Position and Orientation
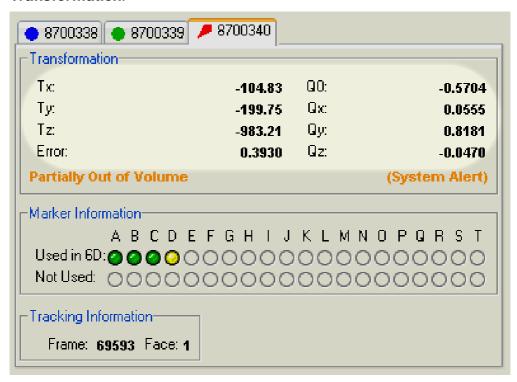
The position and orientation data for each tool is displayed in the bottom right section of the tool tracking utility, under the heading **Transformation**.

ToolBox displays the following position and orientation information:

Transformation Data	Description
Tx, Ty, Tz	The 3D coordinates of the tool's origin in millimetres, in the coordinate system of the Position Sensor. If a reference tool has been selected, then the 3D coordinates of all other tools will be reported relative to the reference tool (instead of in the coordinate system of the Position Sensor). If a tool tip offset has been applied, the 3D coordinates indicate the position of the tool tip instead of the tool's origin.
Q0, Qx, Qy, Qz	The orientation of the tool, in quaternion units. By default, the orientation is reported in

	quaternion units, but can also be reported as Euler angles. (Select **View > Euler Angles**.)
Rx, Ry, Rz	The orientation of the tool about the Position Sensor's *x*, *y*, and *z* axes, respectively, in Euler angles. To display Euler angles instead of the default quaternion units, select **View > Euler Angles**.
Error	The error value is the result of the least squares minimization between the tool's tool definition file information and the data from the tool's markers measured by the system. It is an RMS (root mean square) value with units in mm.

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