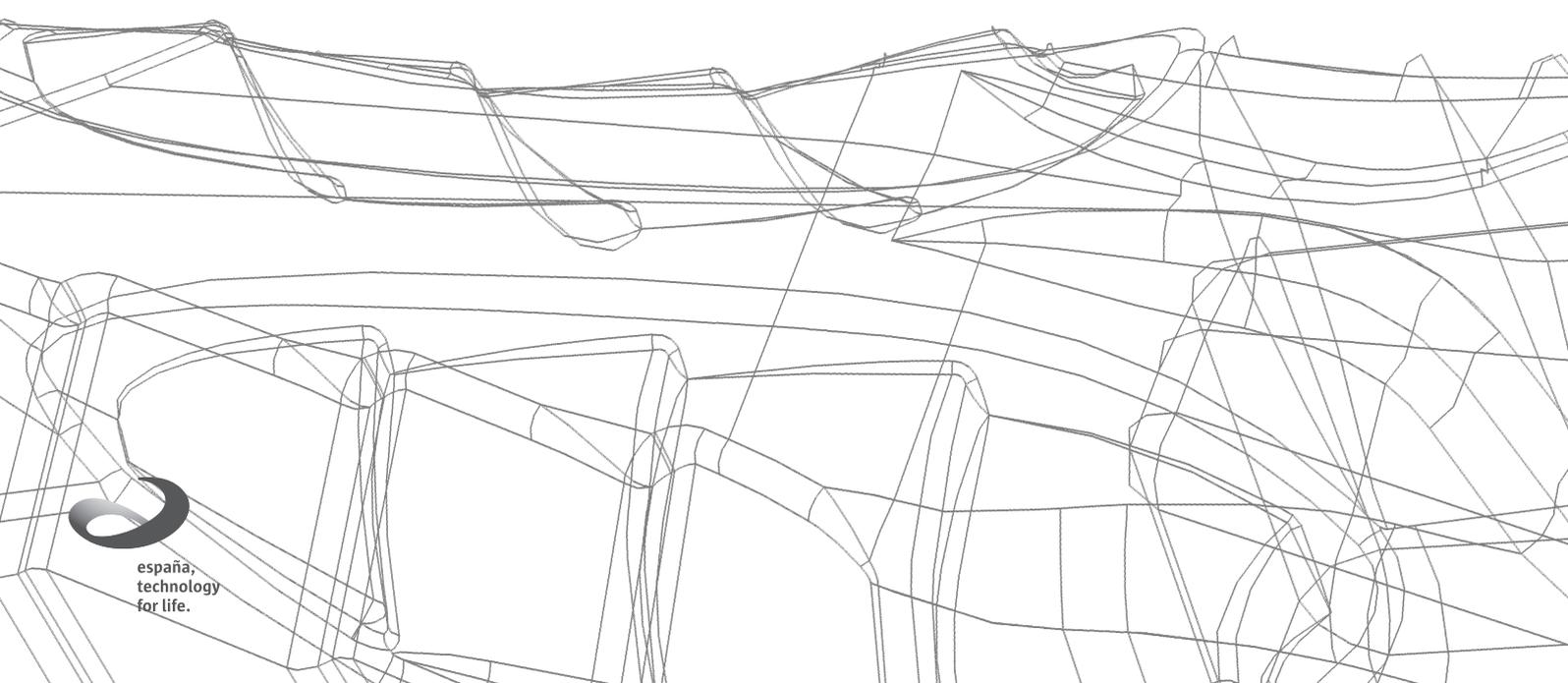


**wear technology**



españa,  
technology  
for life.

## FUTURA SYSTEM

### FUTURA SYSTEM

It is an effective universal side pin hammerless locking system that improves easier and quicker change-outs, overall penetration and sharpness capacity thorough longer teeth and adapter life.

Futura FULLFIES ALL YOUR REQUIREMENTS and expectations

- **PRODUCTIVITY**
- **PERFORMANCE**
- **EFFICIENCY**
- **RELIABILITY**
- **SAFETY**

High steel components, heat treatment, and strict controls along the whole process ensures its mechanical properties 500 HB hardness, resistance to abrasion, impact and penetration

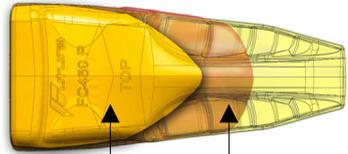
Its productivity and reliability is guaranteed.

A complete engineered range for perfect performance in all applications, light construction, heavy abrasion and mining.

