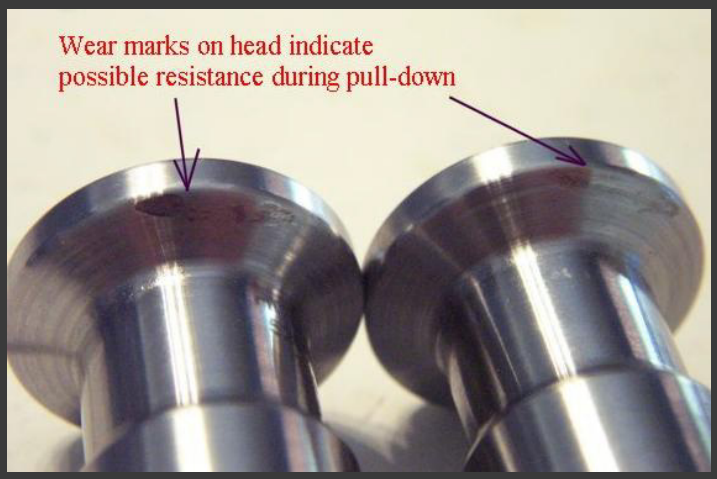
PRESS RELATED DAMAGE & WEAR

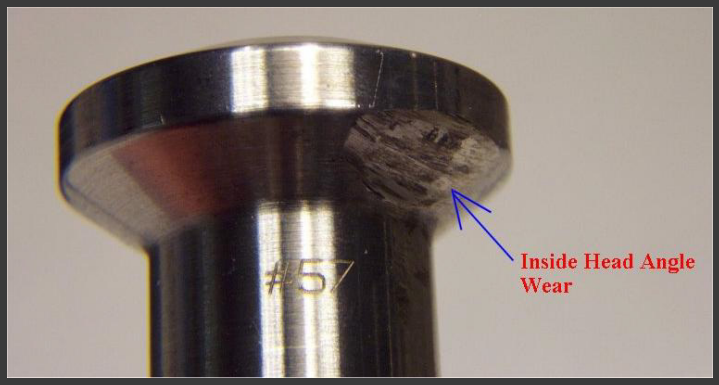
TROUBLESHOOTING TOOLING SERIES

FACTORS TO SHORTENED TOOLING LIFE

- **Wear on cup**, outer punch edge or die cavity
- **Tooling setup in press**, affects uniform punch tip die clearance
- **Press speed**, affects punch tip deflection
- **Compression force**, the closer the force is to the maximum force rating creates a greater overall stress on the cup formation.
- **Variations in particle density** can create higher stress at or near the cup edge.
- **The affect coating** have on the steel.
- Any **re-polishing** of the cup formation
- **Surface corrosion** effecting the steel in regards to pitting.
- **Mishandling**, nicks or dents on the punch edge cup affect long-term edge strength.
- **Punch guide wear**, which affects the punches ability to move in a vertical direction, so the cup is parallel to the powder and compression force is distributed uniformly across the cup geometry.

INNER HEAD ANGLE WEAR





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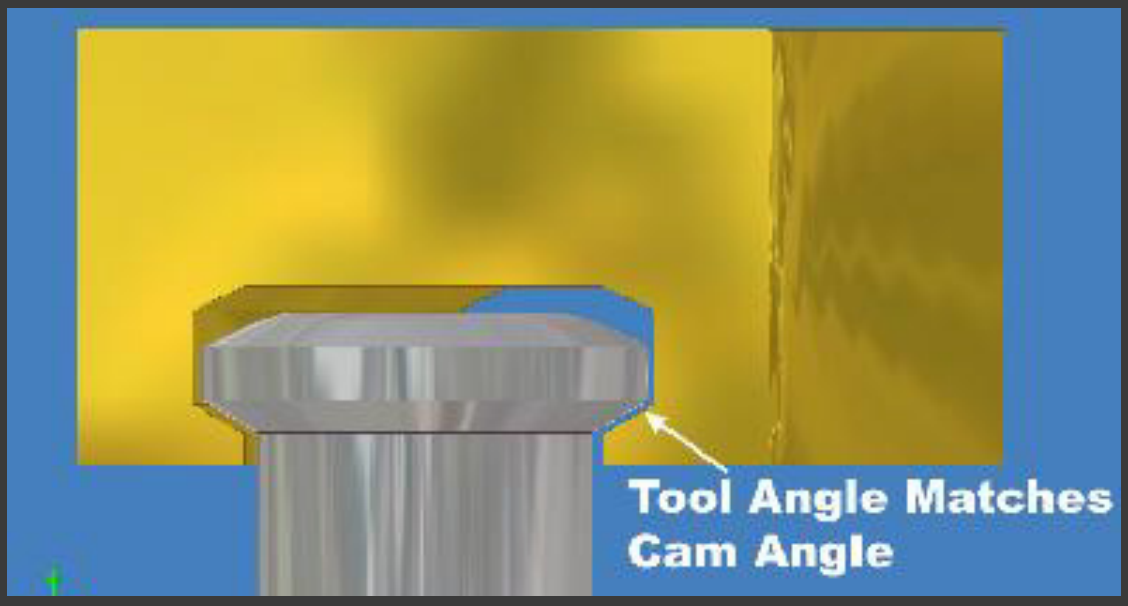
PUNCH HEAD ANGLES

- The punch head of a tool has specific angles on top and bottom; considered “Critical Geometry”.
- The punch head angle matches the angle milled into the cams creating mating parts.
- If the angle on the punch head or the cam is changed through wear or improper polishing, the result will be accelerated wear of both cams and tooling.



