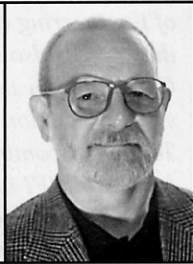


Inspection Acceptance Interpretation for Flower-Shaped Washer Heads

Non-round washer heads must meet maximum and minimum washer diameter requirements of the applicable fastener specification.

by:

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When cold heading hex washer heads and hex flange head screws and bolts, the shape of the washer portion of the head is frequently non-round due to the natural flow of the material. The washer tends to take on a six-petal flower shape. Small indentations line up with the corners of the hex head and small bulges correspond to the location of the six flats of the hex head.

On several occasions, I have been asked about the acceptable limits of this distorted, non-round shape. None of the inch or metric standards specifically address this issue. And since the allowable degree of non-roundness is not addressed by the standards, the measurement results must fall within the maximum and minimum washer diameter limits as specified in the applicable fastener specification.

When utilizing a standard micrometer or similar measurement instrument, if the smallest washer diameter measure-

ment is below the low limit, or if the largest washer measurement is greater than the high limit, then the washer workpiece is non-conforming.

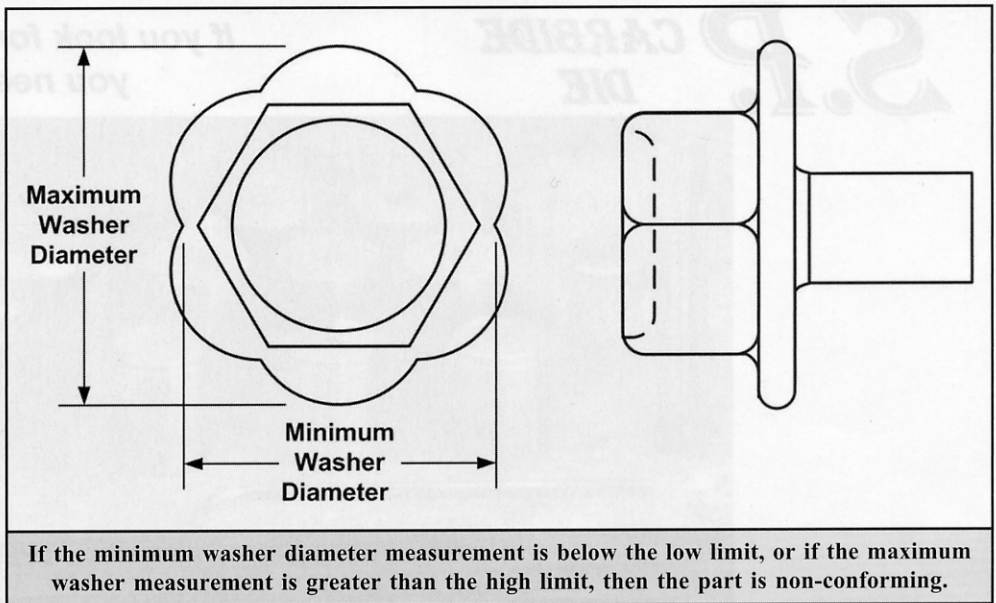
Minimizing the Flower Shape During Heading

The flower shape can be minimized during cold heading by machining a series of concentric circular grooves in the face of the heading die or by cutting a counterbore 0.005" to 0.015" (0.13 to 0.38 mm) deep in the face of the heading die the size of the desired washer diameter.

The circular grooves or shallow counterbore interrupt material flow making the washer more round than if these features were not a part of the heading die design.

To learn more or for information on fastener inspection equipment, contact the author or **Circle 202**.

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Joe Greenslade is a regular contributor of articles to this magazine. Greenslade has been active in the fastener industry since 1970 and has held positions with major fastener producing companies.