Proven Performance



Futura®  
self-sharpening  
wear pattern



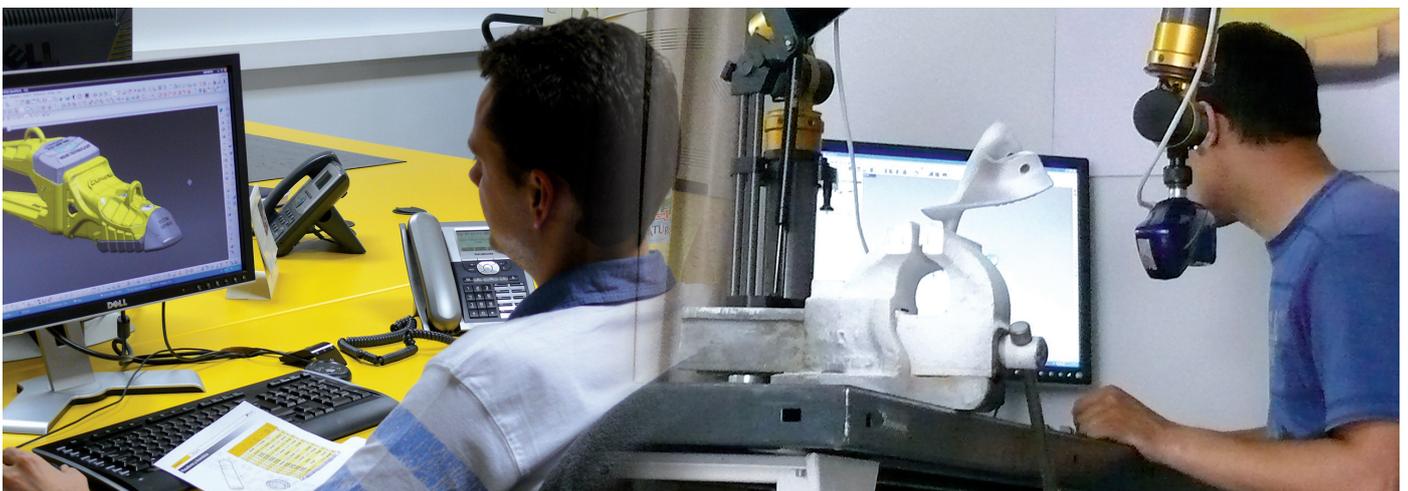
Futura®

Classic



**+89%**  
**steel**  
**used**

on Futura® worn  
teeth compared to  
new ones.  
Thanks to its opti-  
mal design more  
than 89% of steel  
has been used  
without losing  
teeth sharpness.



## Design

FUTURA teeth are generally heavier than other competitor's teeth in the same category size and models. The extra weight has been added in key areas where the tooth is subject to wear. ✓

### Lateral ribs

Lateral ribs reinforce the teeth box and protect pin. ✓

Minimizes pocket breakage ✓

### Underside pocket

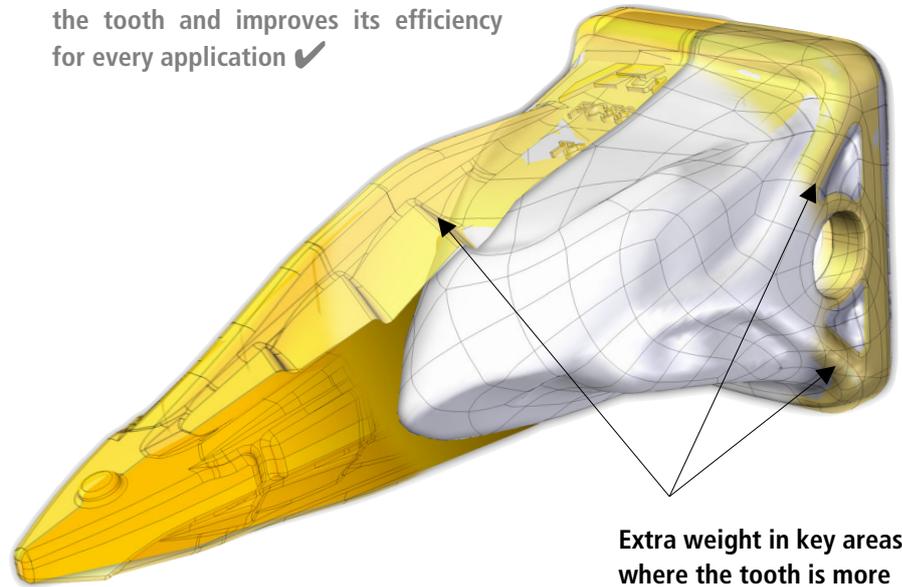
Maintains tooth point sharpness without comprising point integrity ✓

### Rippled surface

Optimized penetration and material flow. Rippled surface improves self-sharpening effect ✓

Ripples also increase wear life as the ripples wear first before getting to the main body of the tooth ✓

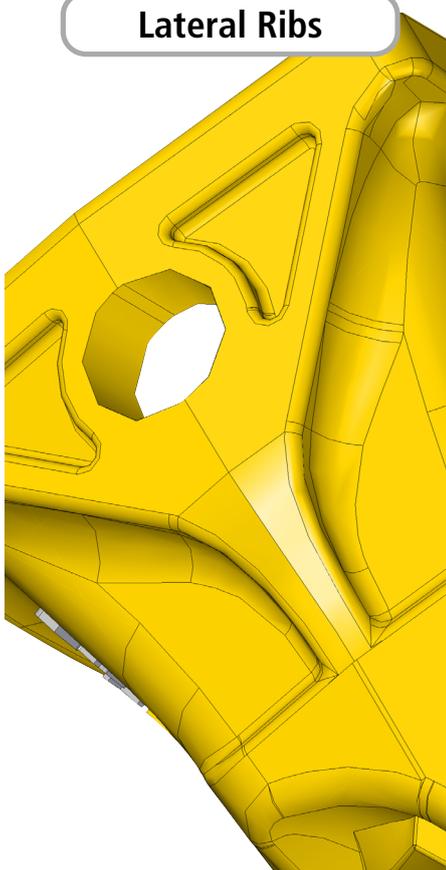
FUTURA teeth, adapters and bucket protection parts feature an innovative design that helps increase the life of the tooth and improves its efficiency for every application ✓



