

**TESMEC ORIGINAL
DIGGING PICKS**

SPECIAL EDITION MAY 2021

BREAKING ROCK NEWS 2.0

DIGGING TOOLS CATALOG 2021



**NEW GENERATION
LONG-LASTING CARBIDE!**
PAGES 25-26



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Tesmec Group

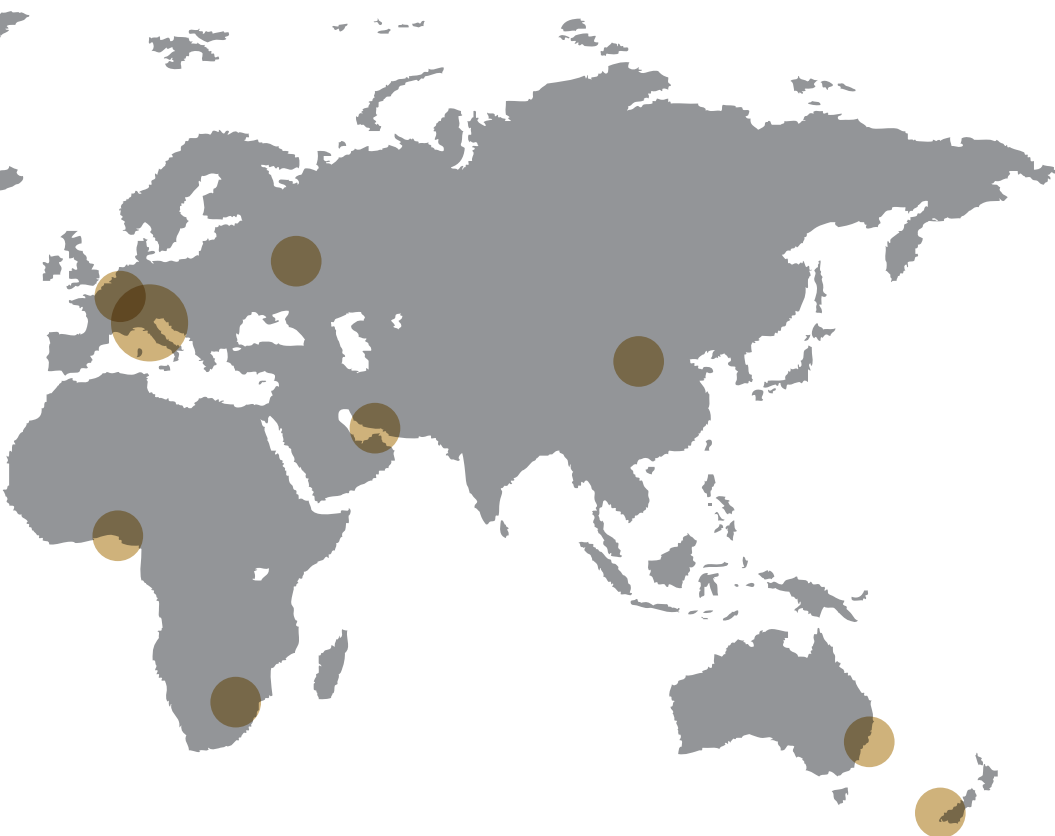
Mission

Tesmec Group mission is to operate in the market of infrastructure for the transport of energy, data and material (oil and derivatives, gas, water). These are strategic markets for the growth and modernization of every country in the world.

Tesmec pursues a “Glocal” growth strategy: we are global, but at the same time we have a local presence in the most strategic areas of the world, in order to meet the market’s needs in the best way.

Modern societies, as well as the emerging ones, face future challenges to invest in energy and telecommunications sectors. New technologies can fill the infrastructural gaps existing between countries; these will improve the efficiency and the needs for future generations.

The need to rationalize energy costs and to improve the transmission speed of information, makes the global investments in energy and telecommunication sectors necessary for the global growth. This is the reason why, Tesmec mission contemplates higher investments in technologies for efficiency and management of grids.



