

H.O.T. PRODUCT MEMO # 034-W



ZF

**ZF and ZM  
Zebra Chip Breakers  
for Soft Steels**



ZM

**TURNING**

**Product category:** HOT product

**Application Area:** Finish and medium turning, copy turning and boring of soft steels and generally gummy materials.

**Target market:** General market but specifically Automotive drivetrain, especially endusers machining shafts and similar parts or where chip control is important.

**Features and Benefits:**

- The combination of an aggressive chip breaker form and a “wavy” cutting edge provides better chip control in a variety of cutting conditions of soft steels.
- ZF breaker has a relatively sharp cutting edge for reducing build up edge along with a small ridge near the nose for small depth of cut and chip control.
- ZM breaker has a stronger cutting edge for medium depth of cut applications yet is sharp enough to resist build up edge.

**Product Strengths:**

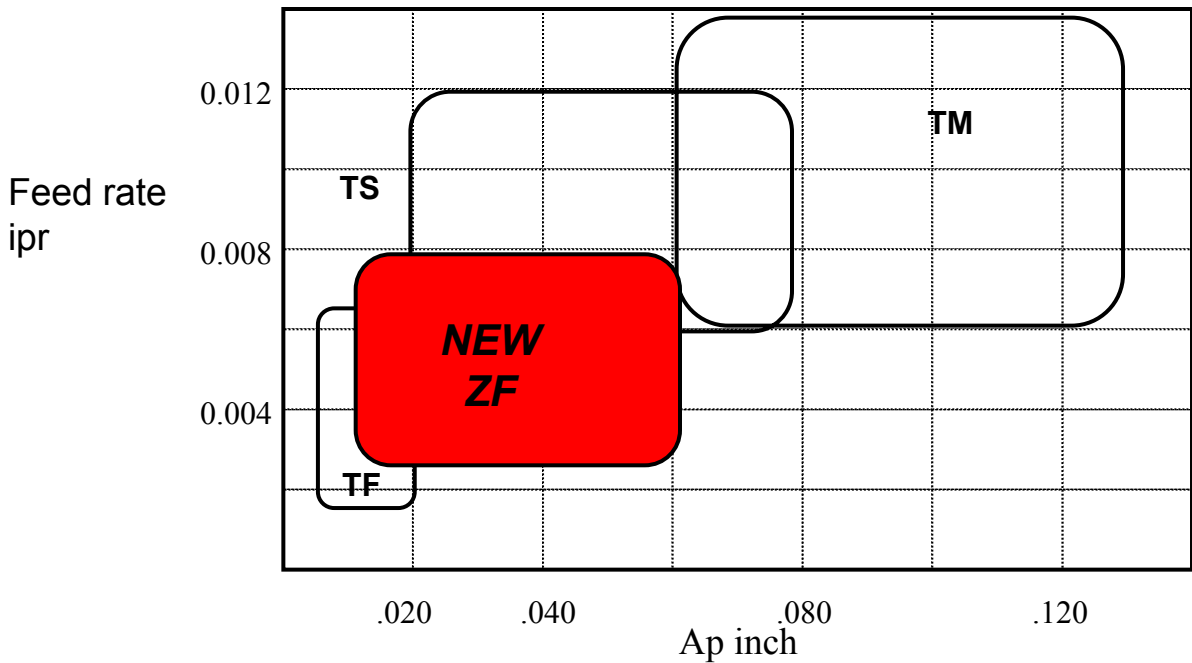
- New **ZF** chip breaker provides excellent chip control in soft steels for finish to semi-finish turning and boring applications along with producing an excellent surface finish.
- New **ZM** chipbreaker provides excellent chip control for finish to medium turning and boring applications.
- Both breakers are stocked in “Double Bridge” grades T9015 and T9025 along with coated cermet grade GT530. These grades can cover most all applications and speeds.