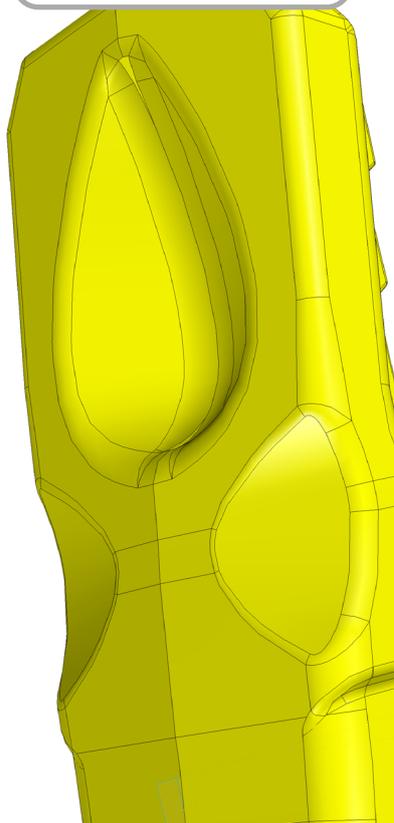
Extra weight in key areas where the tooth is more vulnerable to wear



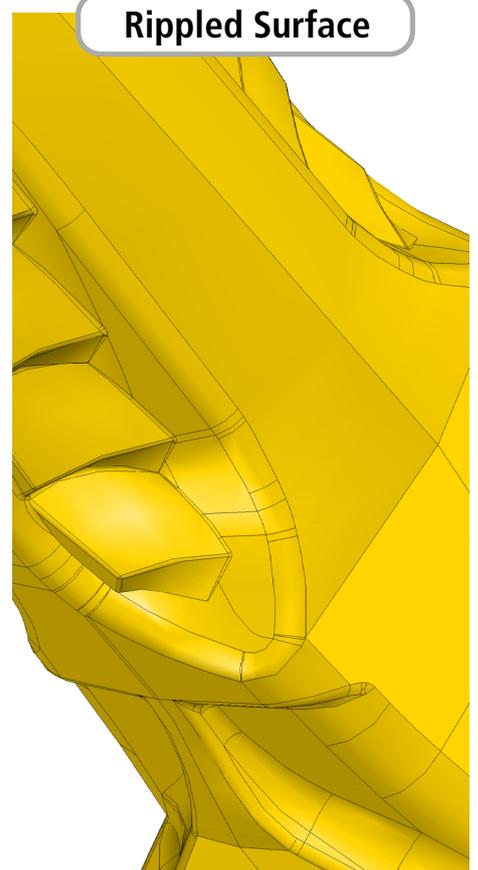
### Lateral Ribs



### Underside Pocket



### Rippled Surface



## Features

### Longer life

The main problem of traditional designs is the heavy wear to which they are subjected, leading to their frequent replacement and limited life span.

FUTURA RANGE has approximately 20 % more of usable wear material than other similar systems in the market. It ensures higher Consumption ratios.

It is not just the length of the tooth or the % over the total weight. What really matters is the total gross wear material weight. As you can find High ratios but less weight that means less cycles used. Futura teeth last after many cycles.



We have added effective material on bottom, laterals and box tooth but providing better penetration and digging properties.

### Self-sharpening design

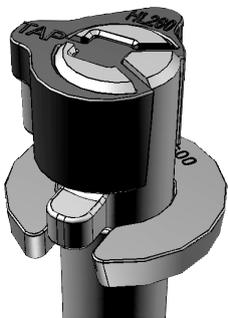
Protruding central and lateral ribs and hollow pocket help material flow and significantly extend tooth wear life and increase sharpness properties. It stabilizer its profile and provide better penetration.

Maintains sharpness without reducing tooth resistance.

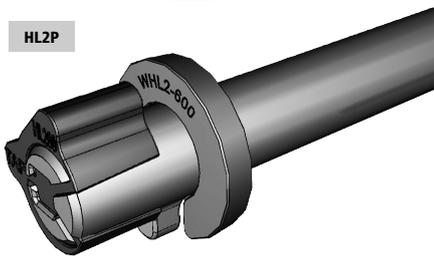
Side ribs optimize material flow. Reduced fuel consumption.

## The Locking system

**FUTURA REUSABLE HAMMERLESS PIN SYSTEM.** This installation and removal method is quicker and safer, since it is carried out manually and mechanically without the need for further tools. The tooth side grooves have been specially designed to protect locking and to avoid strain and possible breakages.