HEADQUARTERS
Grassobbio - BG
Italy

PRODUCTION PLANTS - ITALY

Grassobbio - BG
Endine Gaiano - BG
Fidenza - PR
Padova
Patrica - FR
Sirone - LC
Monopoli - BA
Bitetto - BA

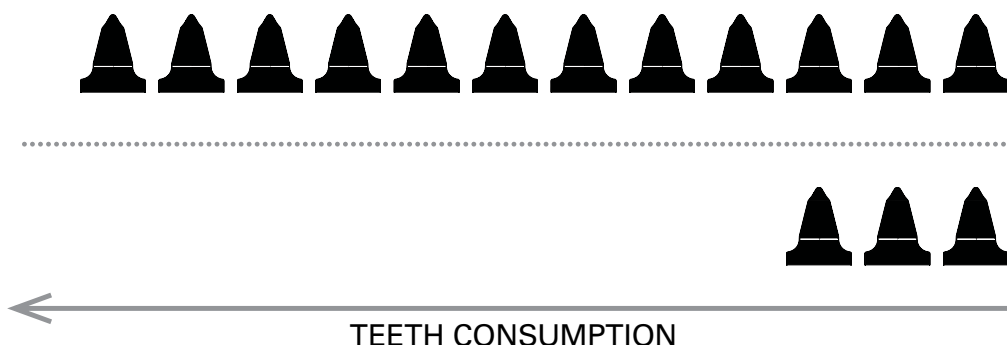
PRODUCTION PLANTS - ABROAD

Alvarado - Texas - US
Durtal - FR

The exclusive picks selection for your best rock performance

When speaking about rock excavation, **productivity and cost/m³** are two of the main factors that define the success of a work. And one of the main factors that influences productivity and cost/m³ is the **pick selection**.

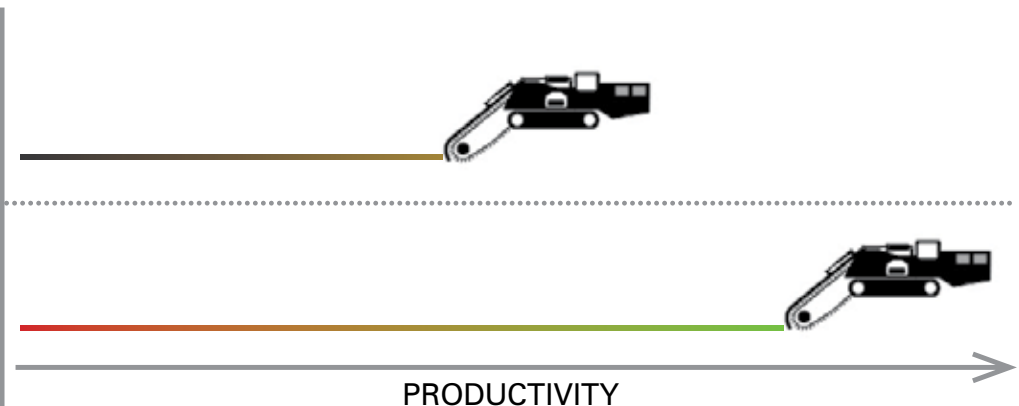
That's why Tesmec focuses on providing its trenchers and surface miners with an **exclusive picks selection** - more durable, penetrating and abrasive - to ensure higher productivity and lower operative cost/m³, even on hard rock.





The selection of the proper digging tool gives many advantages.

The indirect one, which is the most significant, is the downtime for the pics replacement that is converted in **valuable time utilized for dig.**



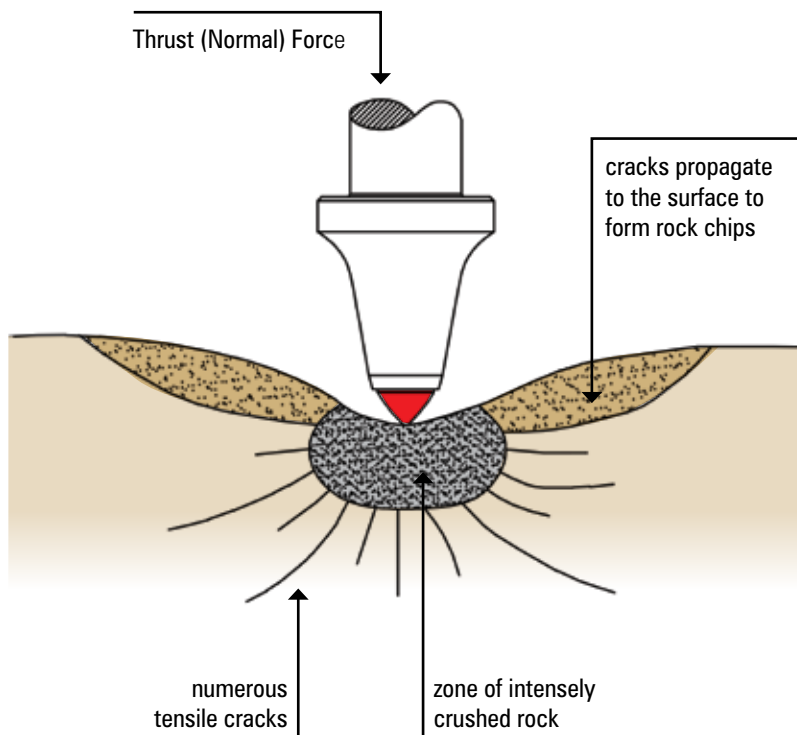
Rock cutting or scratching?