**Technical Information:**

# ZF BREAKER FEATURES



**Application area:**



**Technical Information: Chip Control comparison in finishing**

**Material: 1018**

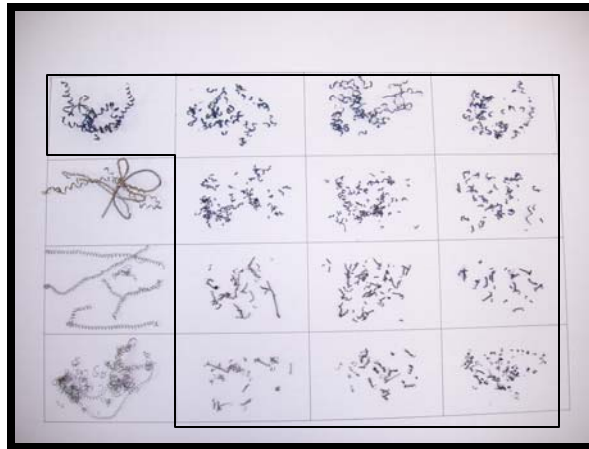
**Standard hardness <200 Bhn**

**SFM = 800**

**Tungaloy ZF**

D.O.C.

.040  
.020  
.010  
.005

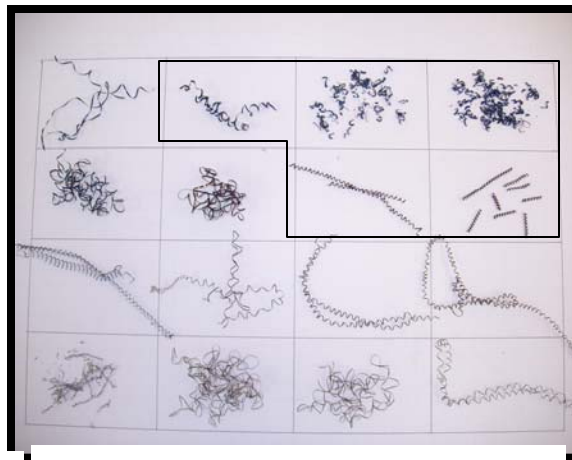


IPR .002 .004 .006 .008

**Competitor 1**

D.O.C.

.040  
.020  
.010  
.005

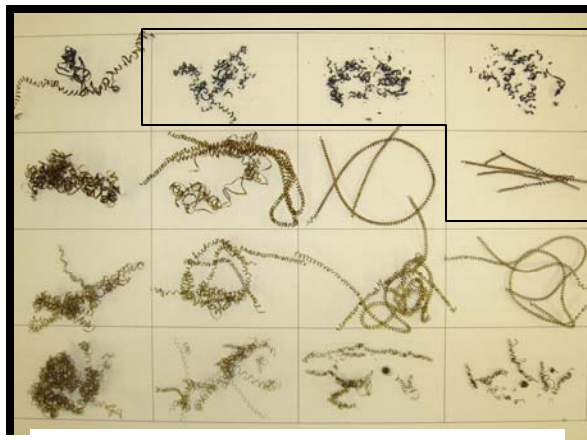


IPR .002 .004 .006 .008

**Competitor 2**

D.O.C.

