

# Universal Trail Assessment Process (UTAP)

## Tool Function & Calibration



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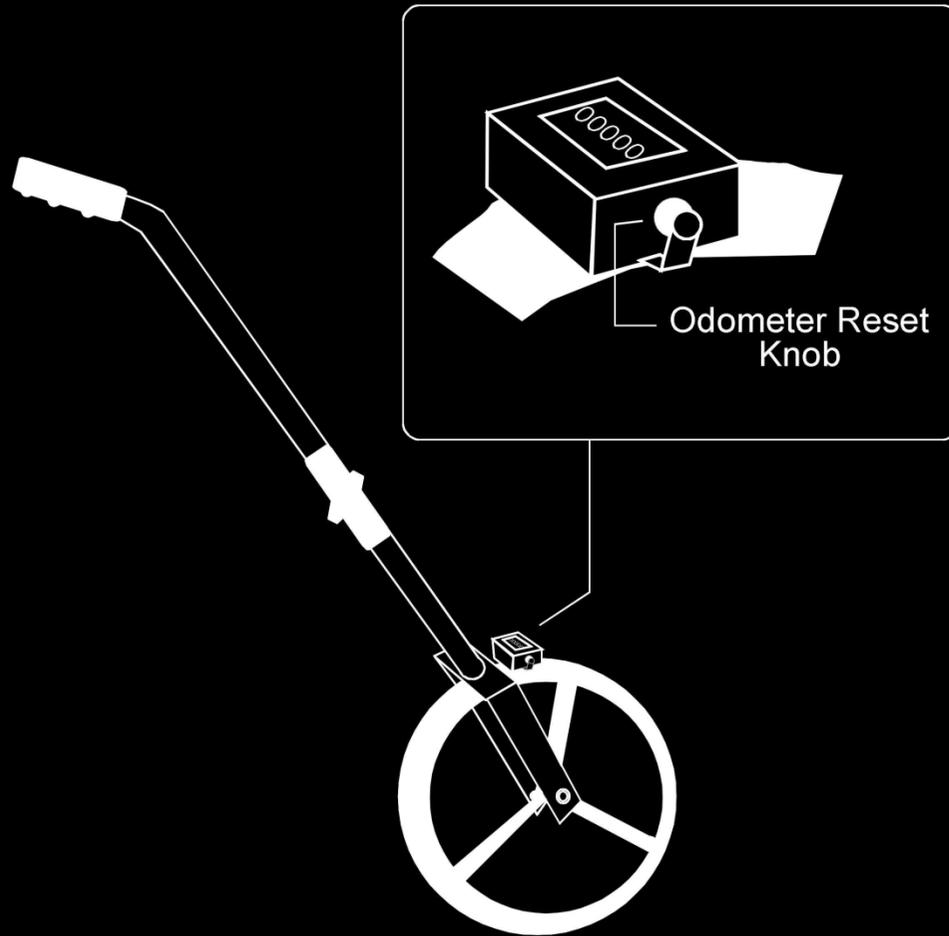
# Tool Function & Calibration Objectives