There is a big difference in productivity between rock cutting and rock scratching.

Mechanical rock cutting is based on inducing stresses in the rock medium exceeding the rock strength values in order to cause cracking and chips formation.

When the carbide tip hits the rock surface, the pressure suddenly increases and a crushed zone is formed under the contact area.

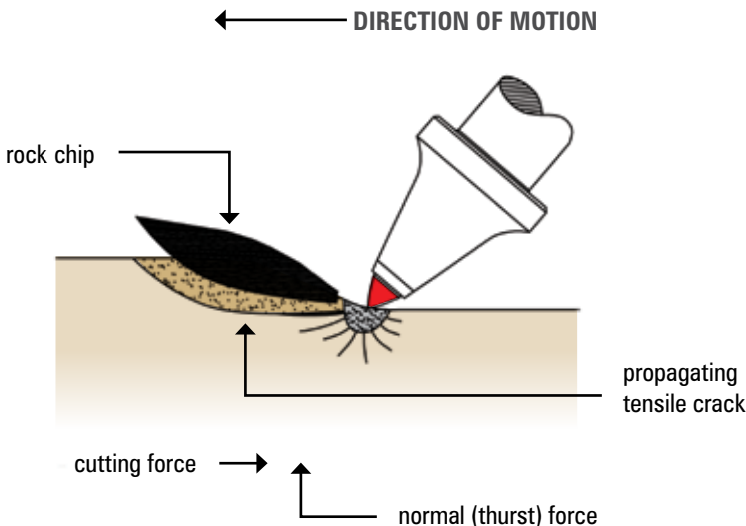
The contact pressure between the pick and the rock causes the rock to fail by creating tensile cracks into the rock: inter-granular bindings between the rock grains are released and finally the rock disintegrates.



Rock cutting or scratching?

- When the load on the pick is sufficiently high to generate enough pressure in the crushed zone to exceed rock strength, the cracks propagate to the surface and form rock chips, here we have rock cutting.

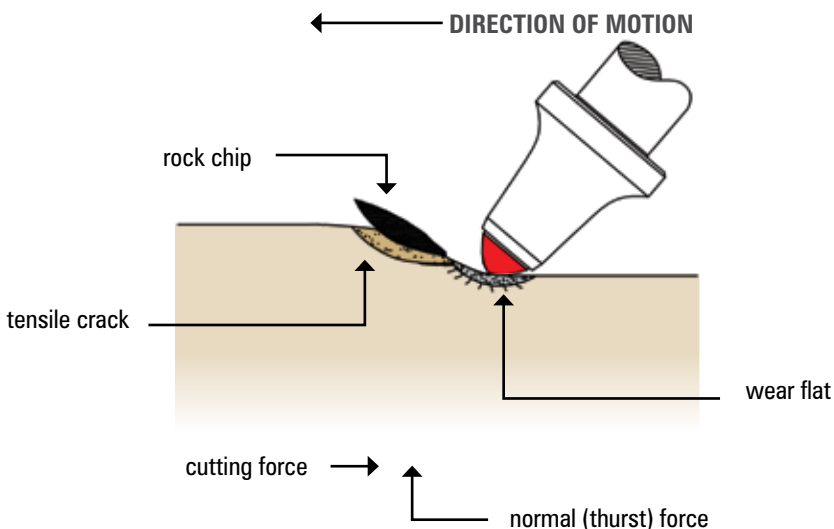
The bigger is the difference between contact pressure and rock strength, the bigger is the rock chips size, and the higher the productivity of the machine.





- When the pressure in the crushed zone is not high enough to allow cracks propagation, we do not have rock cutting but we only have rock scratching or rock grinding, with just dust and fine generation. When only rock scratching occurs, machine performances are poor.

