

UNIK EXCAVATOR PROFILES

LONG



SYMMETRICAL



ROCK CHISEL



PENETRATION



ROCK ABRASION



TIGER LONG



TWIN TIGER LONG



UNIK LOADER PROFILES

LONG FOR LOADER



ABRASION PENETRATION



HEAVY DUTY ABRATION



PASSION FOR PARTS

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UNIK LINE TEETH
Technical Brochure

THE UNIK LINE

The ITR UNIK line has been designed for all applications where high penetration, impact resistance, and increased wear life are essential.

6 UNIQUE FEATURES:

- High productivity from an innovative self-sharpening design ensures excellent performance
- Reinforced pocket structure
- Increased side pin protection
- High impact resistance
- Select ITR steel composition
- Extended wear life

Rigorous quality control standards are carried out at our production facility to guarantee the highest level of quality. The ITR UNIK LINE was developed by our engineering department to improve the product performance.

HOW WE DESIGNED THE UNIK LINE

To design our special tip line we conducted a strict FEM (FINITE ELEMENTS METHOD) analysis, considering that stress can be found under three different load conditions (TIP LOAD, NORMAL LOAD, and LATERAL LOAD). The purpose of our project was to reinforce the design in order to minimize the peak stress values in all conditions. In other words, that means NO BREAKAGE and BETTER DISTRIBUTION OF STEEL.

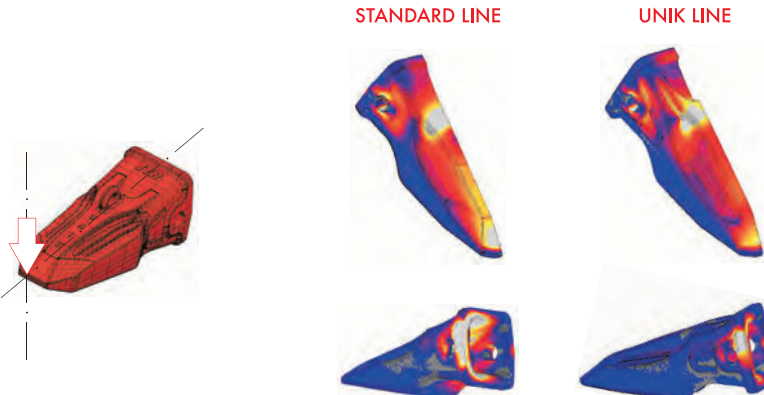
TIP LOAD

Tip load is the predominant one applied when the bucket is engaging the ground. It is very important because the load increases proportionally with the penetration force of the machine.



NORMAL LOAD

Normal load is the predominant one applied when the bucket starts excavating. It is very important because the load is proportional to the breakout force of the bucket.



LATERAL LOAD

Lateral (side) load, even if it doesn't appear to be so important, must be taken into consideration in order to have the complete 3D behavior of the tooth. It is along this direction that the tooth is weakest.



HOW WE INCREASED THE WEAR LIFE

1 DIFFERENT STEEL We researched different steels and selected the one for each application that guarantees the best performance in terms of wear life and mechanical specifications.

2 SELF SHARPENING PROFILE We conducted several tests on ITR UNIK teeth to demonstrate their superiority, in wear life and penetration, compared to ITR Standard teeth. Among the many tests conducted, the following tests were done on two buckets working in a SILICA QUARTZ mine, which

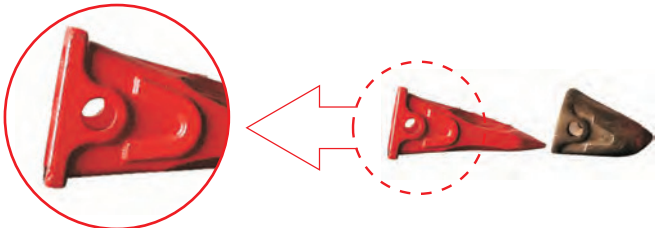


22,46 Kg 9,28 Kg
before the test after the test
WEIGHT
UNIK RCU J550

13,84 Kg 7,92 Kg
before the test after the test
WEIGHT
UNIK RCU J450

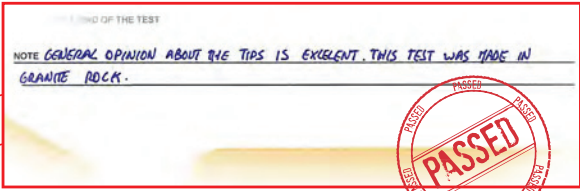
is one of the most abrasive applications. The customer used UNIK RCU J550 and UNIK RCU J450. The UNIK teeth gave to the customer substantially increased productivity, since the teeth remained sharp until the end of the test. For the UNIK RCU J550, **58.7%** of its total weight was used. For the UNIK RCU J450, **42.75%** of its total weight was used.

3 INCREASED WEIGHT We conducted meticulous studies to add steel where needed to increase strength, avoid breakage, and again increase the wear life.



HOW WE CAN PROVE IT

We conducted COMPARATIVE TESTS to make a true comparison between ITR UNIK teeth and other similar competitors' teeth.



The increase of a tooth's useful life mainly depends on the shape of the tooth, and the composition of the steel used. Our test results demonstrate that using UNIK LINE teeth provide 30 - 60% better useful life than competitive teeth.



Studies conducted by the ITR engineering department, multiple tests carried out in the field, and customer feedback show that UNIK teeth work better and last 30% longer than the standard ITR tooth on average. ITR is continuously testing the UNIK LINE around the world using different profiles and carrying out tests in the worst conditions, in order to continuously improve the performance of the line.