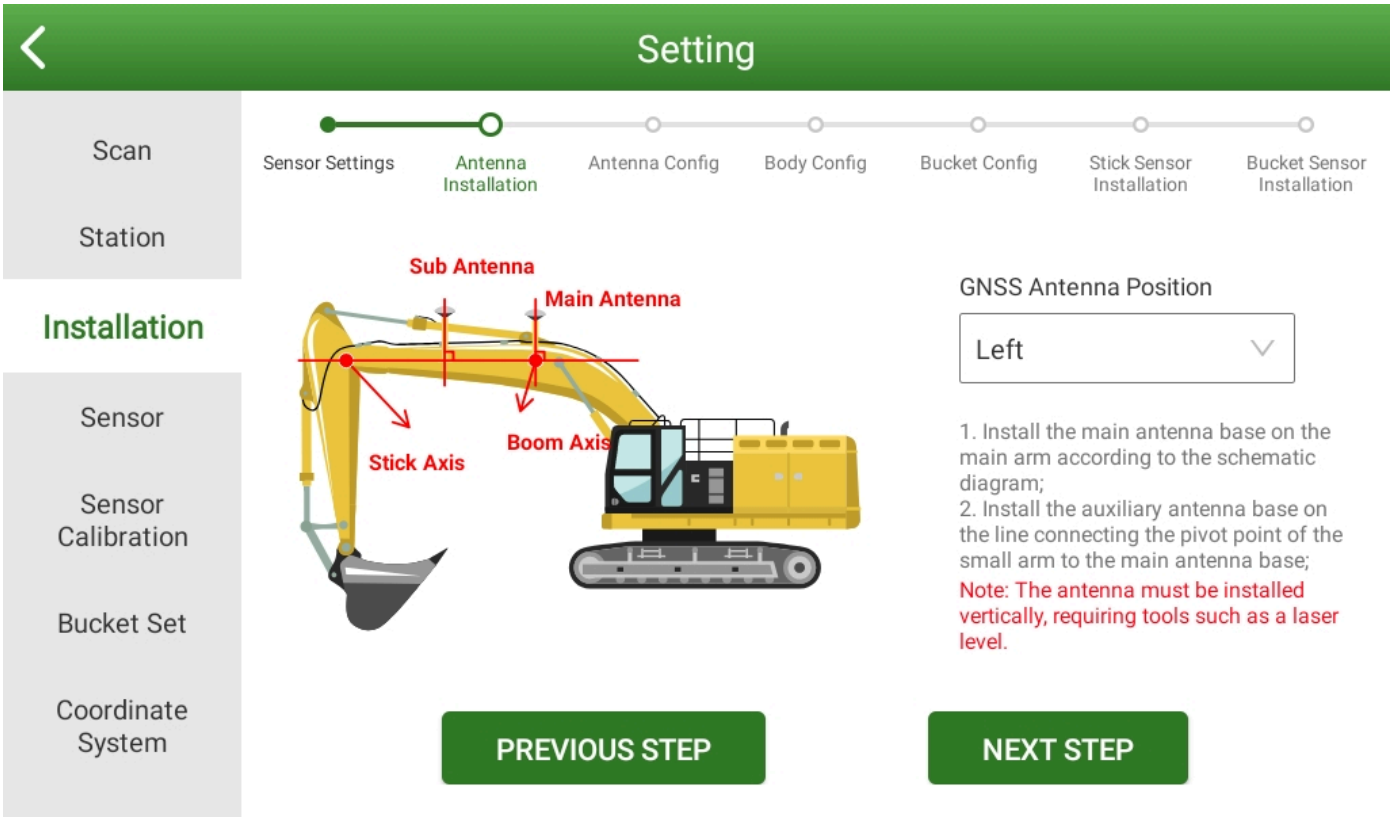
- Base station: Power on and wait for the upper left corner of the base station screen to stabilize;
- Vehicle computer: Select "Laura Data Transmission Differential" for the differential mode, set the frequency band and base station ID to be consistent with the base station, and then click "Use" to proceed;

3. InstallationSettings

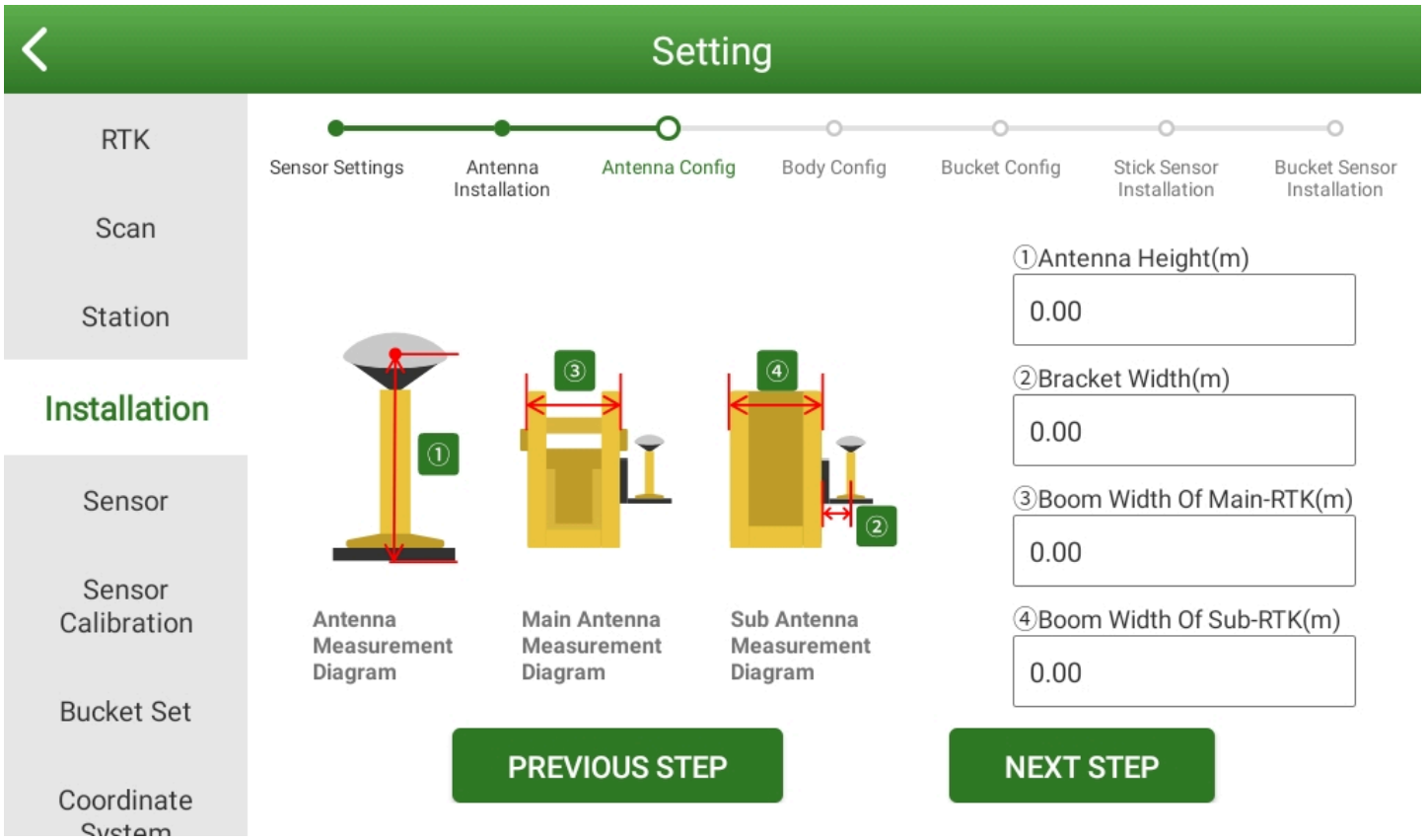
- After all accessories are installed, perform type selection, select [Configuration Type], select [Sensor Type], select [Sensor Installation Location], and then click [Next]