No doubt that the main action in rock excavation jobs has to be **rock cutting, not rock scratching.**





The importance of picks

For given cutting conditions (rock type, teeth pattern, machine model) a **smaller carbide** pick will result in a lower force to penetrate and break the rock, thus **GREATER PRODUCTIVITY**.

Moreover, by decreasing the carbide diameter (or increasing the slenderness of the pick) the forces required to cut the rock decrease, and consecutively the loads transferred to the machine decrease.

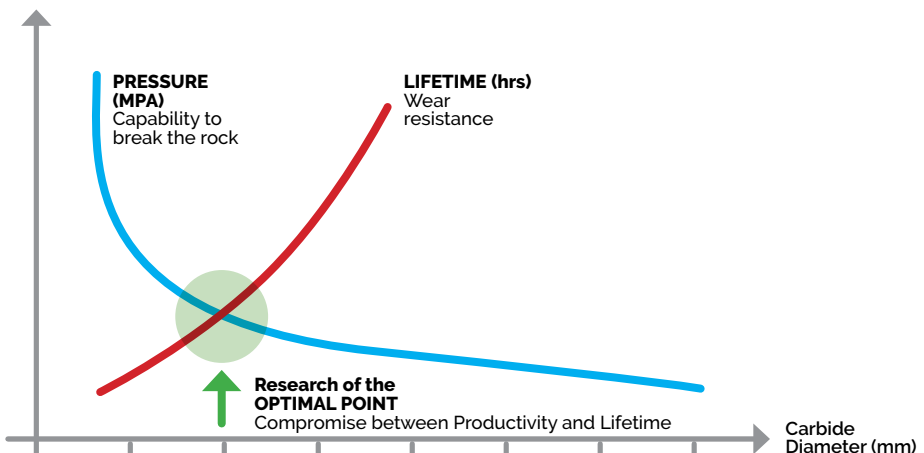
THIS MEANS:

- **Reduced vibration level and higher machine stability**
- **Lower stress on machine parts, thus benefits on machine reliability**

On the other hand, **LIFETIME** of the pick increases with increasing the carbide tip diameter and with decreasing of pick slenderness.

A **bigger carbide** means an increase of the impact resistance of the pick, thus the capability of the pick to withstand **bigger impact loads without breakage**.

- The cutting forces distributes on a wider area, reducing the effect on the pick
- An increase of carbide diameter also means an increase of wear resistance of the pick (large diameter mean wider wear area).



The importance of picks

For given cutting conditions (rock type, teeth pattern, machine model) the maximum cutting force is fixed, so the only way we can change the pick/rock pressure in the crushed zone is to change the carbide diameter.

Since the contact area goes with the square of the diameter and the pressure is the ratio between the force and the contact area, by **doubling the carbide diameter the contact area of the pick with the rock will become 4** times, thus the pressure will become $\frac{1}{4}$.

It's easy to understand how important is the teeth choice on machine productivity.



THE IMPORTANCE OF TEETH ROTATION

Sharpening of the pick due to the rotation of the pick itself into the block is very important to maintain high cutting performances since as the carbide becomes blunt and a wear flat forms at the tip, the rock/pick contact area increases, and the force required to penetrate and cut the rock increases very rapidly.



STANDARD TOOTH IN GRANITE



DIAMOND IN GRANITE

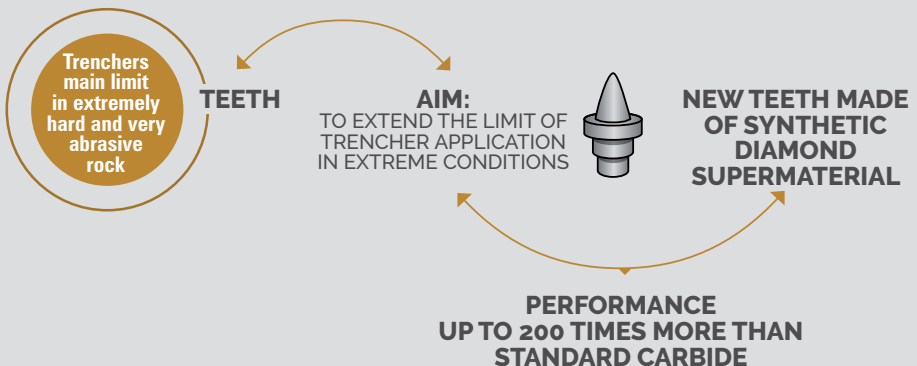
PCD Tesmec

Next generation teeth

TESMEC is active in the pursuit of new technologies in order to be always at the State of Art of the capability to dig in extreme conditions.