HL2P



### FUTURA CLACK SYSTEM: A UNIVERSAL HAMMERLESS side pin solution 100% compatible with your Caterpillar side pin adapters

The HL2P System is **100% compatible** with your current side pin adapter ✓

**Increased pin retention:** the pins are securely locked in place. Rubber insert under locking tab allows the locking tab (fig. 3) to compress, rotate and lock ✓

**Easy to install and remove** with manual drive or ratchet wrench with hex drive socket.

Each pin comes with a heavy duty "dirt" plug to keep fines out of the pin's socket ✓

Increased safety compared to standard pin & washers ✓

Compatible with OEM adapters ✓

The FUTURA hammerless system works only with FUTURA teeth but is fully compatible with DRP Caterpillar side pin adapters ✓

Part#	OEM pins	OEM retainers	Size
FC300HL2P	107-3308 / 132-4766 9J-2308	8E-6259 / 3G-9609 149-5733	30
FC350HL2P	8E-6358 / 114-0358 9J-2358	8E-6359 / 3G-9548 114-0359	35
FC400HL2P	7T-3408 / 116-7408	8E-8409 / 116-7409	40
FC450HL2P	8E-0468 / 114-0468	8E-8469 / 107-3469	45
FC550HL2P	6Y-8558 / 107-3378 1U-1558	8E-5559 / 3G-9559 107-8559	55
FC600HL2P	6I-6608 / 113-9608	6I-6609 / 113-9609	60
FC700HL2P	4T-4708 / 113-4708	4T-4707 / 113-4709	70
FC800HL2P	134-1808 / 102-0101	101-2874 / 134-1809	80



## Mecanical Properties

We work with different foundries according to their own capabilities to ensure the best material, process and controls.

A perfect balance between hardness and toughness is required on different applications. FUTURA Range needs different process treatment and alloys. We always chose the best option and process and monitoring continuous controls.

Alloy is selected according to final application ; high impact resistance, high abrasion and resistance to friction or toughness.

An exhaustive selection of steel and its different alloys and heat treatment has resulted in the ideal combination to provide the new system with the mechanical properties needed to carry out its functions properly, with maximum performance and wear life. The combination of carbon, chrome, molibdenum and silicon used in each piece has been selected according to application.

We make a specialized heat treatment to meet critical specifications to increase elasticity and elongation properties throughout the whole piece not just the exterior.

## Chemical Composition

Continuous control along the casting process are made to obtain the most homogeneous products free of impurities that would cause cracking and breakage.

- **Chrome** offers greater anti-corrosion properties and less wear.
- **Carbon** provides greater hardness.
- **Manganese** increases depth of hardening and improve strength and toughness provides greater resistance to impact.
- **Nickel** increases hardness and impact strength.
- **Silicon** avoids mechanical fatigue.

## Material Classic

Analysis %

Mechanical properties (Room temperature 20°C)

C	Mn	Si	S	P	Cr	Mo	Ni	Re	Hardness	Impact strength V Notch
0.24-0.29	0.80-1.40	1.30-1.60	≤0.035	≤0.035	1.40-1.70	0.05-0.15	≤0.20	0.10-0.25	HRC45-50	akv≥18J/cm <sup>2</sup>