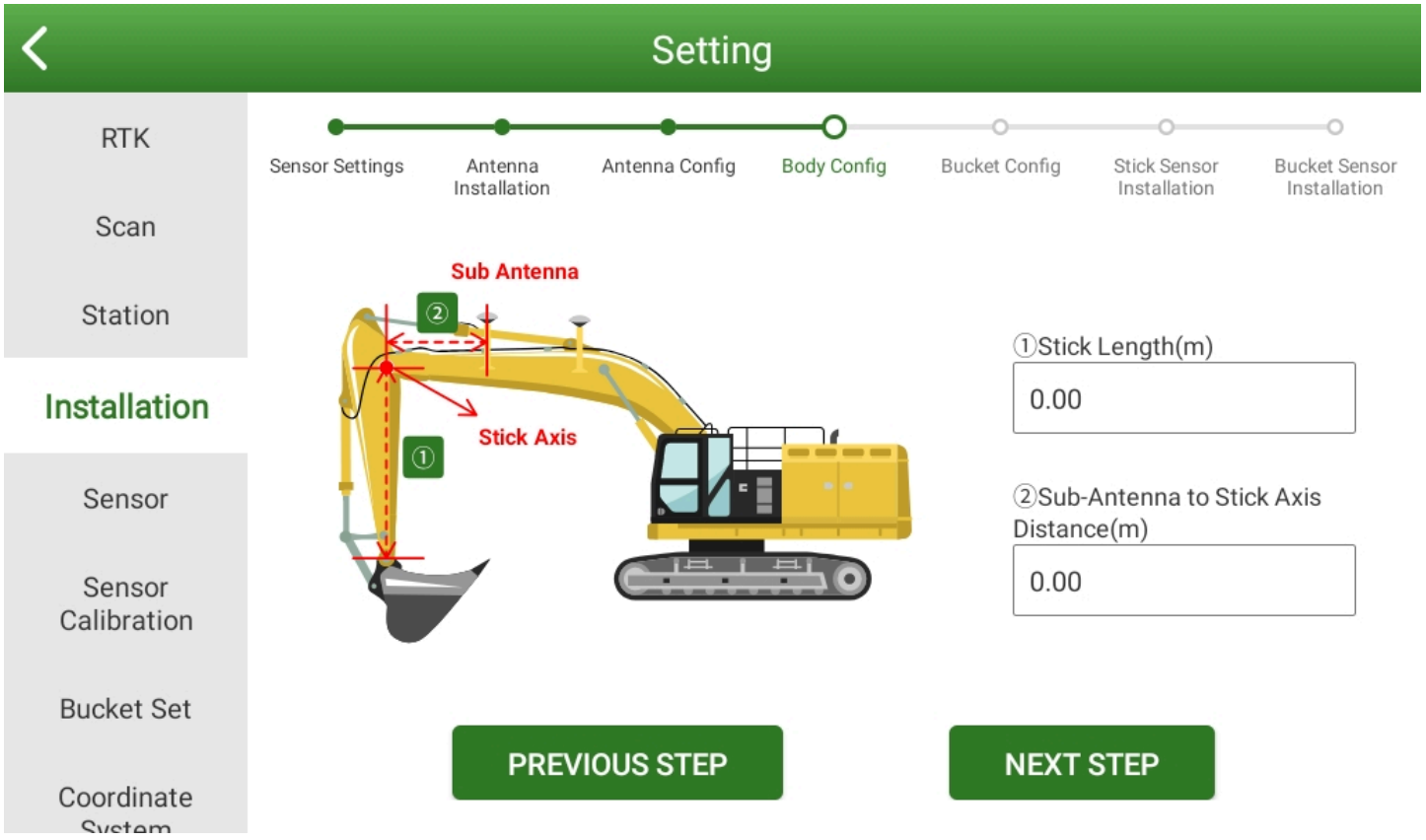
- Install the antenna, select the GNSS antenna location, and click [Next] after selection is complete;



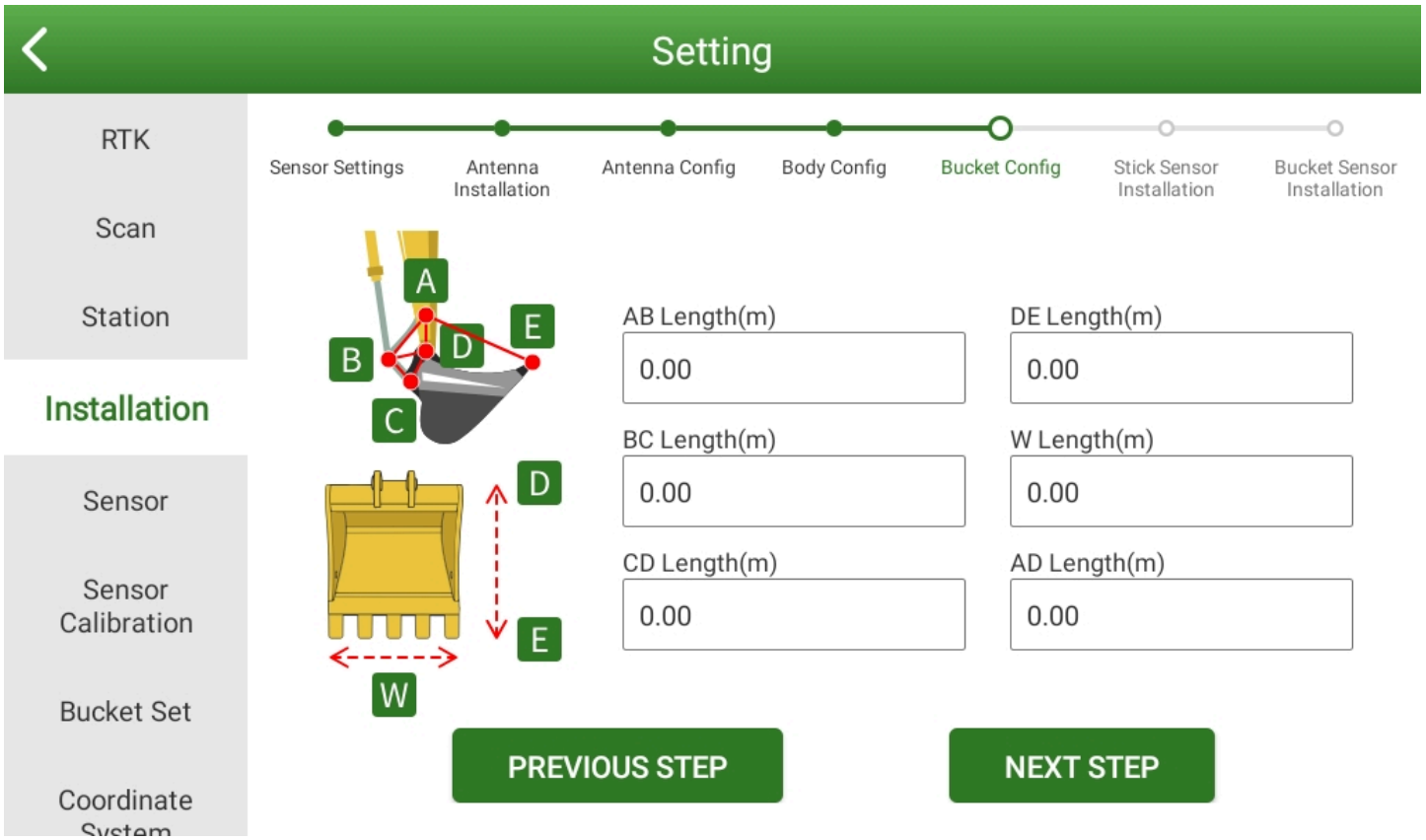
- Fill in the antenna parameters, measure according to the schematic diagram and then fill in the parameters. After filling in, click [Next];



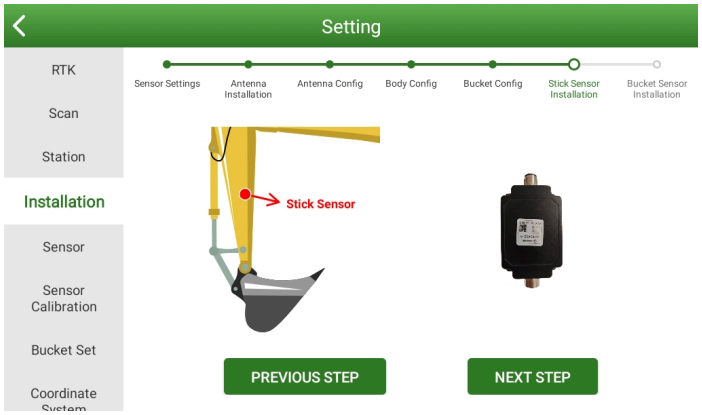
- Fill in the vehicle body parameters. Measure according to the schematic diagram and then fill in the parameters. After filling in, click [Next];

