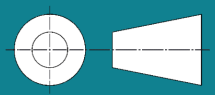
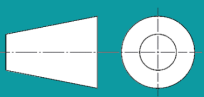
Major Differences between ASME Y14.5 and ISO GPS

	Major Differences	ASME Y14.5	ISO
INTENT OF STANDARD	SPECIFICATION TOPICS	The scope of the standard covers part geometry only. Does not include inspection of the part.	ISO standards cover part geometry, inspection, as well as classes and tolerances.
	PRIMARY STANDARDS FOR THEORY AND PART DIMENSIONING PRACTICES	**ASME Y14.5 - 2018**, formerly **ASME Y14.5 - 2009** **There is no requirement to update to the 2018 standard with the newest update release.**	**ISO 8015** (Fundamental rules of GPS) **ISO 1101** (GPS drawing symbols and rules for use) **ISO 22081**, formerly **ISO 2768-1 & -2** (General geometrical tolerance standards) Several other standards are used for certain industries or for specific instances. ie. ISO 14405
RULES & RECOMMENDATIONS	MAKING SIZE CONTROL FORM	By default (Rule #1), no symbol	Per ISO 14405 
	MAKING SIZE INDEPENDENT OF FORM		By default: Form is independent of size, no symbol
	RECOMMENDED (BUT NOT MANDATORY) PROJECTION METHOD	Third angle 	First angle 
LOCATION TOLERANCES	POSITION 	Only applied to a Feature of Size (FOS) *Composite Position is also different - see below*	May be applied to a Feature of Size (FOS) or a surface
	SYMMETRY 	In the **ASME Y14.5 - 2009** Standard, **derived median points** of directly opposing elements of the symmetrical surfaces must lie within the tolerance zone, which consists of a pair of parallel planes on equal sides of a central datum plane. Can only apply Regardless of Feature Size (RFS). In the **ASME Y14.5 - 2018** standard, Symmetry has been removed.	The **extracted median surface** of the symmetrical surfaces must lie within the tolerance zone, which consists of a pair of parallel planes on equal sides of a central datum plane. Symmetry in the ISO standard is similar to the position tolerance symbol in ASME Y14.5. Can be applied at RFS, MMC, or LMC.
	CONCENTRICITY 	In the **ASME Y14.5 - 2009** Standard, derived median points of diametrically opposing elements of a reference circular feature must fall into a cylinidrical tolerance zone defined by a datum axis. Many points are required for measurement. Can only apply Regardless of Feature Size (RFS). Only applies to 3D objects. In the **ASME Y14.5 - 2018** Standard, Concentricity has been removed.	The **extracted median line** is formed of all center points of the cross sections. This extracted median line must fall into a cylindrical tolerance zone defined by a datum axis. Concentricity in the ISO standard is similar to the position tolerance symbol in ASME Y14.5. Can be applied at RFS, MMC, or LMC. Applies to the 2D cross section (concentricity): ACS ⌾ ⌀0.05 A Applies to the 3D axis (coaxiality): ⌾ ⌀0.05 A

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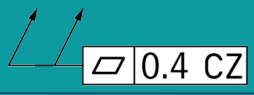
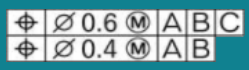
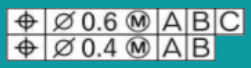
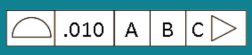
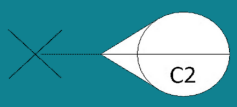
SIMILAR CONCEPTS	CONTROLLING COPLANARITY OF SURFACES	Use "profile of a surface" symbol and indicate the number of coplanar surfaces. ex: 	Use "flatness" symbol, indicate the number of coplanar surfaces, and include "CZ" (common zone) in the feature control frame. ex: 
	COMPOSITE VS. MULTIPLE-SINGLE SEGMENT CONCEPT FOR POSITION AND PROFILE TOLERANCES	These control frames have different meanings in the ASME Standard: **Multiple-Single Segment**  *both frames control location and orientation **Composite**  *bottom frame only controls orientation, not location	 * Both frames control location and orientation in ISO. * Whether it is composite or multiple-single segment, both interpretations are the same in the ISO standard.
	UNEQUALLY DISPOSED PROFILE	Indicated by the symbol: 	Indicated by: UZ
	BONUS TOLERANCE RULES & RECIPROCITY	 Only gives "bonus tolerance" from Size to Geometry 0 Tolerance at MMC allows for ISO "reciprocity" ("bonus tolerance" given from Geometry to Size)	 Only gives "bonus tolerance" from Size to Geometry  Reciprocity allows "bonus tolerance" to be distributed to either Size or Geometry as needed
SYMBOL EXISTS ONLY IN ASME	CONTINUOUS FEATURE		no symbol
	STATISTICAL TOLERANCE		no symbol
	DATUM TRANSLATION		no symbol
	MOVEABLE DATUM TARGET		no symbol
	COUNTERBORE / SPOTFACE / COUNTERSINK / DEPTH		no symbol