

# H&L's FORGING BY UPSETTER PROCESS



1. The "BILLET", a Chrom-Moly grade 17/16" raw steel diameter round, 7.50" long, is heated to 2250° F by electrical induction heaters.



2. First pass in the 4" Upsetter balls the pocket area to ensure material flow into the tooth walls.



3. Second pass defines the first 1/3rd of the pocket and tooth blade throwing horizontal and vertical flash. A further defining of the wear blade takes place.



4. Third cavity continues the forming of the pocket generating 2/3's the pocket depth.



5. Final forge cavity fully develops the tooth pocket and wear blade minimizing the excessive steel into the flash areas.



H&L's Inspector General oversees every inline floor inspection center at our Oklahoma manufacturing facility. This ensures that only the best quality Teeth leaving Tulsa!

*H&L Quality since 1931...*

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6. Trimmed to remove the excess horizontal flash created by the forging process.



*TulsaMADE!*

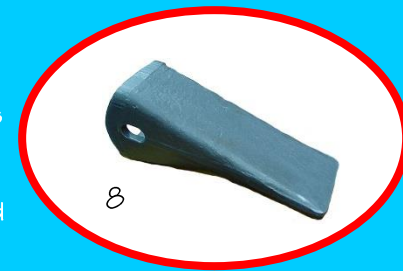


Tooth finishing starts with de-burring remaining flash materials prior to heat treating. Heat treatment consists of quench and temper for an end result of 514BHN in hardness.

The hardened 230SP is then painted H&L Blue and branded as

**FORGED MADE IN THE USA!**

8. Creation of the Flexpin attaching holes are done on hydraulic punching machines exclusively constructed for H&L in the late 1960's.



7. Trimmed to remove the excess vertical "head" flash created by the upsetter dies.