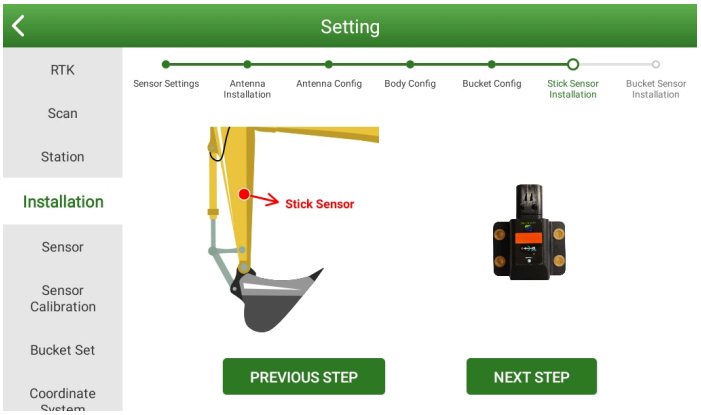


- Fill in the bucket parameters, measure according to the schematic diagram and then fill in the parameters, and click [Next] after completion;

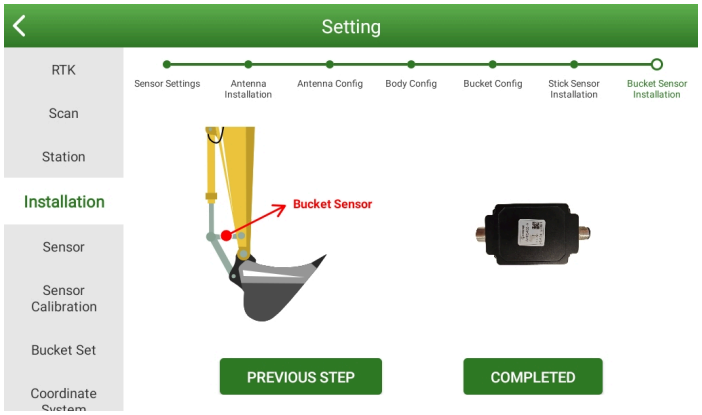


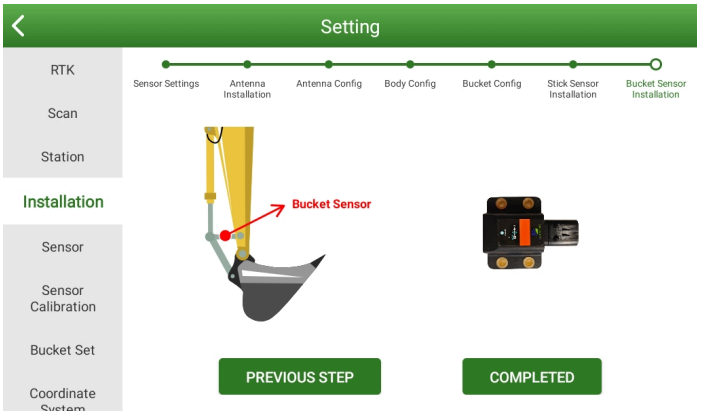
- Install the forearm sensor according to the schematic diagram and sensor orientation. After installation is complete, click [Next]





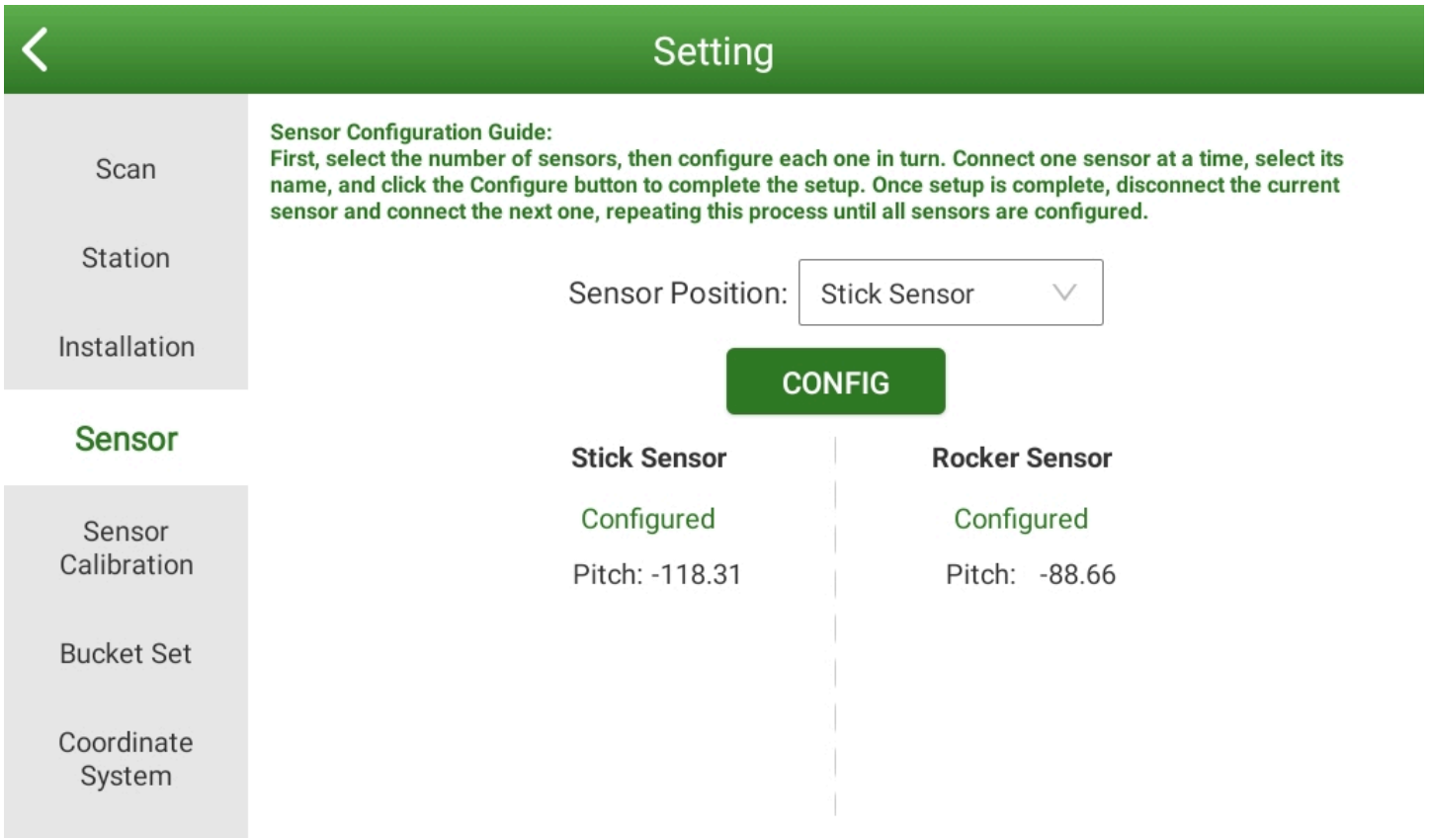
- Install the bucket sensor according to the schematic diagram and sensor orientation. After installation is complete, click [COMPLETED].