The new frontier represented by the tools in PCD (Poly Crystalline Diamond) is for TESMEC the horizon that opens the possibility to utilize Trenchers where till now was not cost effective.

... AND IT IS ALREADY REALITY!



Types of picks for Tesmec Trencher

CAP



**ABRASIVE GROUND,
NOT HARD**
SUITABLE FOR DIGGING ON ROAD

BULLET



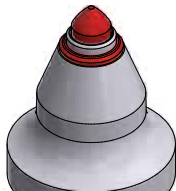
**FROM MEDIUM HARD
TO HARD ROCK**
HIGH IMPACT CONDITION
(CHUNK)
NOT ABRASIVE CONDITION

ROOT



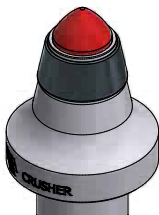
**FROM MEDIUM HARD
TO HARD ROCK**
ABRASIVE CONDITION

CR



HARD ROCK
HIGH IMPACT CONDITION
(CHUNK)
VERY ABRASIVE CONDITION

PLASMA



**MEDIUM HARD ROCK AND
CHUNK MIXED GROUND**
FROM ABRASIVE TO EXTREMELY
ABRASIVE CONDITION
SPECIAL OPTION FEATURE
APPLICABLE ON DEMAND ON
MANY TYPES OF TEETH



Tooth replacement for Tesmec Trencher

TOOTH REPLACEMENT IS RECOMMENDED WHEN CARBIDE IS STILL PRESENT ON THE TOOTH BODY



WARNING! TO POSTPONE THE TOOTH REPLACEMENT TILL WHEN THE CARBIDE IS TOTALLY DISAPPEARED IS DANGEROUS FOR THE PROPER HANDLING OF THE EQUIPMENT

A TOOTH IN THIS CONDITION PUTS THE HOLDER IN SEVERE RISK OF DAMAGE






WHEN THE DIGGING TOOTH LOSES ITS SHARPENING, THE MACHINE DOES NOT PRODUCE AND IS EXPOSED TO VIBRATIONS THAT CAN DAMAGE MECHANICAL COMPONENTS AND THE TRENCHER STRUCTURE





Tesmec Trencher

problems and solutions

Here below a table with possible issues that can affect the teeth working life and the good functioning of Trencher.
We recommend to inform Tesmec in case of facing similar problems for a correct diagnostic.

Problem	Possible Cause	Recommended Solution
 CARBIDE FRACTURE	<ul style="list-style-type: none">• Hard cutting conditions• Extreme impact• Rough excavated material	Reduce digging chain speed Use digging teeth with larger carbide Evaluate with Tesmec of the need of using a different grade of carbide
 THERMAL STRESS CRACKING	<ul style="list-style-type: none">• Hard cutting conditions• Lack of penetration• Grinding of material not conveyed• Excessive heat generation during cutting	Use digging teeth with smaller carbide Evaluate with Tesmec of the need of using a different grade of carbide
 CARBIDE LOSS	<ul style="list-style-type: none">• Hard cutting conditions• Extreme impact• Rough excavated material• Defect in carbide brazing	Reduce digging chain speed Check the angle of the tooth holder



 <p>LOSS OF SHARPENING</p>	<ul style="list-style-type: none"> • Incorrect rotation of the tooth • Excessive carbide diameter 	<p>Check obstacles to rotation Use digging teeth with smaller carbide</p>
 <p>BODY WASHING</p>	<ul style="list-style-type: none"> • Grinding of material not conveyed • Abrasive cutting conditions 	<p>Use teeth with ROOT type carbide Use teeth with protection ring (CR type) Use teeth with plasma hard facing (T-REX)</p>
 <p>ONE-SIDED WEAR</p>	<ul style="list-style-type: none"> • The tooth is not rotating • Misaligned blocks • Sticky cutting condition • Worn blocks • Excess material build-up on tool 	<p>Clean the holder bore Check the holder internal wear</p>
 <p>SHANK BREAKAGE</p>	<ul style="list-style-type: none"> • Worn block bore • Worn-out sleeve • Hard cutting conditions • Blunt/missing cutting tip 	<p>Reduce digging chain speed</p>