Identify each tool used for the UTAP  
& HETAP

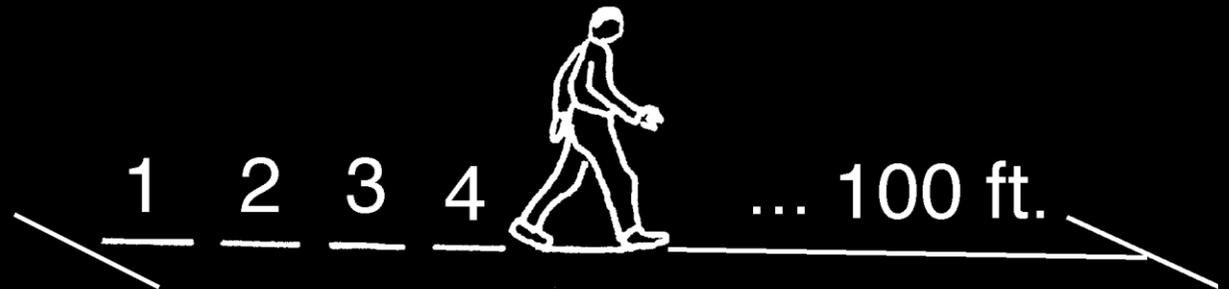
Perform tool calibrations

Describe how each tool functions

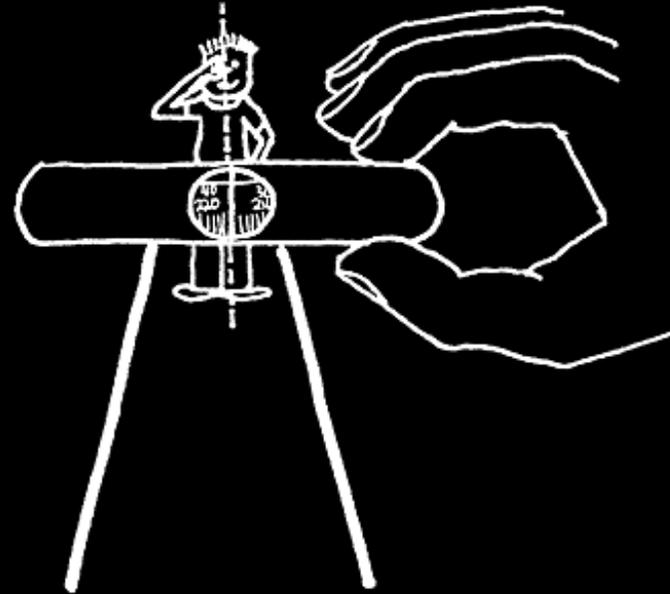
# Rolawheel



## Length of Pace

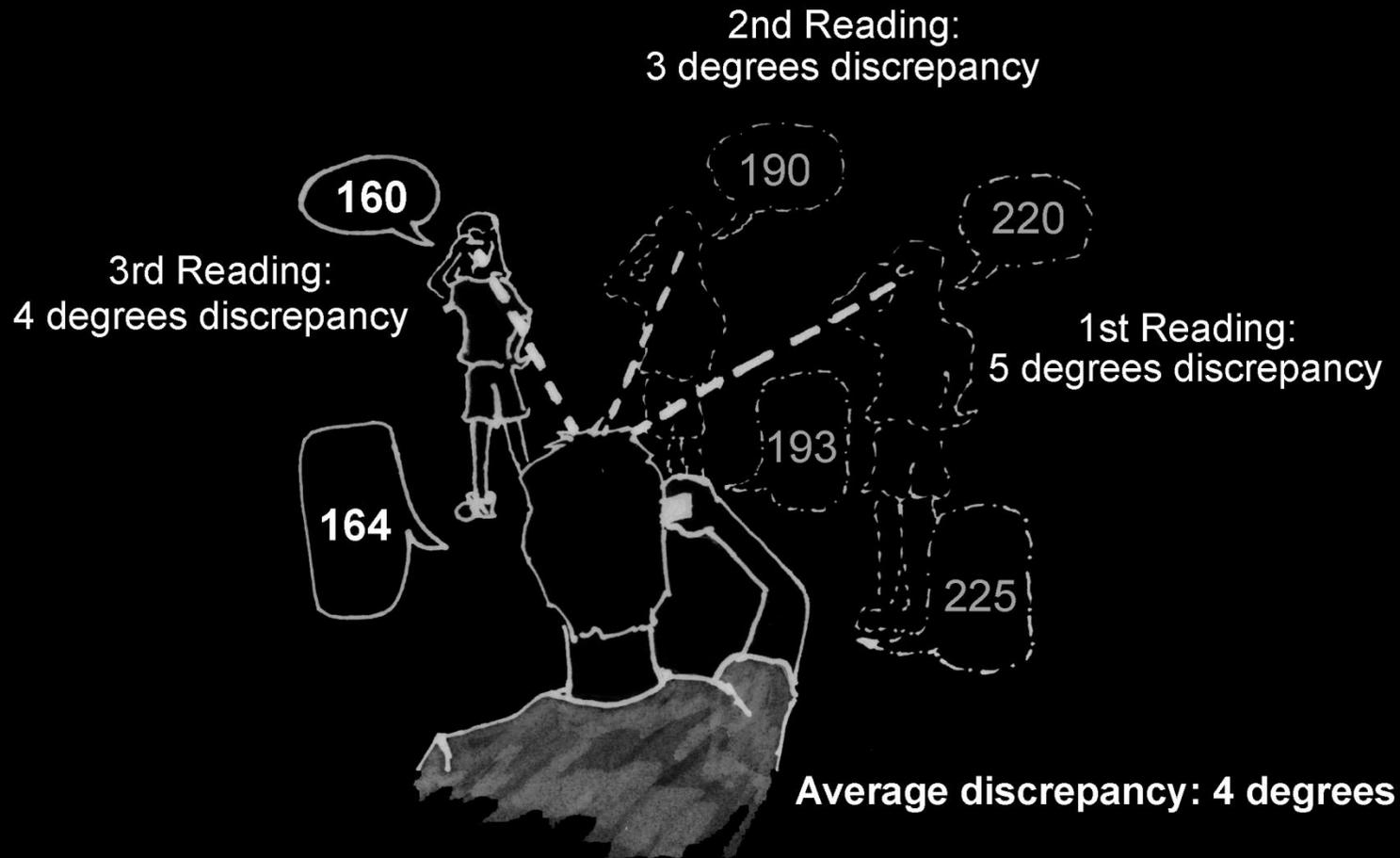