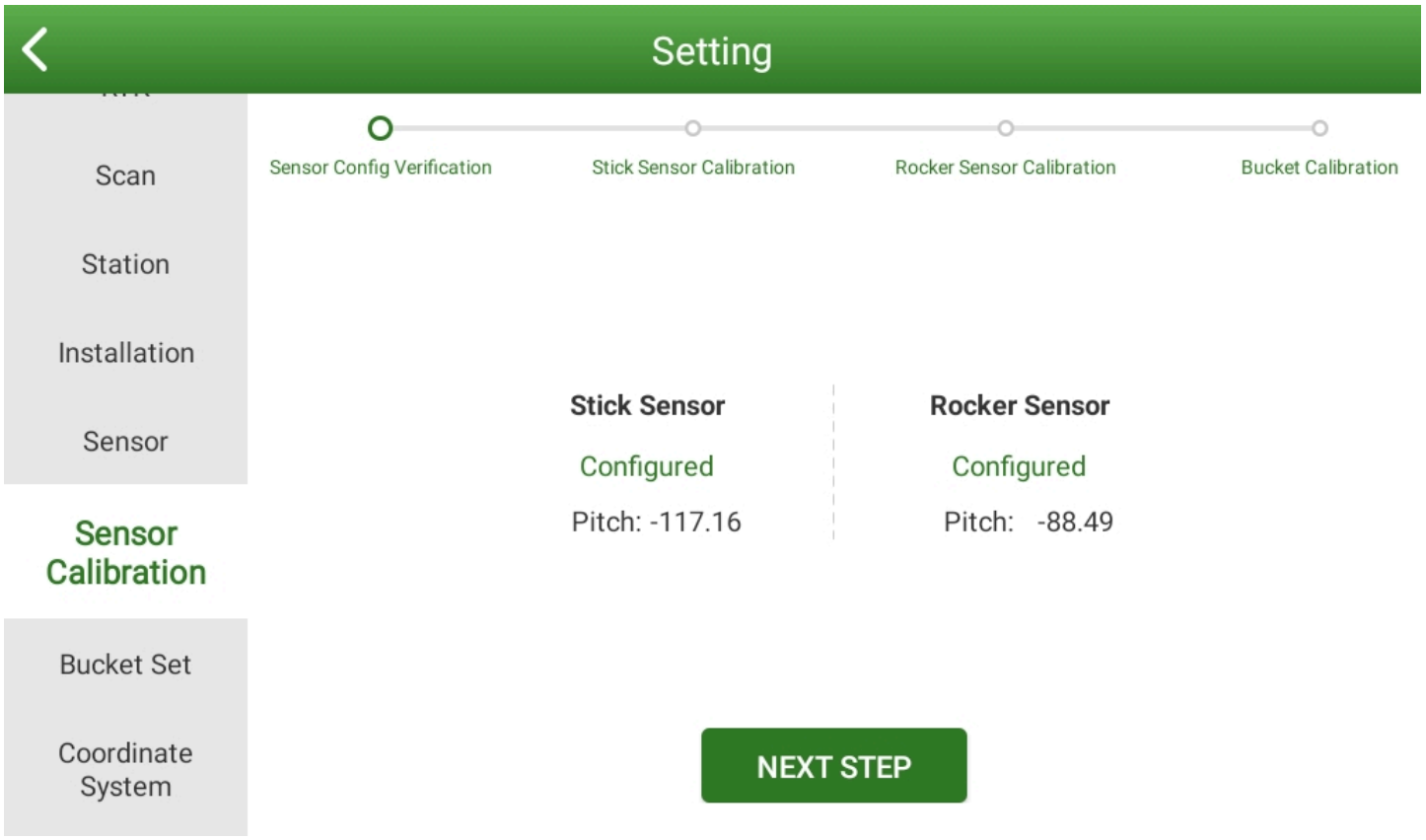
4. Sensor Configuration

- Please select sensors first, then configure each sensor in turn. Each time, only connect one sensor, select its name, and click the configuration button to complete the setup. After the setup is complete, please unplug the current sensor, then connect the next one, and repeat this process until all sensors are configured.

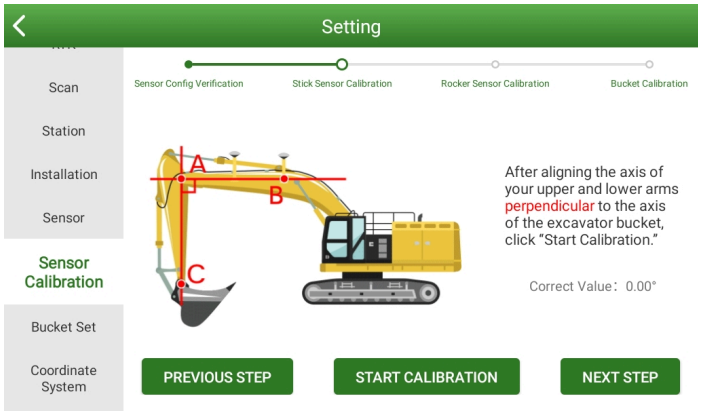


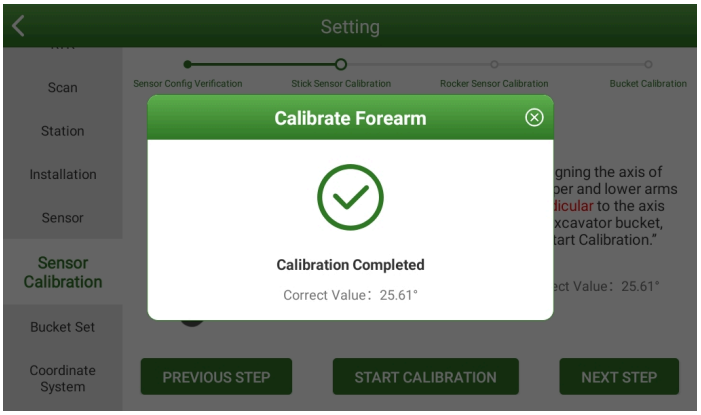
5. Sensor Calibration

- Sensor configuration calibration: first configure the sensor, then click [Next];

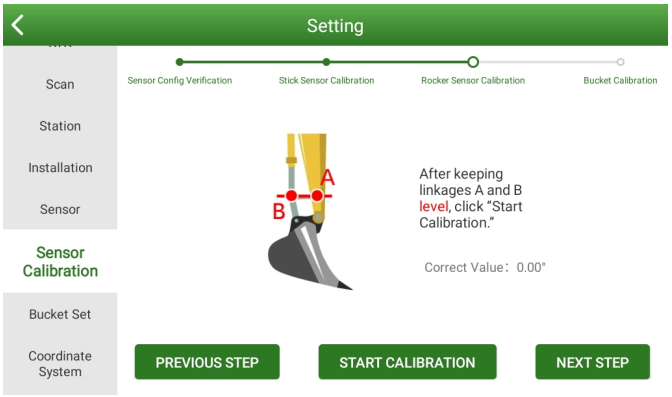


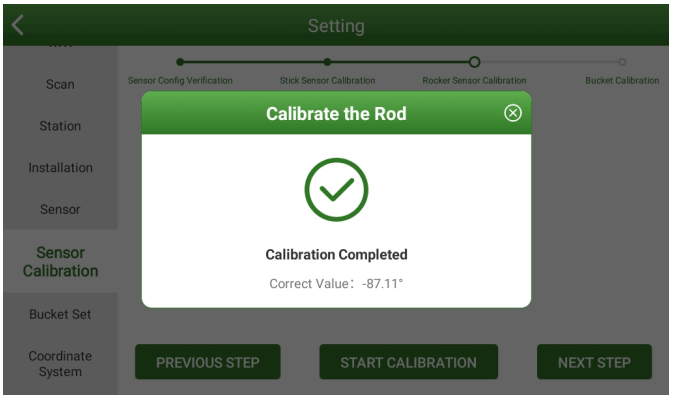
- For forearm sensor calibration, park the excavator according to the schematic diagram and prompts, click [Start Calibration], and click [Next] after calibration is completed;