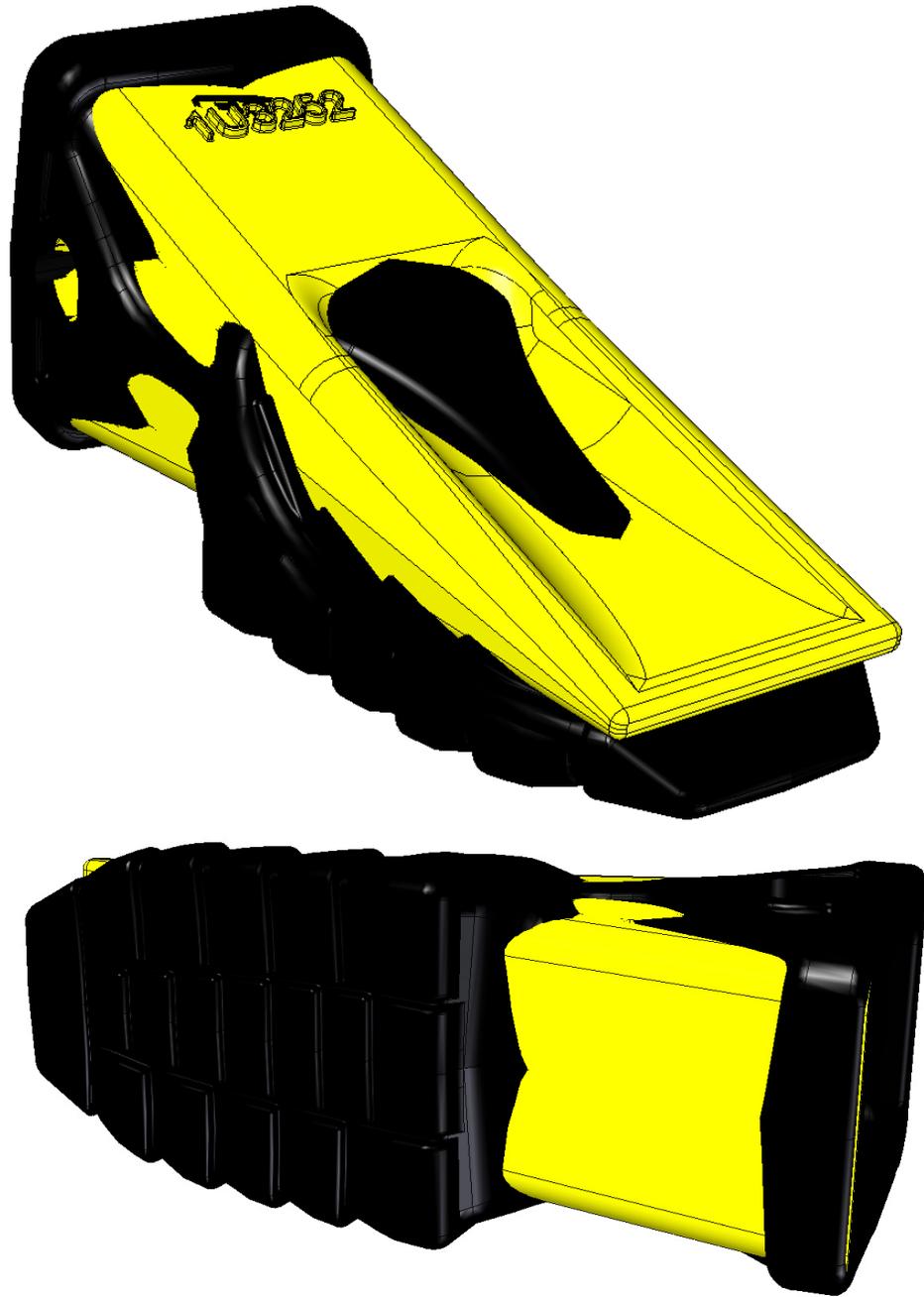
## Futura Alloy

Analysis %

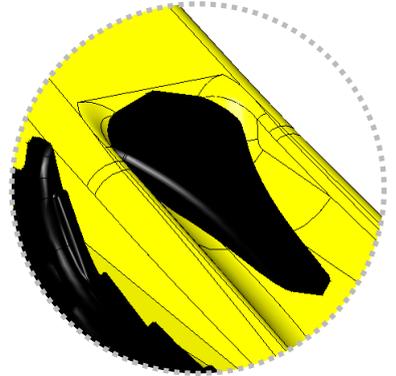
Mechanical properties (Room temperature 20°C)

C	Mn	Si	S	P	Cr	Mo	Ni	Re	Hardness	Impact strength V Notch
0.25-0.31	0.50-1.10	1.00-1.40	≤0.035	≤0.035	1.40-1.80	≤0.3	≤0.30	0.10-0.25	<b>HRC48-52</b>	<b>akv≥24J/cm<sup>2</sup></b>

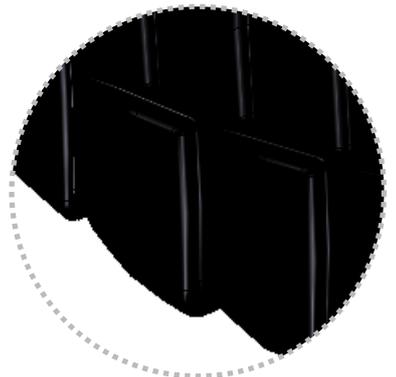
# FC250 RPL versus 1U-3252



- 1U-3252
- FC250 RPL



Central rib for penetration



Bottom extra wear material and ribs

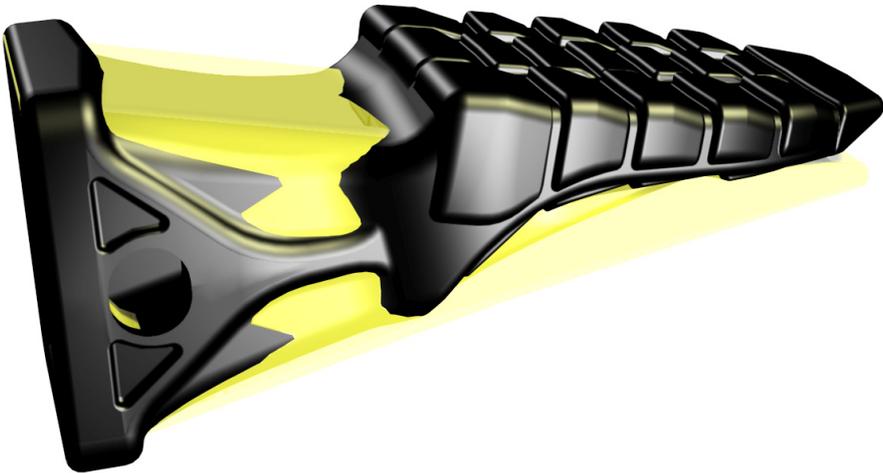
1U-3252

<p>● ● ●</p> <p>Wear factor</p> <p>● ● ●</p> <p>Penetration</p> <p>● ● ●</p> <p>Impact</p>	<p>115 mm. 4,53 inches</p> <p>200 mm. 7,87 inches</p>	
<p> <b>2,90 Kg.</b> 6,38 Lbs</p> <p>Total Weight</p>	<p>Estimated Wear Length <b>57%</b></p>	
<p> <b>1,40 Kg.</b> 3,08 Lbs</p> <p>Wear Weight</p>	<p>Wear Weight (in Pounds) <b>3,08 lb</b></p>	