# Compass

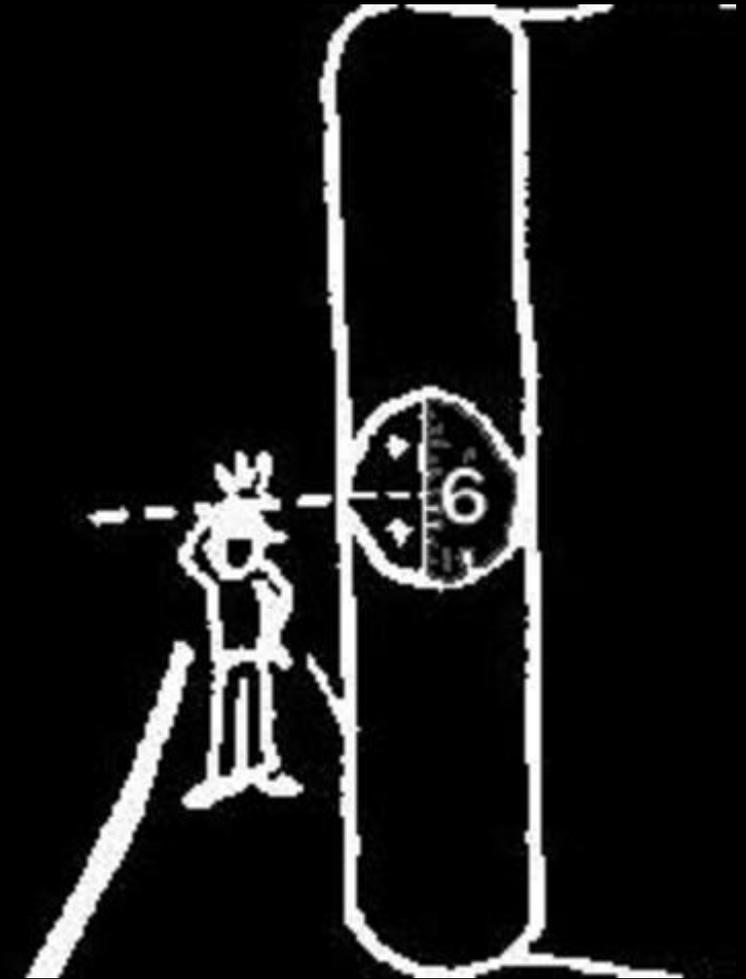


# Dominant Eye

# Calibrated Discrepancy for Compass Measurements



# Clinometer



# Clinometer Scales

# Determining Your Eye Level Target



# Inclinometer



On/Off  
Button

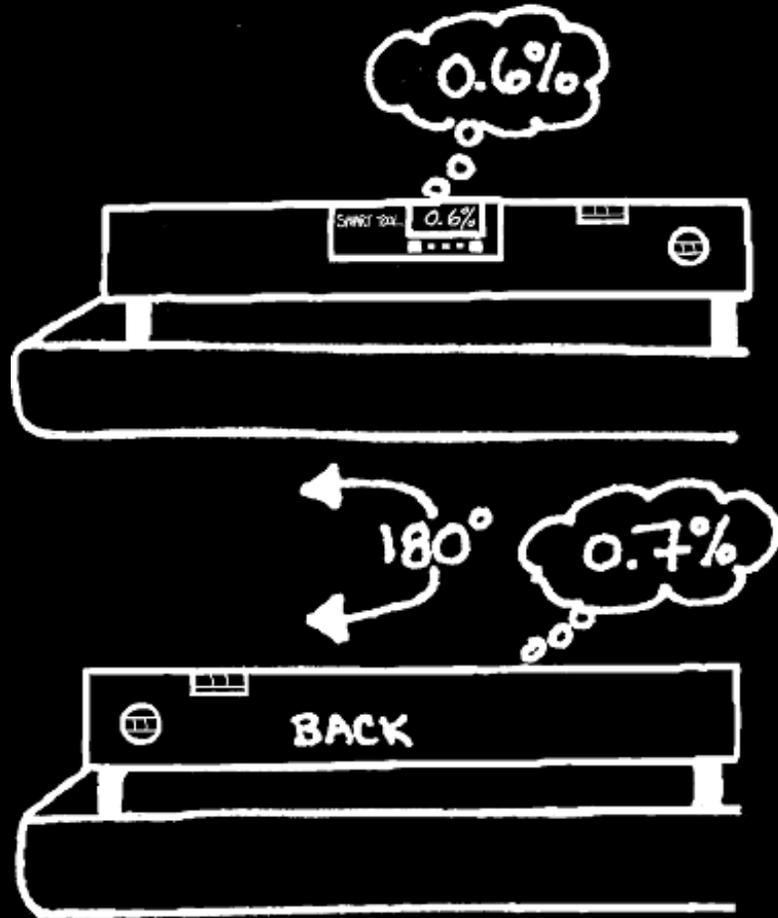


Calibrate  
Button

% in/ft  
Button

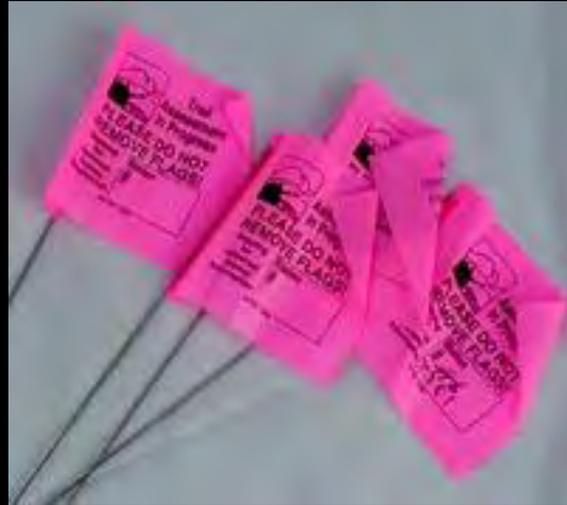
Hold  
Button

# Calibration Check



# Calibrating the Inclinometer





# Additional Tools



# HETAP – WISP Calibration

The grade, cross slope, and distance calibration should be checked before performing any trail assessment session