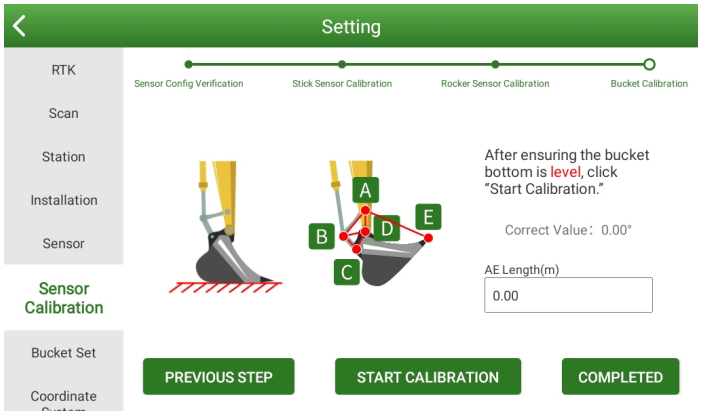


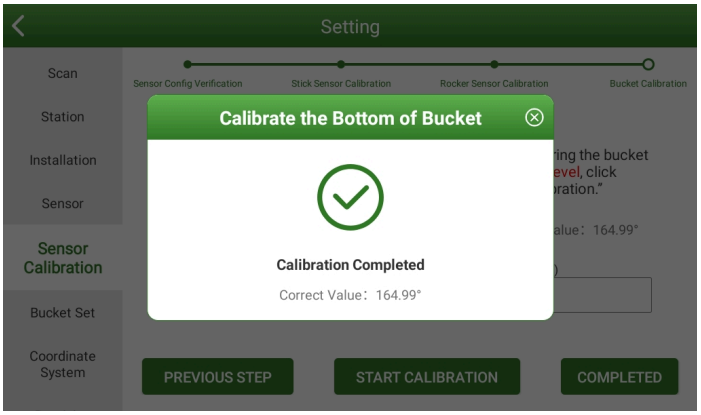
- For link sensor calibration, park the excavator according to the schematic diagram and prompts, click [Start Calibration], and click [Next] after calibration is completed;





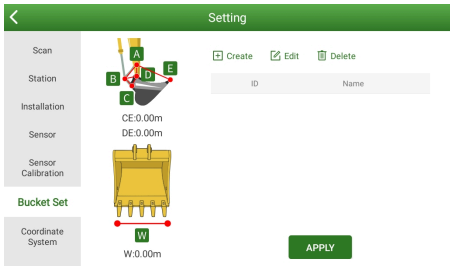
- Bucket bottom calibration: Park the excavator according to the schematic diagram and prompts, then click [Start Calibration].

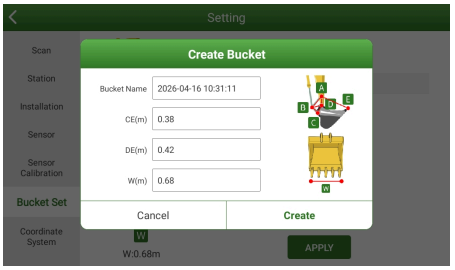


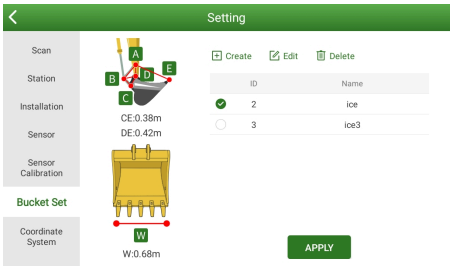


6. Bucket Configuration

For the same excavator, different buckets can use the bucket configuration to save the parameters of each bucket. First, click [Create], then measure the corresponding lengths according to the schematic diagram, fill them in, click [Create] again, check the created bucket, and click [Apply].