FC250 RPL

<p>● ● ● ●</p> <p>Wear factor</p> <p>● ● ● ● ●</p> <p>Penetration</p> <p>● ●</p> <p>Impact</p>	<p>133 mm. 5,24 inches</p> <p>209 mm. 8,23 inches</p>	
<p> <b>3,80 Kg.</b> 8,36 Lbs</p> <p>Total Weight</p>	<p>Estimated Wear Length <b>64%</b></p>	
<p> <b>2,30 Kg.</b> 5,06 Lbs</p> <p>Wear Weight</p>	<p>Wear Weight (in Pounds) <b>5,06 lb</b></p>	

FC250 RPL versus 1U-3252



1U-3252

FC250 RPL

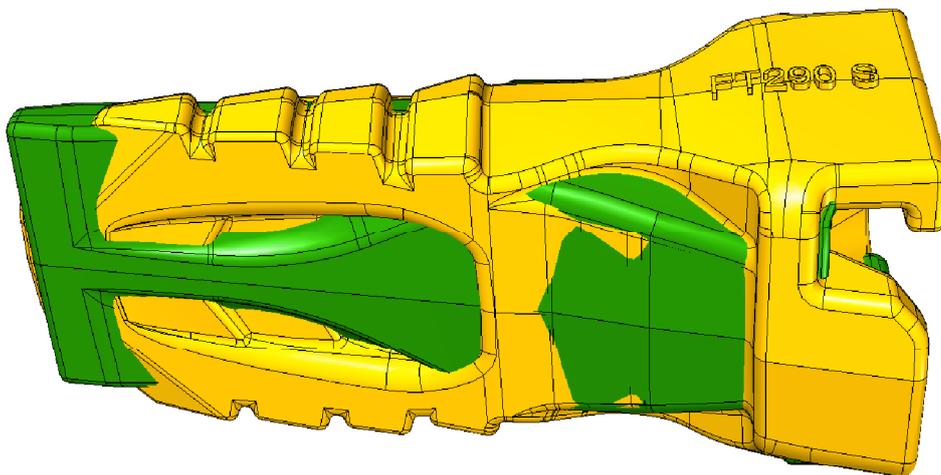
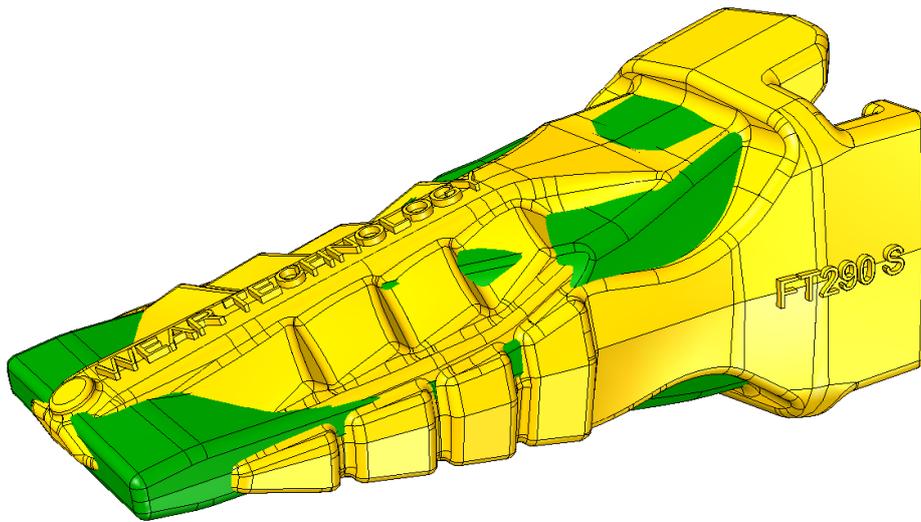


Lateral locking protection

## FT290 S versus V29SYL



**Futura twister**  
 A better performance on tip retention and change over. It is suitable to use with other helix system in the market. Futura twister designs minimize machine down time and inactivity. This vertical pin orientation and twist system has been carefully designed to facilitate manipulation and substitution. It represents an improvement with respect to Futura teeth. Mechanical properties are similar but functionality has overall previous designs. Change are easily, quickly and reduces maintenance cost. Nose profile fits perfect with teeth, reduces teeth fatigue and resistance that could allow frequent breakages. Box are reinforced with more usable material. One piece locking is protected by ears that ensures less friction and longer life. Retainer are designed in one piece to provide security.



