A novel artefact for calibration of the scale in 3D X-ray Computed Tomography (CT) is presented. The artefact comprises a carbon fibre tubular structure on which a number of reference ruby spheres are glued. The artefact is positioned and scanned together with the workpiece inside the CT scanner providing a reference system for measurement. The artefact allows a considerable reduction of time by compressing the full process of calibration, scanning, measurement, and re-calibration, into a single process. The method allows a considerable reduction of the amount of data generated from CT scanning. A prototype was calibrated and its applicability demonstrated.