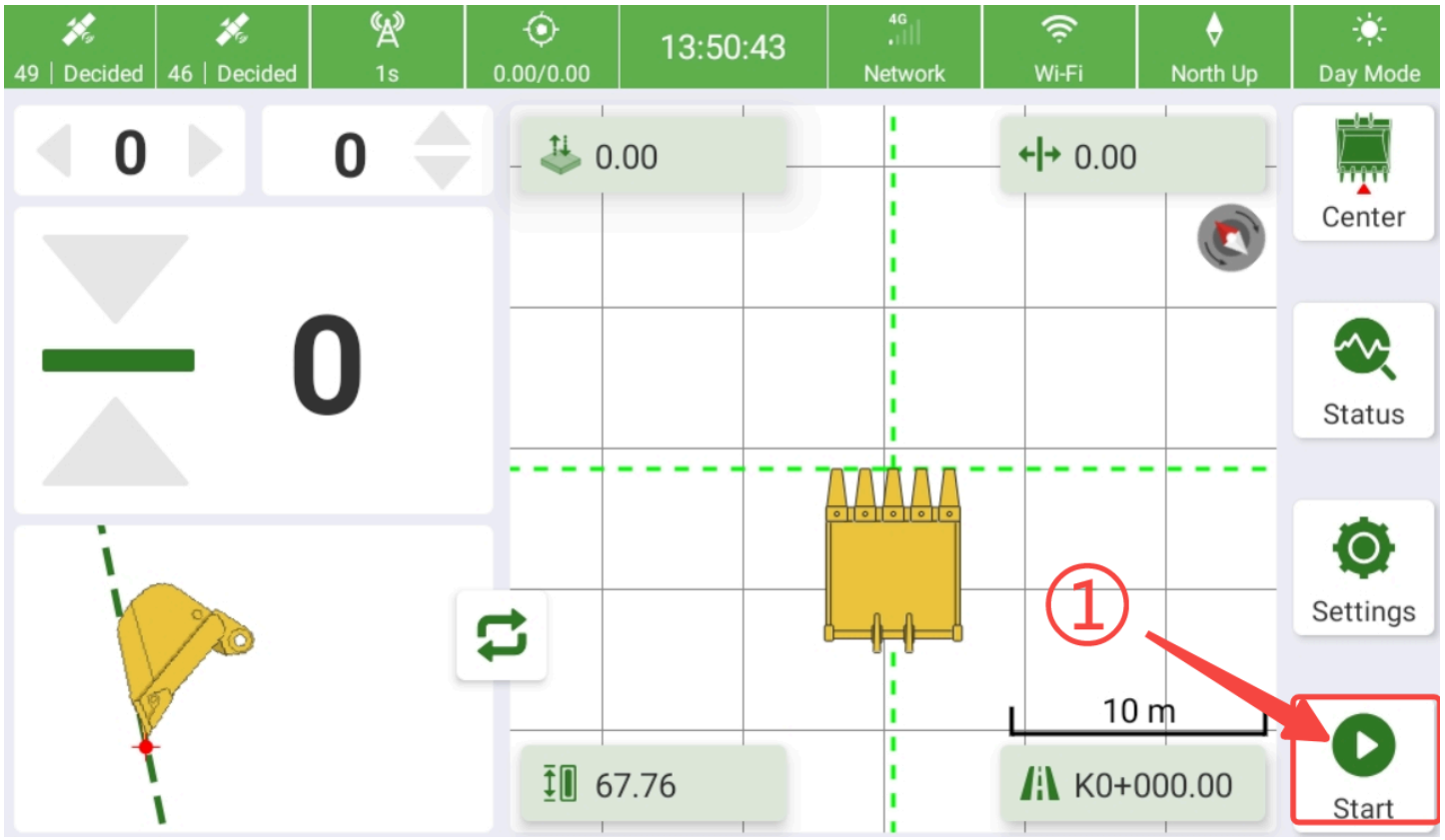






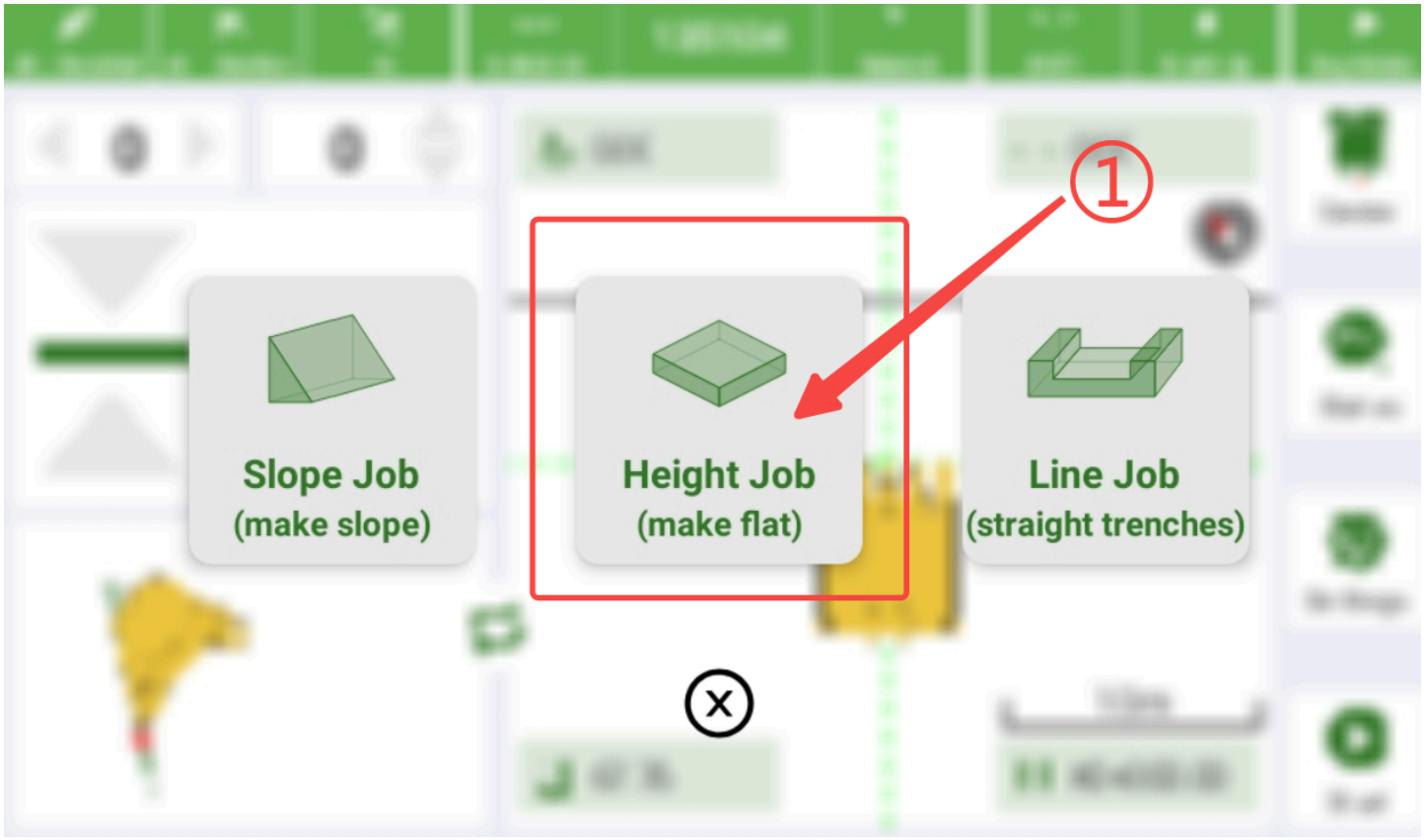
4. Operating Instructions

- Click "Start" to enter the job selection interface

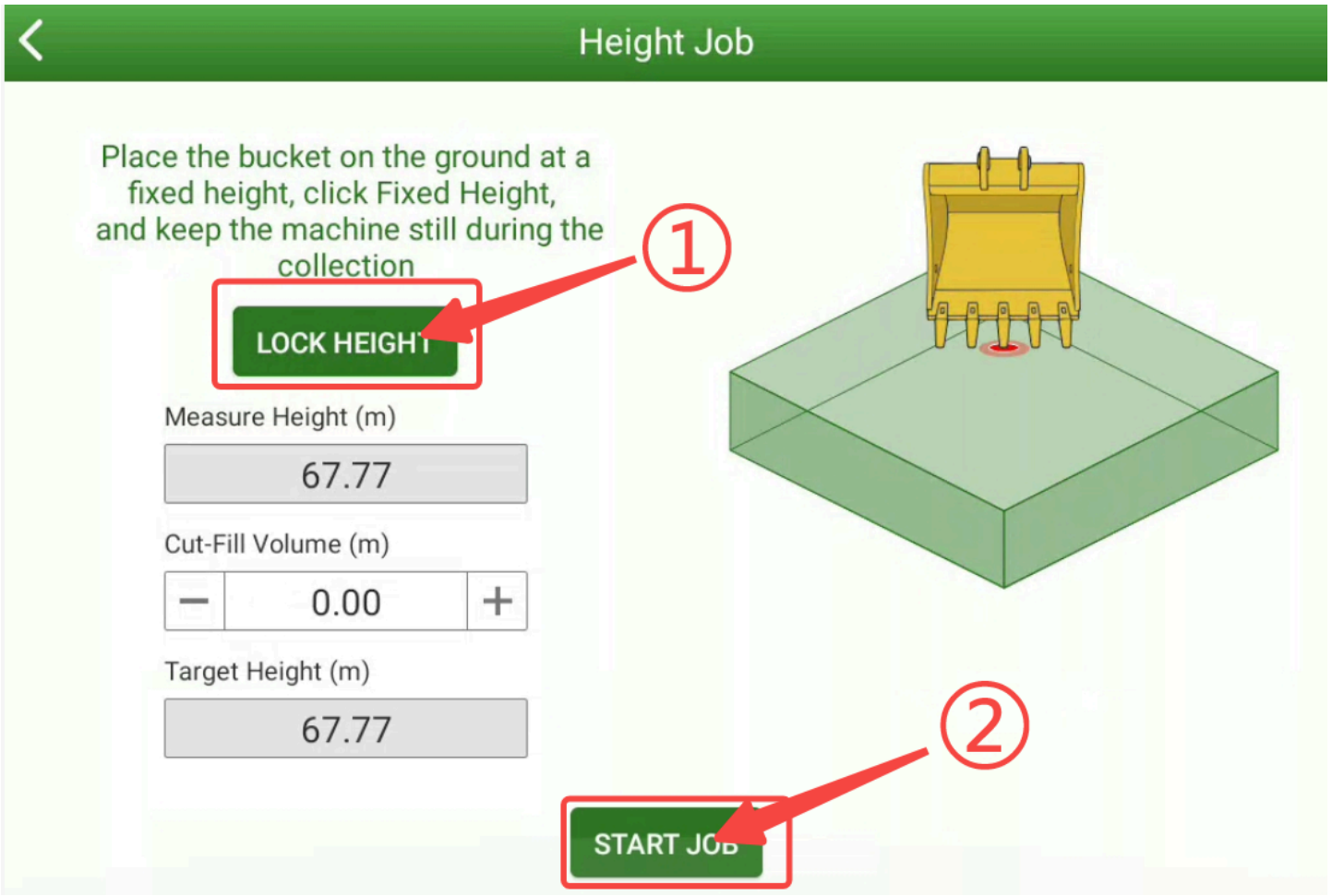


1. Altitude-holding operation

- Click 【Start】-【Fixed Elevation】-【OK】 to enter the fixed elevation interface