### V29SYL



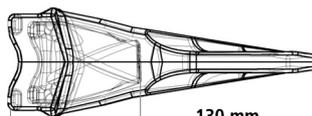
Wear factor



Penetration



Impact

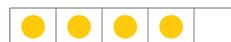


130 mm.  
5,12 inches  
241 mm.  
9,49 inches

Estimated Wear Length **62%**

Wear Weight (in Pounds) **5,50 lb**

### FT290 S



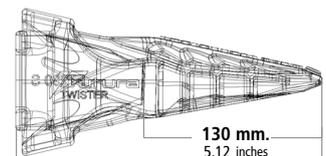
Wear factor



Penetration



Impact



130 mm.  
5,12 inches  
211 mm.  
8,31 inches

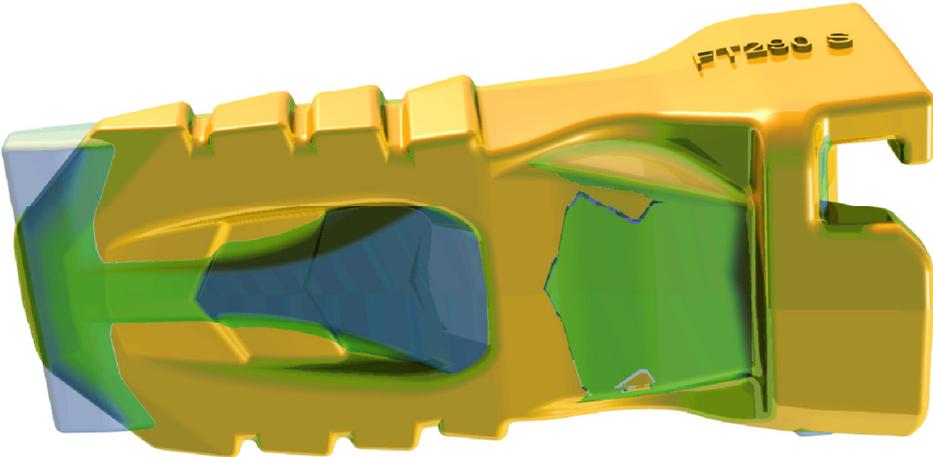
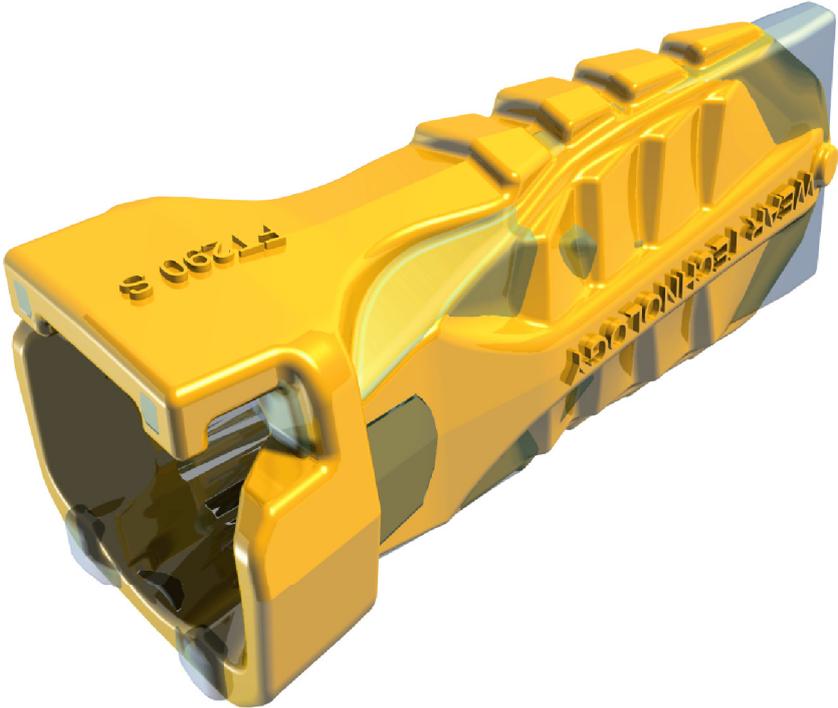
Estimated Wear Length **54%**

