

BENEFITS OF THE MAXIMUM MATERIAL REQUIREMENT

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Summary. The position tolerance may be applied to the features of size: holes or their patterns [ISO 5458]. The position tolerance specifies that the actual axis of each single hole or each hole in a pattern shall be within the cylindrical tolerance zone (Fig. 1). The practical question is how the toleranced holes will accommodate mating pins? In fact the assembly is determined not by the hole axes location and form, but by configuration of their surfaces – the fitability is inseparably connected with clearance between mating features. So, the different approach to the tolerancing shall be applied – the default independency principle shall be suspended because assembly of parts depends on the combine effect of the size and geometrical deviations [ISO 2692](Fig. 2).

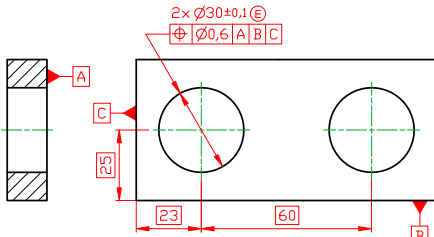


Fig. 1. The position tolerance specification for two hole pattern.

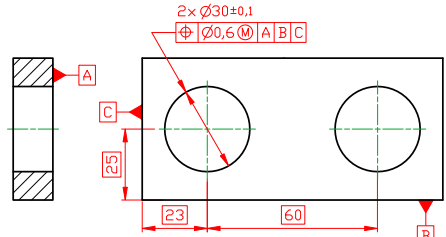


Fig. 2. The position tolerance specification for two hole pattern with MMR modifier.

Below screenshots of final scenes from the animations developed to present difference between both tolerancing concepts are given. The MMR benefit is clearly visualised.

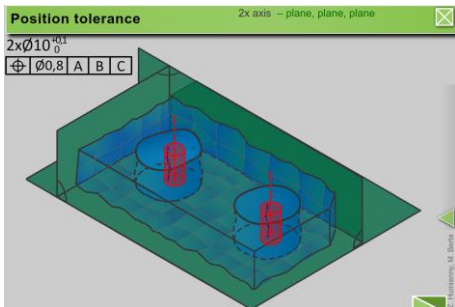


Fig. 3. Missed functional tolerancing.

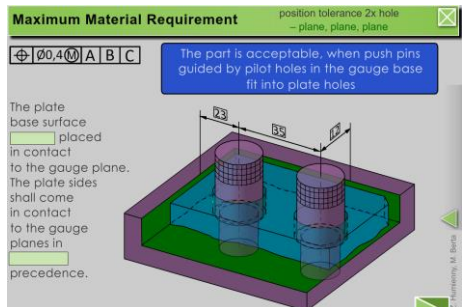


Fig. 4. Functional tolerancing.