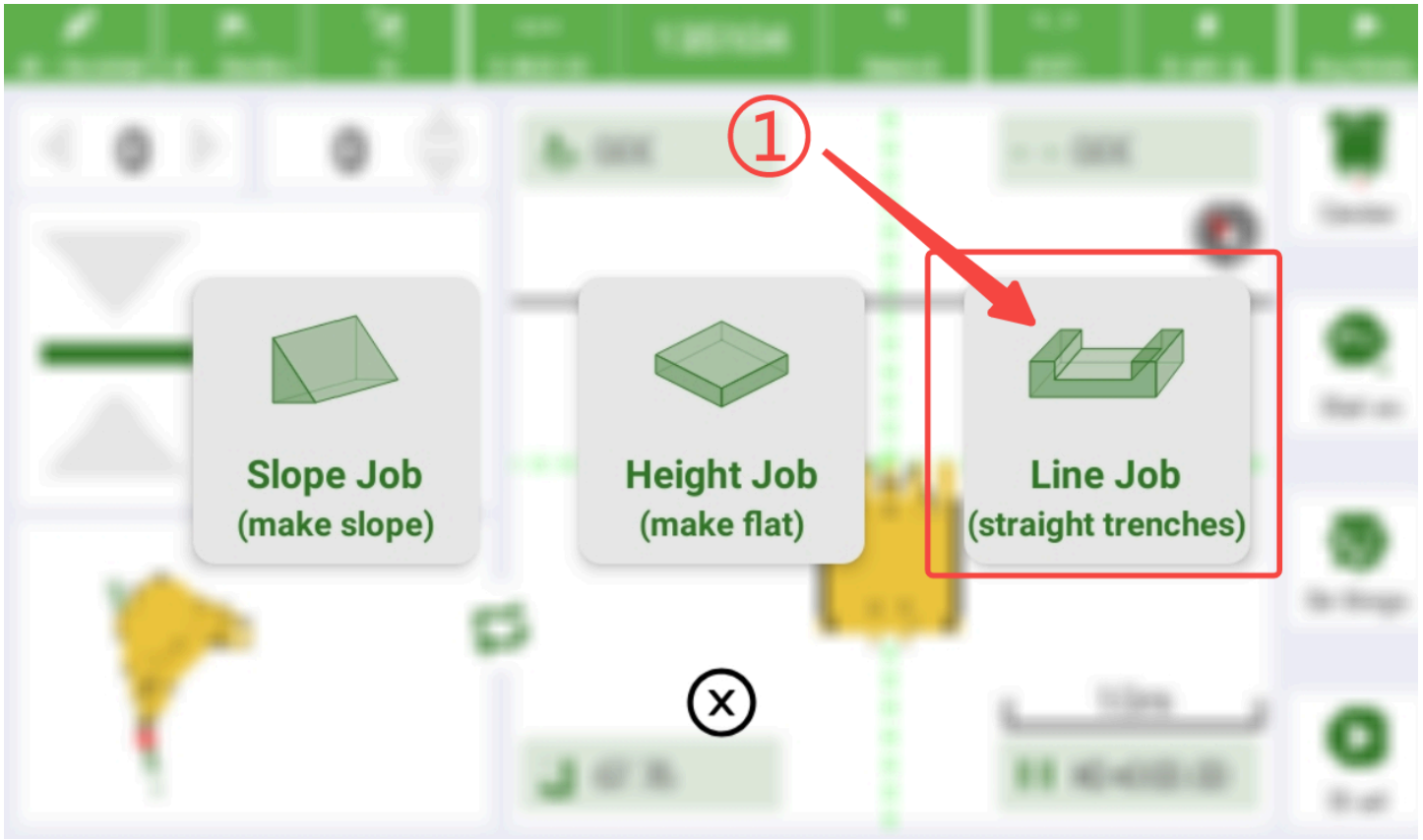


- After placing the bucket tip at the construction elevation, click [Set Elevation]. After a 5-second countdown, the elevation collection of the bucket tip will be completed. Click [Start Operation] to enter the elevation-guided interface.