# HETAP – WISP Calibration

Calibration will need to be performed on a planar, smooth surface



# Slopes - Start Position

“Check Grade” or “Select to Calibrate”  
and then “Start Position” to Begin

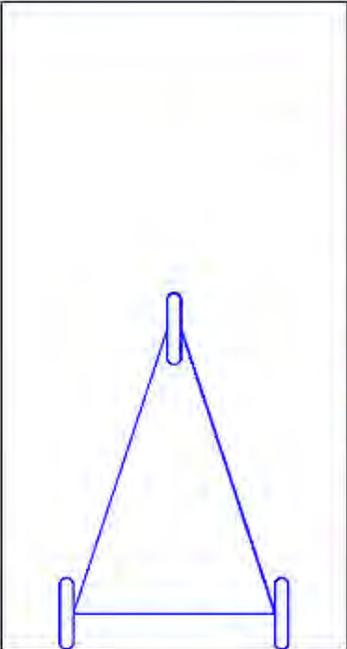
**Tilt Sensor Calibration**

**Tilt Calibration Verification:**

Set the data collection vehicle in the starting position.

Select [Check Grade].

Check Distance Calib



**Check Grade**

<b>Grade</b>	<b>X-Slope</b>
0.5 %	-0.3 %

**Select to Calibrate**

Tilt sensor data from Sensor Instrumentation Package Label:

**Ensure these numbers match your box!**

<b>X Axis (mV/deg)</b>	<b>Y Axis (mV/deg)</b>
35.079	34.812

Cancel



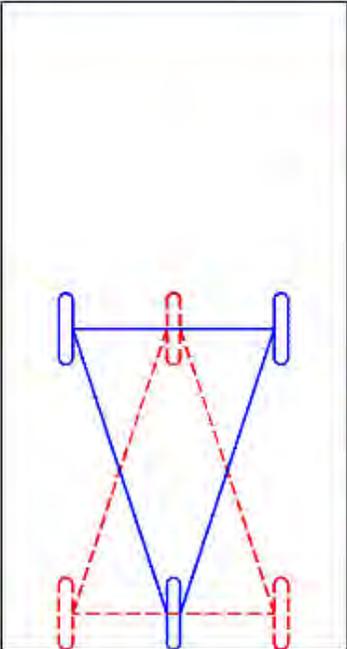
# Rotate 180° in same space

“Check X-Slope” or “Calibrate Grade”  
to Continue

**Tilt Sensor Calibration**

Rotate the vehicle 180° so the rear wheels straddle the original front wheel location and the front wheel sits between the original rear wheel locations.  
The Grade should be 0.3% ±0.3%.  
If it is, select [Check X-Slope].  
Otherwise, select [Select to Calibrate].

Check Distance Calib



Grade	X-Slope
-0.3 %	0.2 %

Select to Calibrate

Tilt sensor data from Sensor Instrumentation Package Label:

**Ensure these numbers match your box!**

X Axis (mV/deg)	Y Axis (mV/deg)
35.079	34.812

Cancel

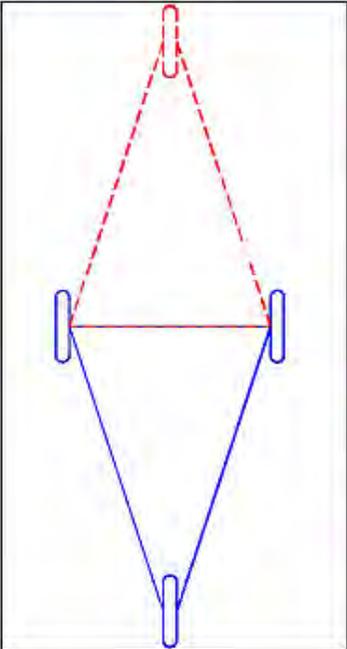


# Roll Forward

“Finish Checking” or “Calibrate X-Slope”  
to Continue

**Tilt Sensor Calibration**

Roll the vehicle forward until the rear wheels return to the starting position. The X-Slope should be  $-0.3\% \pm 0.3\%$ . If it is, select [Finish Checking]. Otherwise, select [Select to Calibrate].



