

Visual3D models segments as cones, cylinders, spheres, and ellipsoids. Visual3D doesn't compute the volume of a segment based on these geometries, but the calculations are straightforward.

Volume of Conical Frustrum

One of the Visual3D segment geometries is labeled a **Cone**. To be precise the **Cone** refers to a **conical frustrum**. A **frustra of right cones** is created by cutting the top off of a cone such that the cut is parallel to the base of the cone.

[frustraOfRightCones1.gif](#)

A frustra of right cones is created by cutting the top off of a cone such that the cut is parallel to the base of the cone.

The volume of a conical frustrum is:

[Volume_Frustrum.jpg](#) This value is not computed by default, but can be added as a Model Metric Item.

[Volume_Frustrum_Metric.png](#)

Volume of Ellipsoid

In Visual3D the inertial properties of an ellipsoid (sphere) are calculated using only the distal radius.

[sphere.gif](#) The distance from the proximal end of the segment to the center of mass of the segment.

CG_from_proximal_end = L

[Volume_Ellipsoid.jpg](#)

Volume of Elliptical Cylinder

[Cylinder.gif](#) Visual3D uses the Radius at the distal end of the segment as the Radius of the cylinder.

[Volume_Cylinder.jpg](#)

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