.040  
.020  
.010  
.005

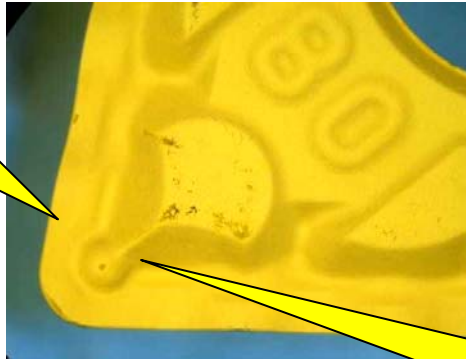


IPR .002 .004 .006 .008

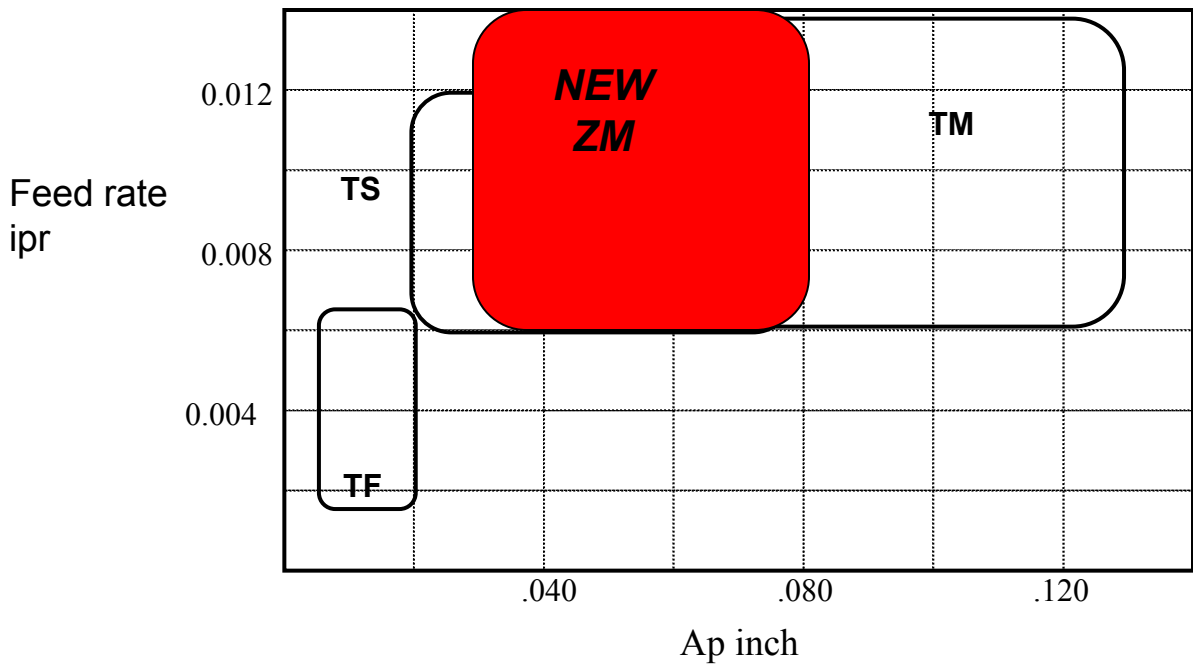
**Technical Information:**

# ZM BREAKER FEATURES

Positive yet strong cutting edge



Special chip breaker design for roughing

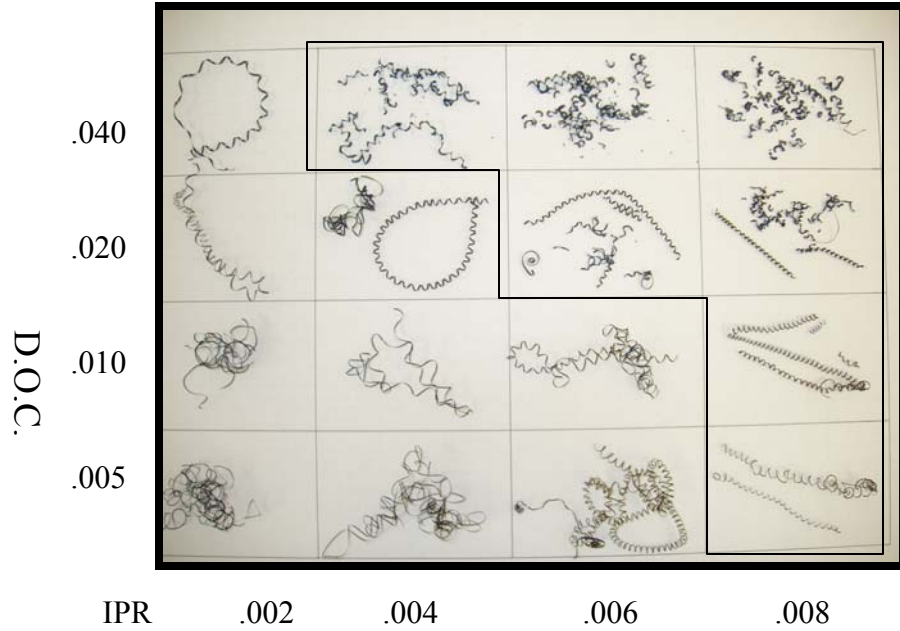


**Technical Information: Chip control comparison**

**ZM Breaker light cut**

**Material: 1018**

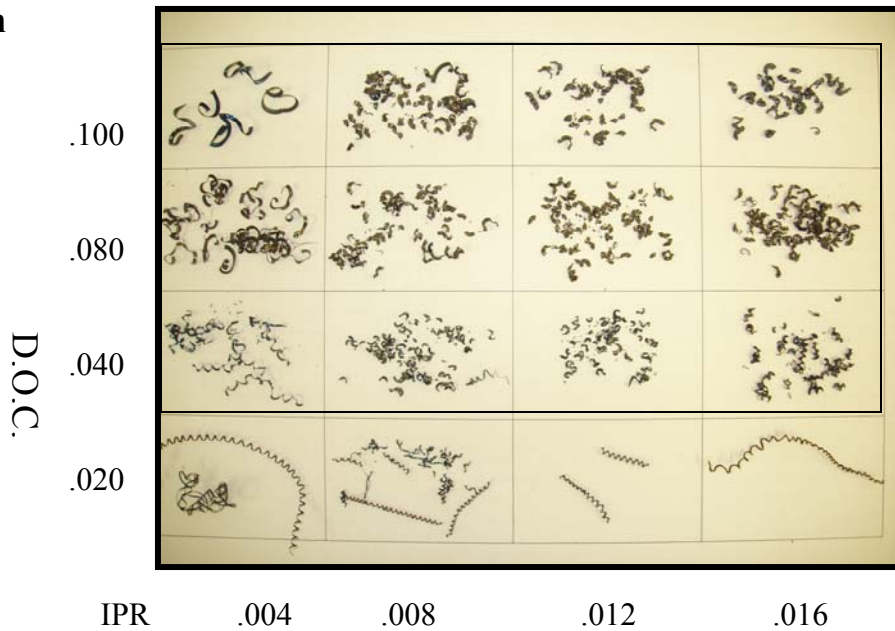
**SFM = 800**



**ZM Breaker medium cut**

**Material 1018**

**SFM = 800 sfm**

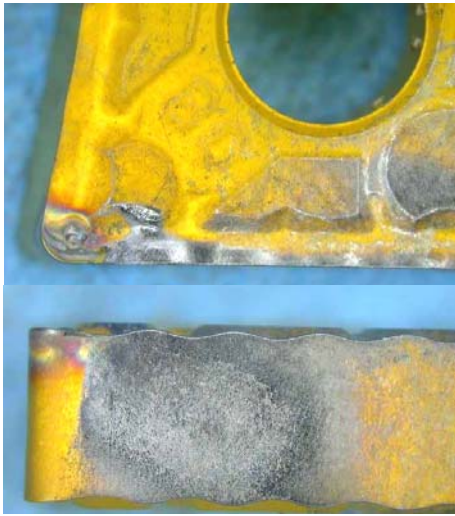
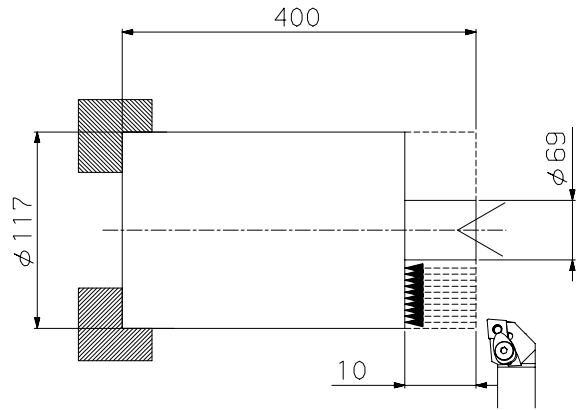


**Technical Information:**

**Cutting edge strength comparison test:**

**Material S45C (1045), V= 650 sfm,**

**F= .014 ipr, Ap = .060” Dry**



**T9015-ZM**



Easy to see chipping type damage along cutting edge

**COMP 1**



**T9015-NM**



**T9015-TS**

**Application Example:**

- In the Midwest company machining 1155 forged steel evaluated T9015 ZM against COMP 2 and COMP 3. The goal was not price nor tool life but chip control. Our ZM chip breaker gave 40-50% reduction in chip volume. The smaller chips did not foul the machine or require as much attention to the chip hopper.

**Conclusion:**

- For finishing operations in soft type materials the ZF breaker offers better chip control and a larger range in comparison to many competitor products.
- For medium cutting applications in soft steels the ZM can offer good chip control if feed is above .004 ipr and it improves with higher feed rate. Additionally the ZM has good chip control in softer alloy steels.
- Even though the ZM breaker has relatively sharp type cutting edge it still maintains good toughness.
- Use these two breakers with the A type or D type holders for a better productivity advantage.