**Finish Checking**

<b>Grade</b>	<b>X-Slope</b>
<b>-0.2 %</b>	<b>0.2 %</b>

**Select to Calibrate**

Tilt sensor data from Sensor Instrumentation Package Label:

**Ensure these numbers match your box!**

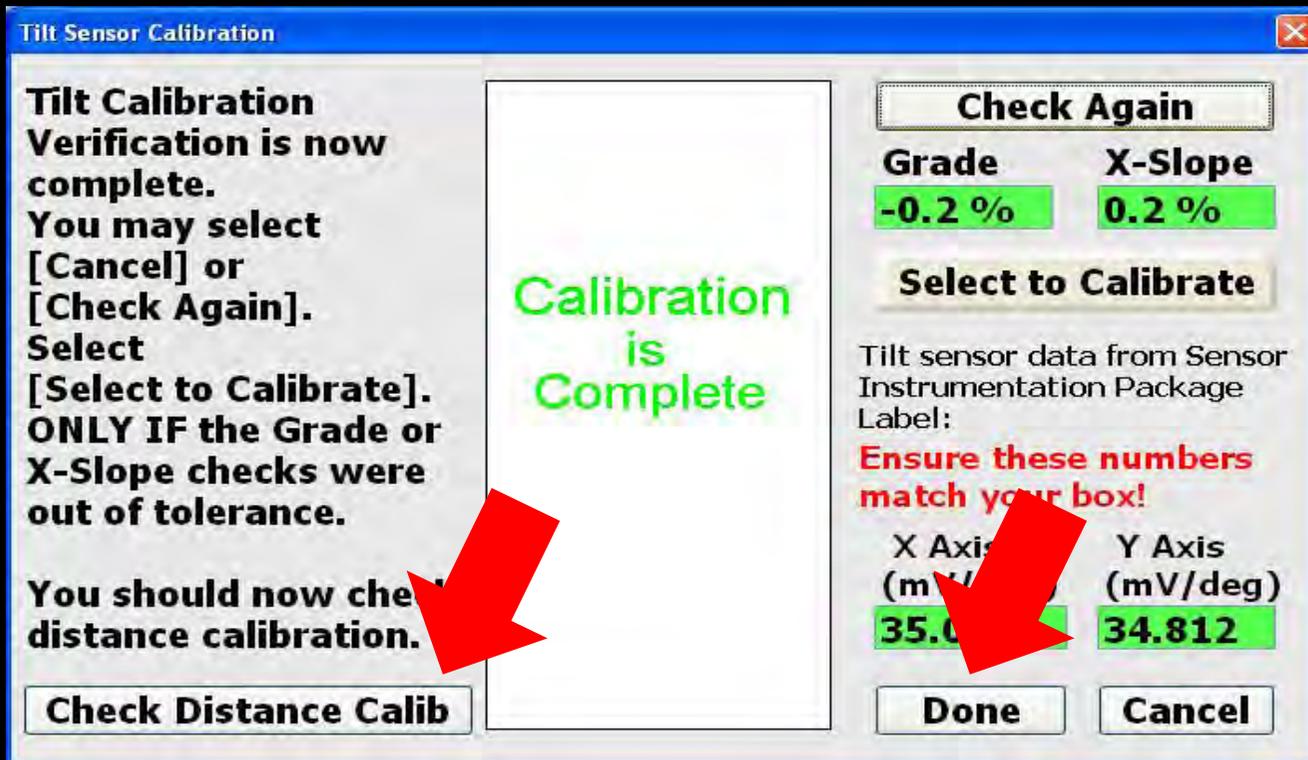
<b>X Axis (mV/deg)</b>	<b>Y Axis (mV/deg)</b>
<b>35.079</b>	<b>34.812</b>

**Check Distance Calib** **Cancel**



# Slopes Calibration Complete

Must always “Check” calibration before saving the new settings is allowed



“Check Distance” or “Done” to save new settings

# Distance - Start Position

Enter the measured Distance in the Calibration Distance Box (25ft min)

The screenshot shows a software window titled "Distance Calibration" with a close button in the top right corner. On the left, under "Distance Calibration Verification:", there are two numbered instructions: "1) Measure a known distance from the start line to the finish line." and "2) Set the rear wheels on the start line." Below these is a "Select [Start Position]." label. In the center is a diagram of a three-wheeled vehicle with a red "On Hold" label above its rear wheel. On the right, there are several input fields and buttons: "Magnet Count" (10), "Whl. Dia." (1.25), "Max. Dist. Range" (200), "Calibration Distance:" (50 Feet), "Select to Calibrate", "Distance Traveled" (-0.0), "Reset", "Done", and "Cancel".