Wear Weight (in Pounds) **7,04 lb**

FT290 S versus V29SYL

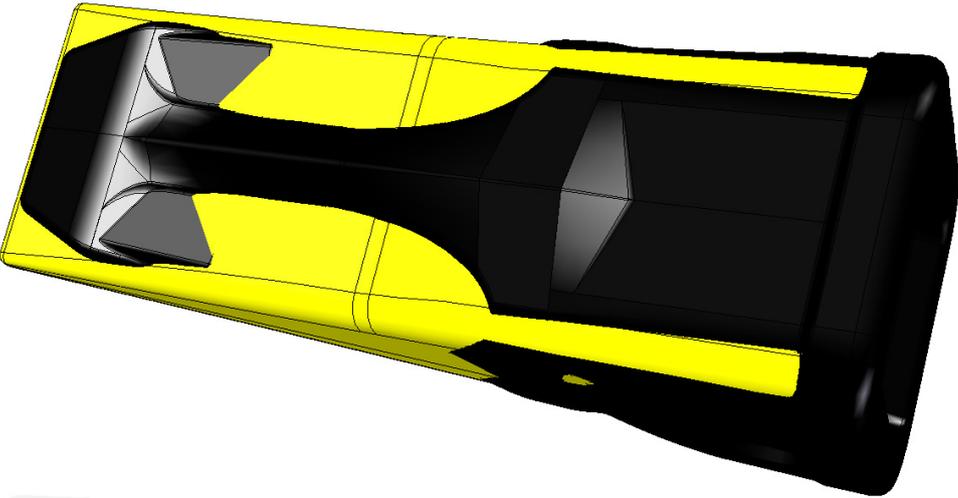
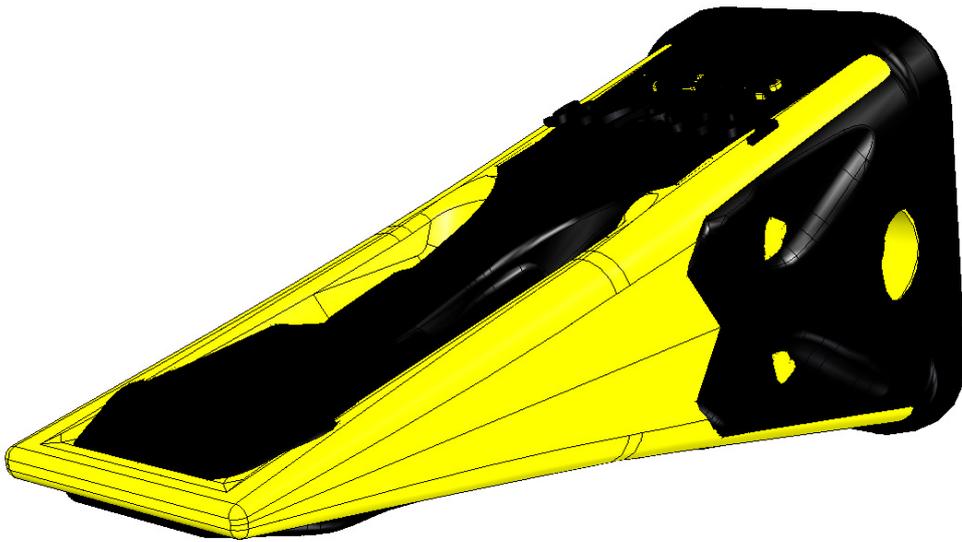
V29SYL

FT290 S



# FC250 SYL versus 1U-3252

- 1U-3252
- FC250 SYL



1U-3252

<p>● ● ●</p> <p>Wear factor</p> <p>● ● ●</p> <p>Penetration</p> <p>● ● ●</p> <p>Impact</p>	<p>115 mm. 4,53 inches</p> <p>200 mm. 7,87 inches</p>	<p> <b>2,90 Kg.</b> 6,38 Lbs</p> <p><b>Estimated Wear Length 57%</b></p> <p> <b>1,40 Kg.</b> 3,08 Lbs</p> <p><b>Wear Weight (in Pounds) 3,08 lb</b></p>
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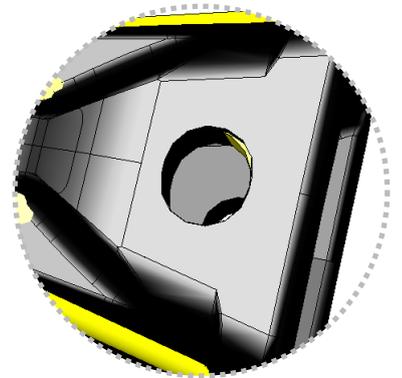
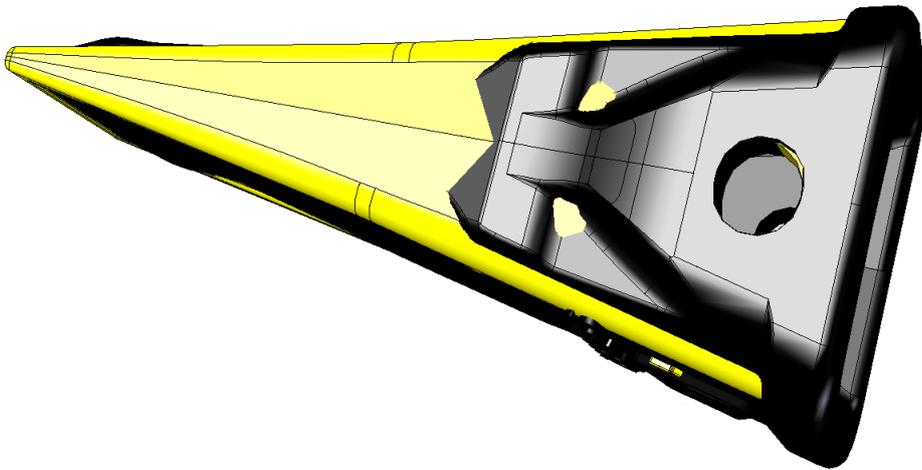
FC250 SYL

<p>● ● ● ●</p> <p>Wear factor</p> <p>● ● ● ● ●</p> <p>Penetration</p> <p>● ●</p> <p>Impact</p>	<p>119 mm. 4,69 inches</p> <p>199 mm. 7,83 inches</p>	<p> <b>3,20 Kg.</b> 7,04 Lbs</p> <p><b>Estimated Wear Length 60%</b></p> <p> <b>1,55 Kg.</b> 3,41 Lbs</p> <p><b>Wear Weight (in Pounds) 3,41 lb</b></p>
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FC250 SYL versus 1U-3252

1U-3252

FC250 SYL



Avoid stress