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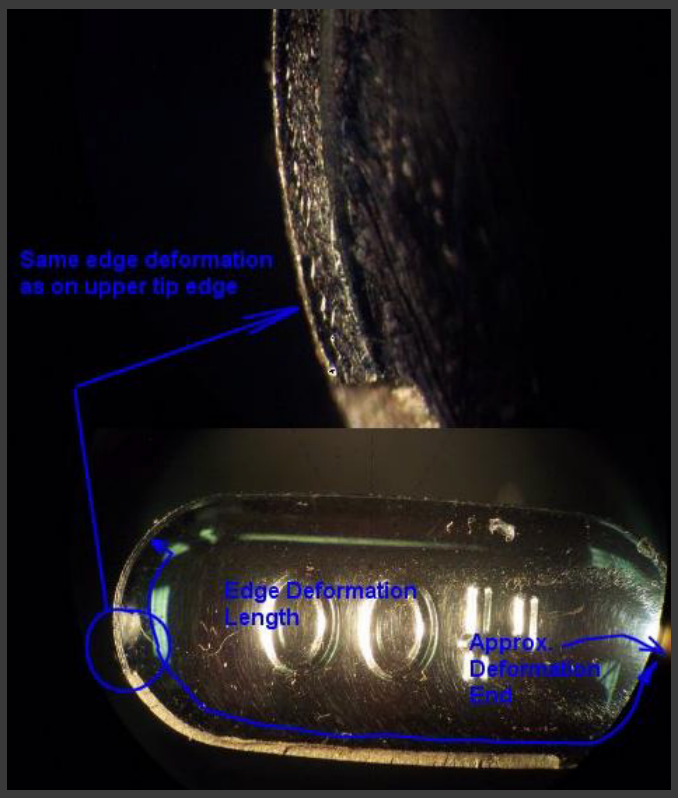
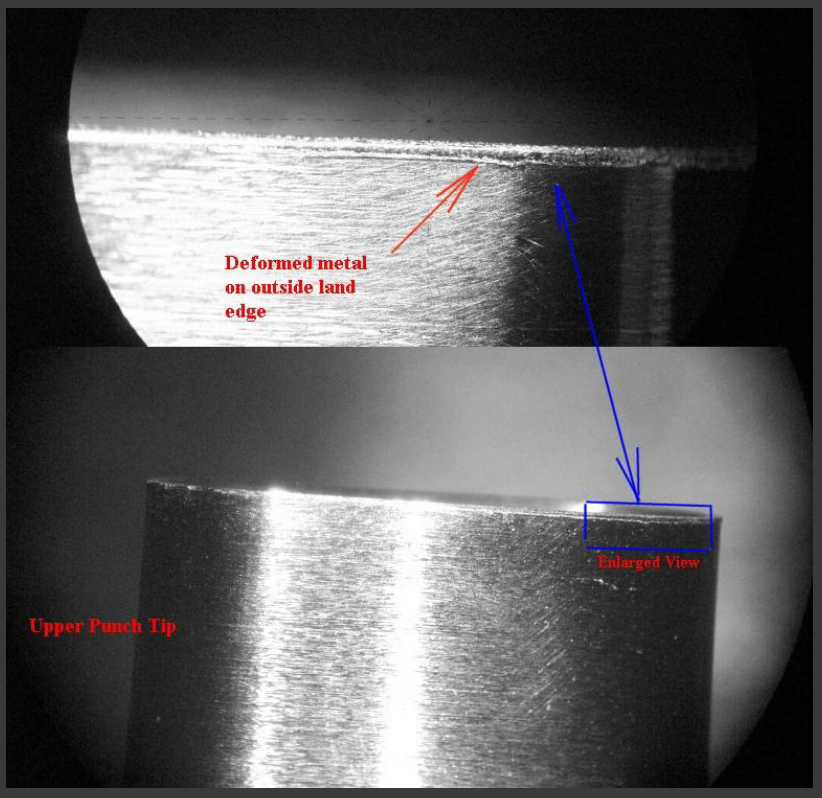
TIP TO TIP PUNCH CONTACT





- Upper and Lower punch tip came in contact with each other.
- Adjust press set-up such as upper punch penetration and dosing cam settings.