Align Rear Wheel with Start Mark

# Distance - Start Position

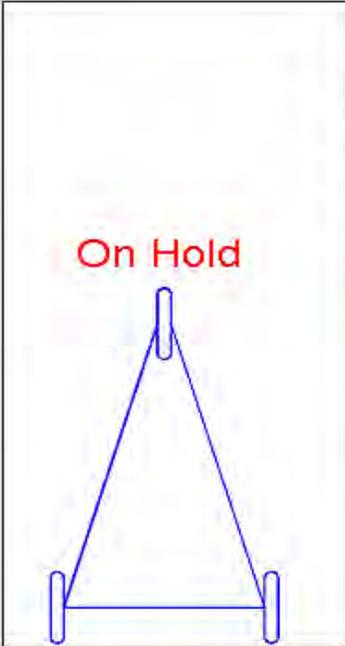
“Start Position” or “Select to Calibrate”  
then “Start Position” to Begin

**Distance Calibration**

**Distance Calibration Verification:**

1) Measure a known distance from the start line to the finish line.  
2) Set the rear wheels on the start line.

Select [Start Position].



**Start Position**

Magnet Count 10 - Whl. Dia. 1.25

**Max. Dist. Range** 200

**Calibration Distance:** 50 Feet

**Select to Calibrate**

**Distance Traveled** -0.0

Reset

Done Cancel



# Distance – Finish Line

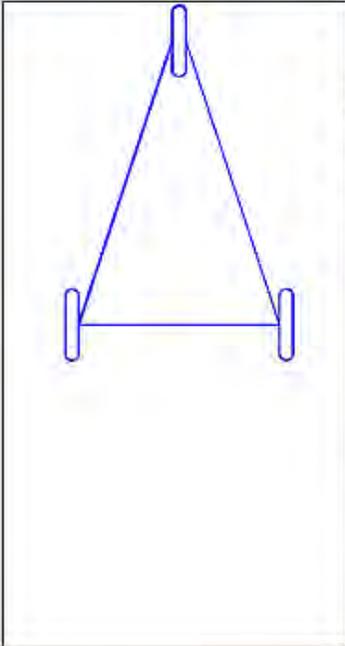
Select “Finish Line” when distance has been traversed (Verify Distance Traveled)

**Distance Calibration**

Roll from the start line to the finish line.

Select [Finish Line]

Select [Reset] any time you need to zero the "Distance Traveled".



**Finish Line**

Magnet Count 10 Whl. Dia. 1.25

Max. Dist. Range 200

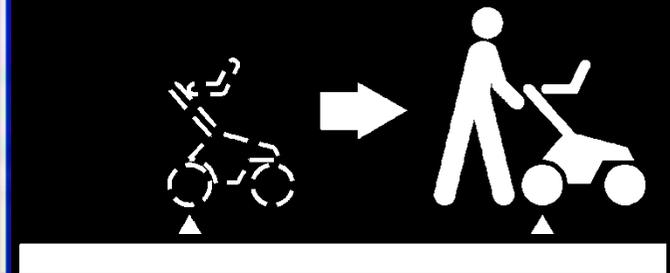
Calibration Distance: 50 Feet

Select to Calibrate

Distance Traveled 50.1

Reset

Done Cancel



Align Rear Wheel with Finish Mark

# Distance Calibration Complete

Must always “Check” calibration before saving of the new settings is allowed

Distance Calibration

Distance calibration is complete.  
You should now select [Check Calibration].

Calibration is Complete

Check Calibration

Magnet Count 10 Whl. Dia. 1.25

Max. Dist. Range 200

Calibration Distance: 50 Feet

Select to Calibrate

Distance Traveled -0.0

Reset

Done Cancel

“Done” to save new settings

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through research, design & education*