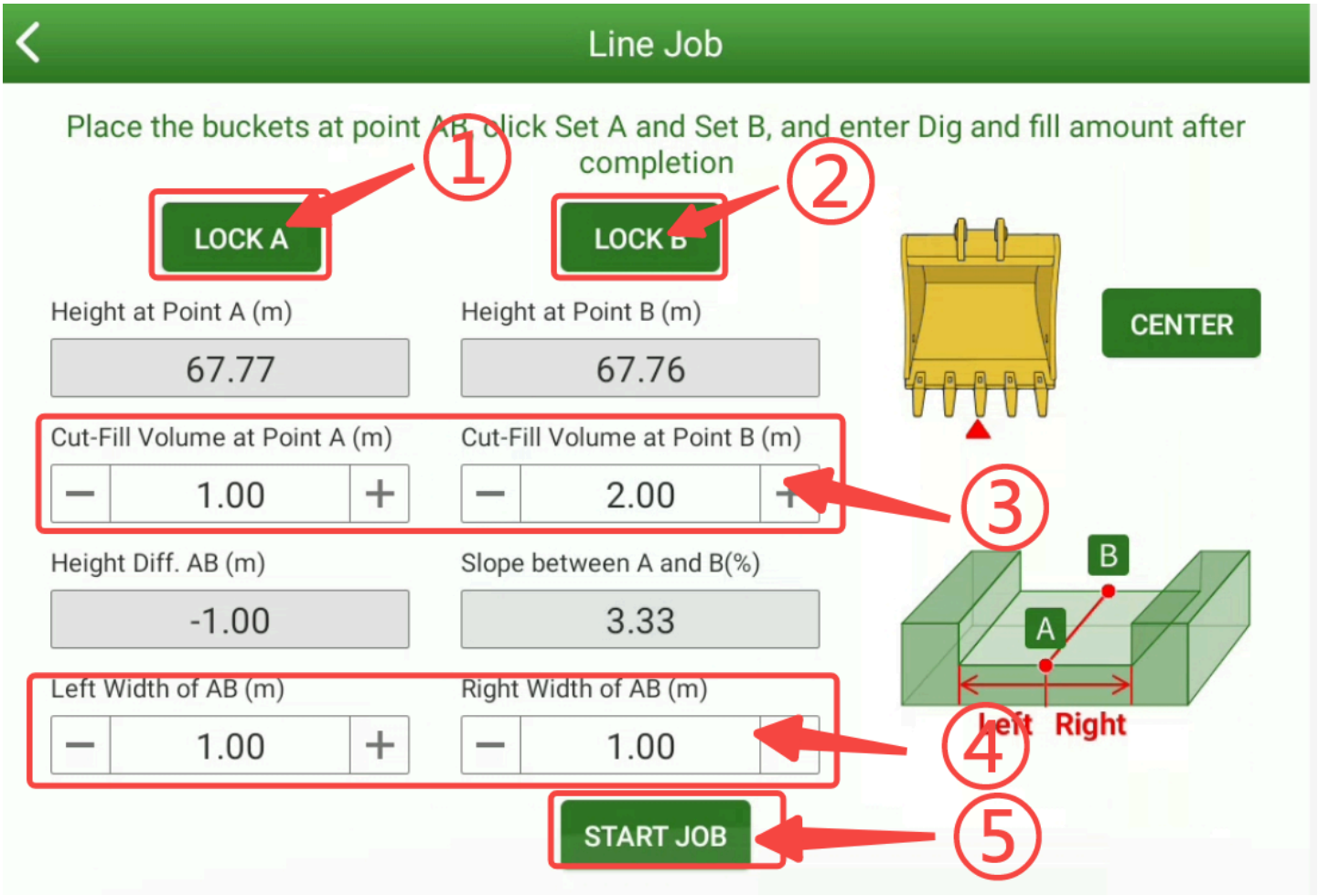


2. Alignment operation

- Click [Start] - [Alignment] - [Confirm] to enter the alignment interface

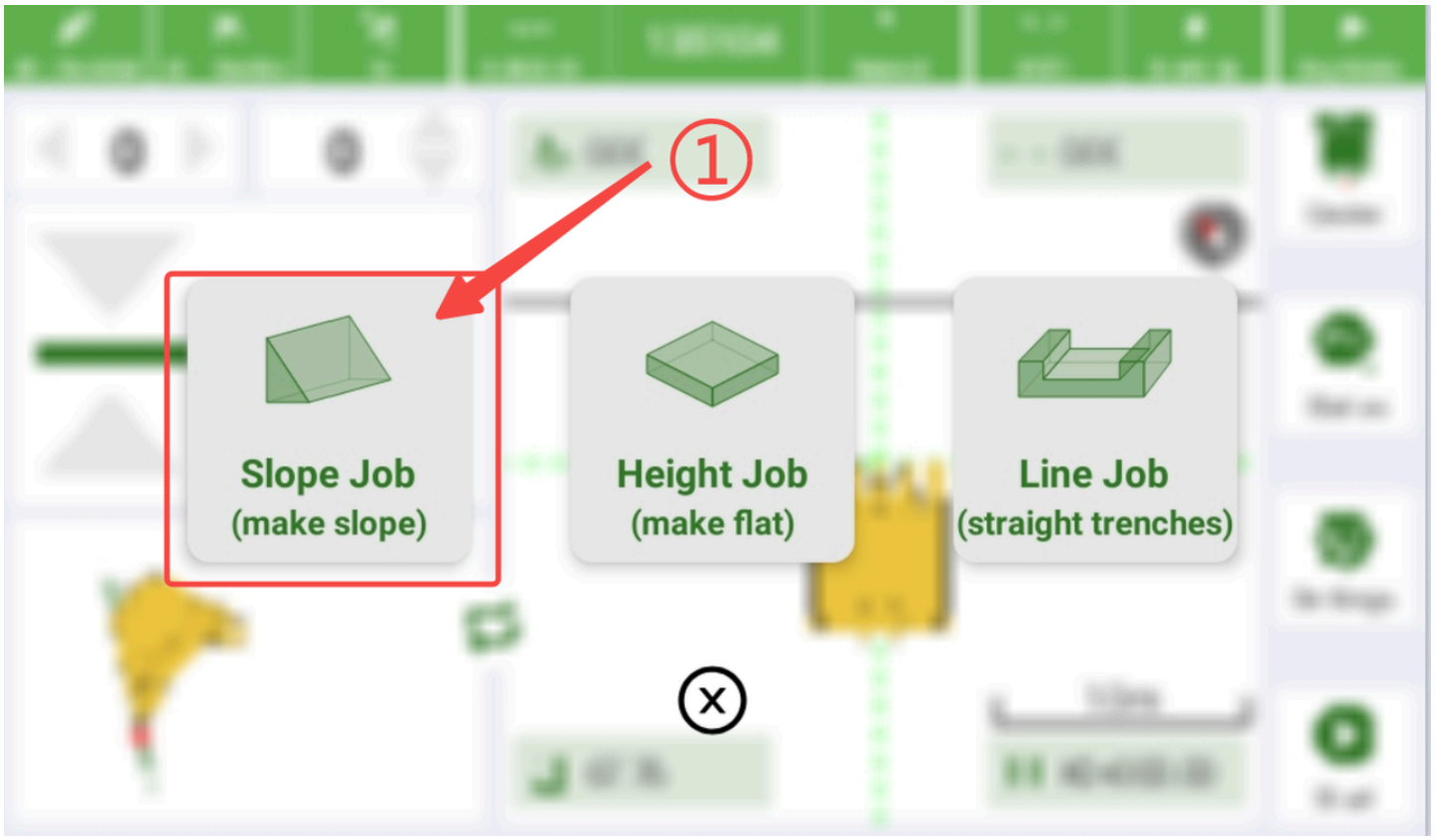


- Place the bucket tip at the starting and ending points of the ditch/embankment, click [Set Point A] and [Set Point B] respectively, input the operation data to complete the AB line setting, and click [Start Work] to enter the alignment guidance interface

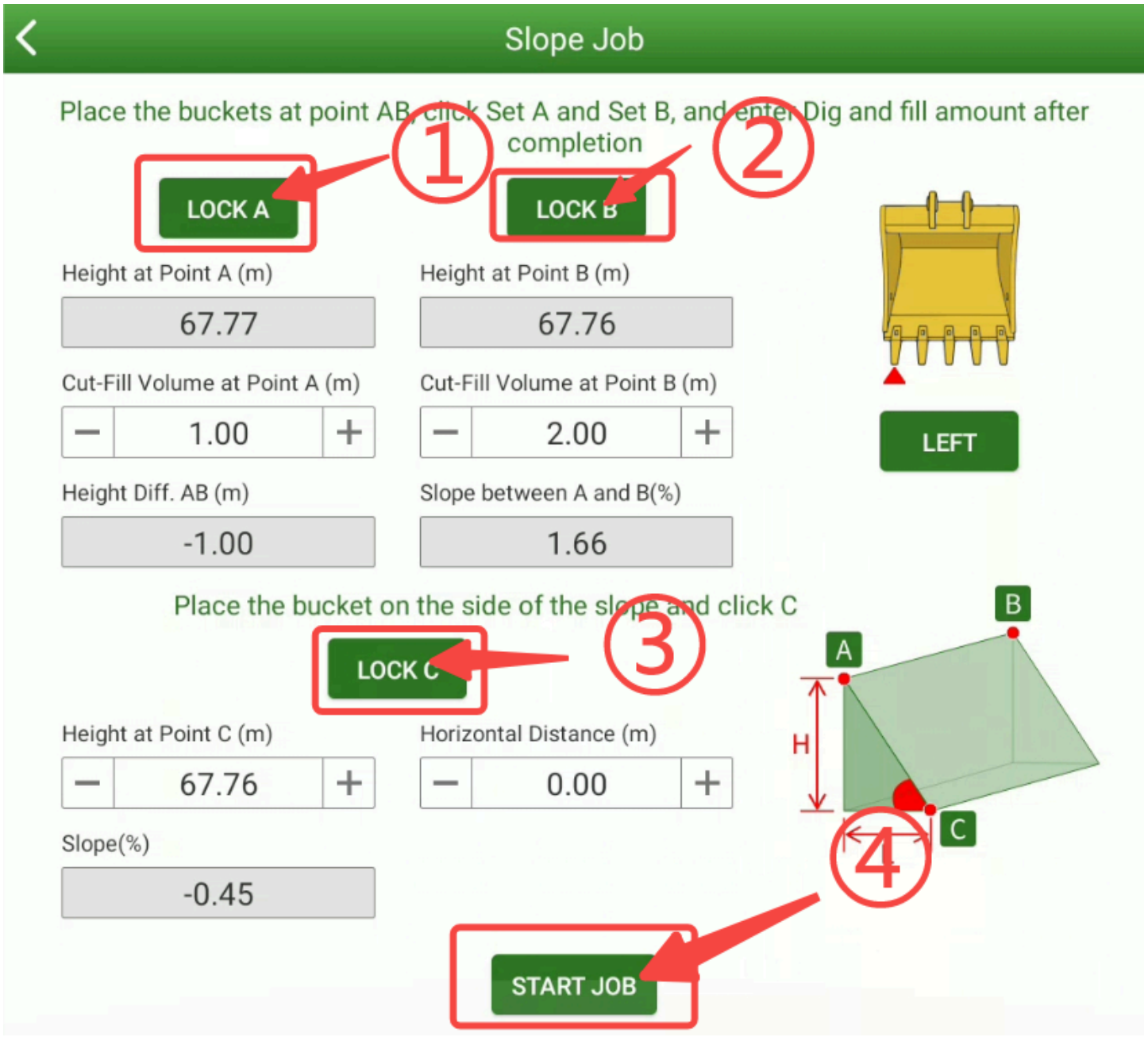


3. Fixed slope operation

- Click 【Start】-【Fixed Slope】-【OK】 to enter the fixed slope interface



- According to the diagram, place the shovel tip alternately at points A, B, and C, alternate fixed points, then input the parameters required for the operation, and click "Start Operation" to enter the puncture operation interface



5. Technical Parameters

Vehicle Infotainment System Technical Specification

10.1-inch Intelligent Vehicle-mounted Terminal		
Technical Parameters		
1	Operating System	Android 13
2	CPU	RK3588，quad-core Cortex-A76 + quad-core Cortex-A55
3	GPU	ARM Mali-G610 MC4
4	NPU	6.0 TOPs
5	ROM	32/64 GB
6	RAM	4/8 GB
7	MCU	STM32F429
8	Mobile Network	LTE-TDD: B38/B39/B40/B411 LTE-FDD: B1/B3/B8 WCDMA: B1/B8 EVDO/CDMA: BC0 GSM: 900/1800MHz
9	SIM	Single Card
10	Wi-Fi	IEEE 802.11 a/b/g/n/ac/ax
11	BT	BT5.0（BR/EDR+BLE）
12	GNSS	GPS/Beidou/Glonass/Galileo (Optional RTK Module Support)
13	LCD	10.1-inch, 1024×600, 600cd/m² brightness, horizontal/vertical viewing angle: 85°
14	TP	Multi-touch
15	Speaker	8Ω，3W
16	USB	USB2.0
17	Video Input	Optional, 1~4-channel AHD camera, 720P
18	Ethernet	Optional, 1000Mbps Ethernet port
19	CANBUS	Optional, 1~2-channel CANBUS
20	RS232	Optional, 1~2-channel RS232
21	Data Radio	Optional
22	Enclosure	Aluminum Alloy
23	Power Supply	9-36V wide-voltage input, switch control
Environmental Adaptability		
1	Temperature	Operation: -20°C ~ 70°C; Storage: -30°C ~ 80°C;
2	Protection Class	IP65