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TROUBLESHOOTING TOOLING SERIES

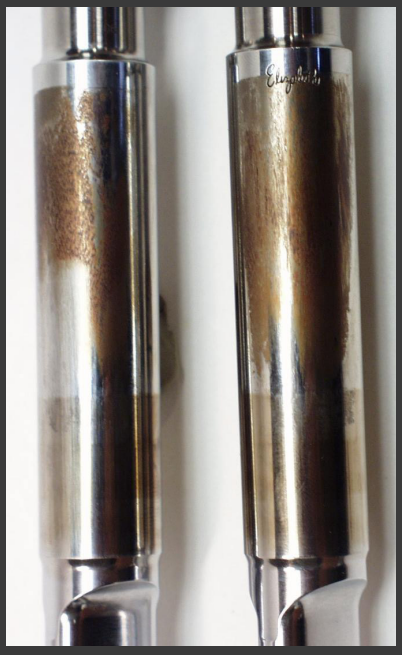
NICK & BURRS

- Nicks on tooling are the most common cause of damage to a tablet press turret.
- Improper inspection during setup can lead to damage to the turret die bores and punch bores.
- As the nicked punch moves up & down in the turret, scoring from the nick shaves metal from the bore wall.
- These shavings can gather and cause the tool to get tight in the bore and possibly seize.

PRESS LUBRICATION

Recommended Lubrication:

- Upper or Lower Punches: Darmex NTO-30 food grade
- Lower Punches Only : SPO-244 (not a food grade)



Insufficient Press Lubrication leads to excessive heat and burnishing of tool bodies.

PRESS RELATED DAMAGE & WEAR

TROUBLESHOOTING TOOLING SERIES

TIP DEFLECTION KIT

Check your turrets to avoid tool wear from excessive tip defecltion.

Want some additional help ensuring your tooling is aligned? Consider our tip deflection kit, a user-friendly kit for checking punch tip deflection and press turret wear. Contact us to learn more!

Thank you for reading! If you have further questions or concerns email us at sales@eliz.com or call us at 412-751-3000.

PRESS RELATED DAMAGE & WEAR

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HEAD DAMAGE

Pitting of head (referred to technically as "Surface Origin Fatigue") is identified by voids in the head flat. This type of premature failure is more common with TSM standard head styles.

The failure is caused mostly by extreme compression forces, creating stress at the 5/16-inch top head radius. The impact of heavy forces at high speeds has a work-hardening effect, contributing to the pitting of the head flat.

Surface-Origin Fatigue

Surface Origin Fatigue on the punch head is created by a lack of vertical motion of the punch when contact is made between the punch head and pressure roll during the compression cycle.

Contributing factors :

- To deep of upper punch penetration setting, can move the contact point with the compression roll too high on the punch head causing a deformation area.

- Lack of proper lubrication

- Excessive tip deflection causing increased binding

- Powder adhering to the die cavity walls or on the lower punch tip perimeter.

- High lower punch ejection pressure

PRESS RELATED DAMAGE & WEAR

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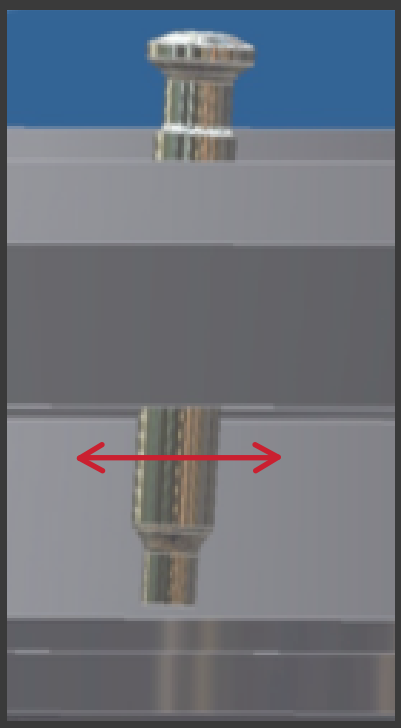
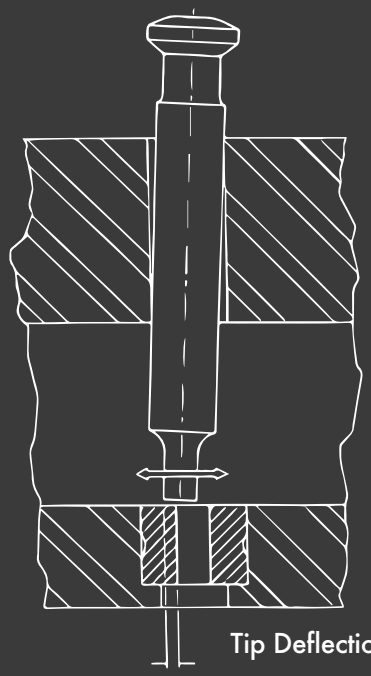
UPPER PUNCH TIP DEFLECTION

Why should you be concerned about tip deflection?

Tip deflection causes the tip of the punch to strike the leading edge of the die. This contact, no matter how slight, is metal striking metal and must be minimized to prolong tooling life and tablet quality.





Using punch tip deflection as a means of checking for wear in turret guideways.