

# VALUE ADDED FASTENERS

SUPPLEMENTAL QUALITY STANDARD -

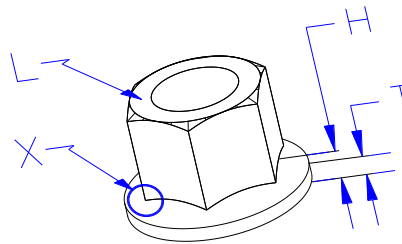
Fasteners Used for Nut & Retainer Assembly

ALPHAUSA – 33375 GLENDALE AVE. LIVONIA, MI 48150-1657 PH: 734 523-1000 FAX: 734 425-1297

**This document will better define areas of a nut that are critical to assembled part quality and performance.**

The staking process attaches a nut to a stamping by placing the hex of the nut through a hex shaped hole in a stamping. Once the nut is placed in the stamping, a tool is used to shave two to six corners of the nut hex down to the surface of the stamping. This shaved metal serves to secure the nut into the stamping.

Fasteners that are assembled into stamped metal products are subjected to automated feed systems requiring exceptional product uniformity. Uniformity in dimension must be within each lot as well as from lot to lot. In addition, the attachment of fasteners by staking the corners of the hex places emphasis on this area.



- L = PREVAILING TORQUE FEATURES MUST NOT DEFORM THE DIMENSION ACROSS THE FLAT OF THE HEXAGON ON ALL SIDES. SIDE LOCK TYPE FEATURES CAUSE VARIATION IN STAKE SIZE/STRENGTH AND FOR THIS REASON SHOULD BE AVOIDED. TOP LOCK PREVAILING TORQUE FEATURES ARE DESIRABLE. THE TOP LOCK DESIGN IS UP TO THE MANUFACTURER AS LONG AS IT MEETS ALL APPLICABLE PERFORMANCE STANDARDS.**
- X= HEX CORNER FILL MUST BE UNIFORM ALONG THE FULL LENGTH OF THIS EDGE AND ON ALL SIX CORNERS. INCOMPLETE CORNER FILL CAUSES UNDERSIZE STAKES WHICH RESULT IN ASSEMBLY WEAKNESS OR FAILURE. BURRS OR FLASH WHERE THE HEX MEETS THE FLANGE CAN CAUSE THE NUT TO ASSEMBLE CROOKED IN THE STAMPING.**
- H= THE HEIGHT OF THE FLANGE FROM THE BOTTOM OF THE NUT TO WHERE THE FLANGE MEETS THE HEX AREA MUST BE CONSISTENT. THIS DIMENSION MUST BE UNIFORM WITHIN EACH LOT AND FROM LOT TO LOT. VARIATION CAUSES THE NUT TO RATTLE IN THE ASSEMBLY DUE TO UNDERSTAKING OR DEFORMATION OF THE STAMPING DUE TO OVERSTAKING.**
- T= FLANGE DIAMETER MUST BE CONCENTRIC TO THE THROUGH HOLE AND THE HEX. FAILURE TO CONTROL THIS FEATURE CAN CAUSE AUTOMATION JAM UPS AND OFF-CENTER STAKING. FLANGE THICKNESS MUST BE UNIFORM FOR REASONS STATED ABOVE.**



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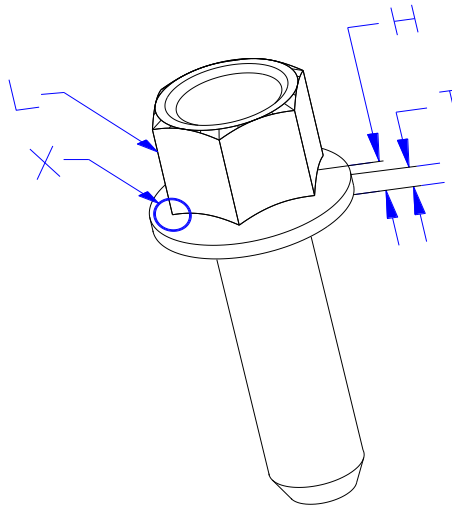
**SUPPLEMENTAL QUALITY STANDARD - Fasteners Used For Bolt & Retainer Assembly**

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**This document will better define areas of a bolt that are critical to assembled part quality and performance.**

The staking process attaches a bolt to a stamping by placing the hex of the bolt through a hex shaped hole in a stamping. Once the bolt is placed in the stamping, a tool is used to shave two to six corners of the bolt hex down to the surface of the stamping. This shaved metal serves to secure the Bolt into the stamping.

Fasteners that are assembled into stamped metal products are subjected to automated feed systems requiring exceptional product uniformity. Uniformity in dimension must be within each lot as well as from lot to lot. In addition, the attachment of fasteners by staking the corners of the hex places emphasis on this area.



**L = HEX CORNER FILL MUST BE UNIFORM ALONG THE FULL LENGTH OF THIS EDGE AND ON ALL SIX CORNERS. INCOMPLETE CORNER FILL CAUSES UNDERSIZE STAKES WHICH RESULT IN ASSEMBLY WEAKNESS OR FAILURE.**

**X= BURRS OR FLASH WHERE THE HEX MEETS THE FLANGE CAN CAUSE THE STAMPING TO ASSEMBLE CROOKED ON THE BOLT.**

**H= THE HEIGHT OF THE FLANGE FROM THE BOTTOM TO WHERE THE FLANGE MEETS THE HEX AREA MUST BE CONSISTENT. THIS DIMENSION MUST BE UNIFORM WITHIN EACH LOT AND FROM LOT TO LOT. VARIATION CAUSES THE BOLT TO RATTLE IN THE ASSEMBLY DUE TO UNDERSTAKING OR DEFORMATION OF THE STAMPING DUE TO OVERSTAKING.**

**T= BOLT HEX MUST BE CONCENTRIC TO THE BOLT SHANK. FAILURE TO CONTROL THIS FEATURE CAN CAUSE AUTOMATION JAM UPS AND OFF CENTER STAKING. FLANGE THICKNESS MUST BE UNIFORM FOR REASONS STATED ABOVE.**

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