Guides and Resources: Hardware - QBot 2e

Localization Markers

This document provides rigid body configurations for the QBot 2e for use with a localization system.

Configuring a rigid body with the QBot 2e and Motive

Getting the Motive software to track the QBot 2e involves 2 steps.

1. Placing markers on the vehicle (rigidly attached to the vehicle) so that the cameras can see the vehicle
2. Tagging the rigid body configuration in Motive, so that it knows what the QBot 2e look like

For step 1, we have provided 4 examples of unique configurations for the QBot 2e (Figure 1). In case you want to use your own configurations, note the following important considerations. See the Research Studio Setup Guide for information on step 2.

Note: The marker configurations for each rigid body operating within the workspace simultaneously must be unique in order for the Motive software to be able to clearly identify one rigid body from another.

Note: It is recommended that five or more markers be used per vehicle. This adds redundancy leading to higher robustness because Motive will be less prone to losing tracking due to markers being obscured. This also reduces the chance that the solution to the pose estimates may be interchanged/confused amongst vehicles.

Note: The placement of the markers on the rigid body must be such that the pattern is NOT symmetric about any arbitrary plane, as it may result in aliasing. For example, placing four markers in a square configuration would lead to ambiguous orientation solutions in 90° intervals. This would make it impossible to discern 90° rotations.

Note: Make use of different heights when placing markers; for example, placing markers near the base of the QBot 2e as well as above it's camera.

Note: For the QBot 2e, use a hot glue gun to secure markers in place.

Note: Please contact tech@quanser.com if additional markers are needed.
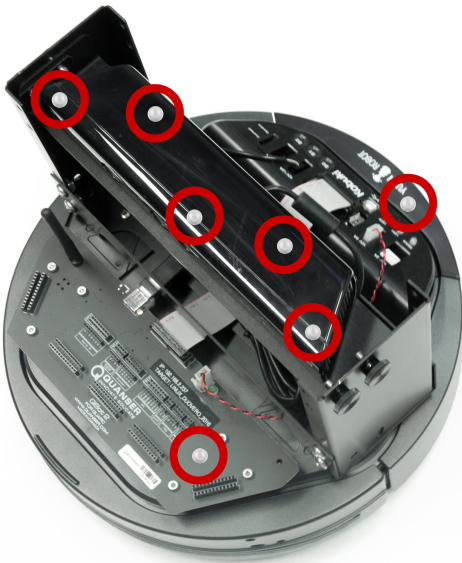
Note: The recommended size for the markers is 12.7mm (½") spherical markers.
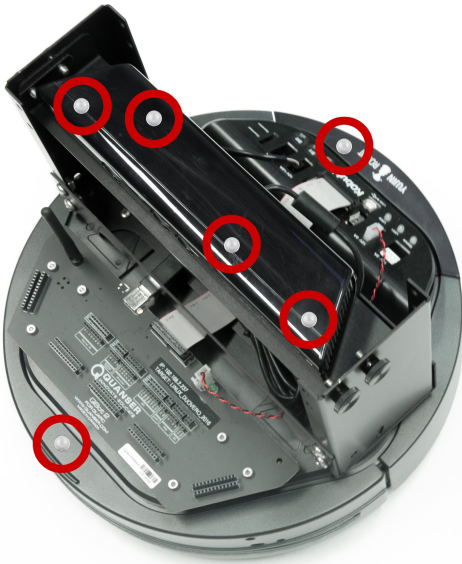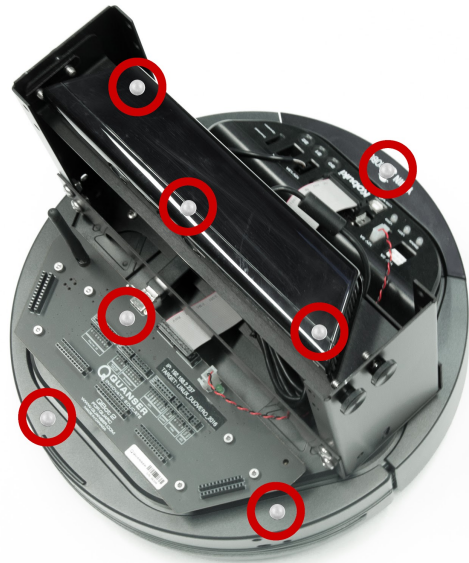
Configuration #1

Configuration #2

Configuration #3

Configuration #4

Figure 1: 4 examples of unique marker configurations for the QBot 2/QBot 2e