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Tesmec

teeth spare parts table

TYPE: CHAINSAW & ROCK HAWG

1675 / 1475 - 1150 - 985 / 975 - M5/M3

SHANK
30/38

PAG. 24/29

SPADE TOOLS
& CUP CUTTERS

PAG. 36



TYPE: CHAINSAW

950R - 950SL/SLO - 885 - 700/750

SHANK 30/38

PAG. 24/29

SHANK 25

PAG. 30/31



TYPE: ROCKSAW

950R - 885 - ST2 - GD2

SHANK 25

PAG. 30/31

SHANK 22

PAG. 32



TYPE: RADIO CONTROLLED	SHANK 20	SHANK 14	SHANK 10
300 - SIDECUT	PAG. 33	PAG. 34	PAG. 35
	●	●	●



TYPE: INTEGRATED VACUUM SYSTEM	SHANK 20
CLEANFAST - CITY CLEANFAST	PAG. 33
	●



TYPE: CHAIN DIRT	SPADE TOOLS & CUP CUTTERS
775DT	PAG. 36/37
	●

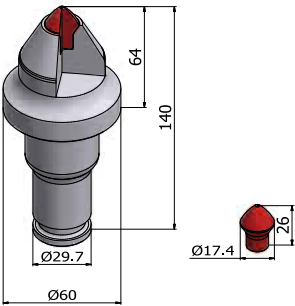


PICKS
Tesmec original Digging Picks

SHANK 30/38



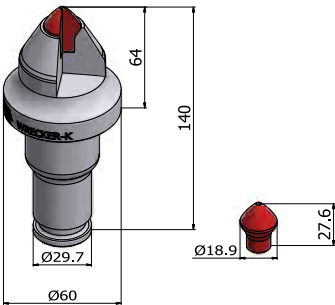
CODE V00-2700-185



LINE	TESMEC
SHANK	30/38
LENGTH	2,5"
CARBIDE Ø	17,4 mm
TYPE	Root
MODEL	RIPPER- K



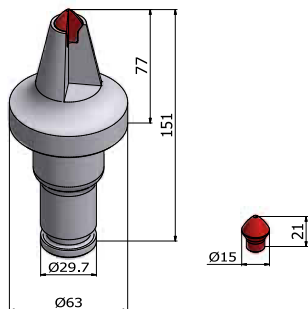
CODE V00-2700-204



LINE	TESMEC
SHANK	30/38
LENGTH	2,5"
CARBIDE Ø	18,9 mm
TYPE	Root
MODEL	WRECKER- K



CODE V00-2700-189

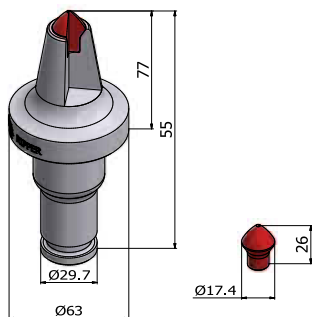


LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	15 mm
TYPE	Root
MODEL	SHARP



CODE V00-2700-120

CODE V00-2700-208 RIPPER-S - SUPERCARBIDE

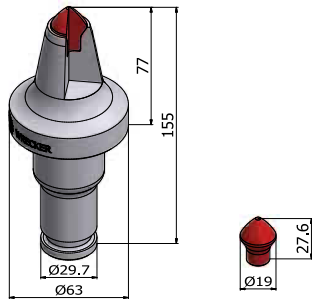


LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	17,4 mm
TYPE	Root
MODEL	RIPPER



CODE V00-2700-119

CODE V00-2700-209 WRECKER-S - SUPERCARBIDE

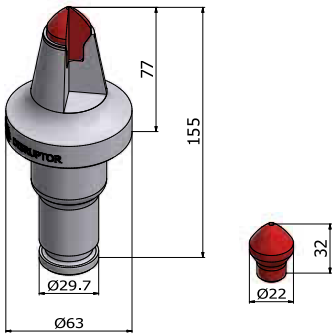


LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	19 mm
TYPE	Root
MODEL	WRECKER



CODE V00-2700-135

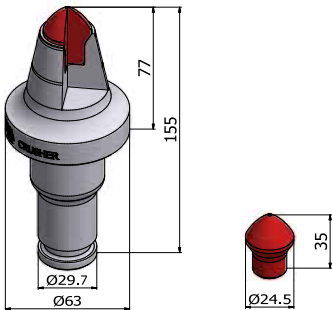
CODE V00-2700-200 DISRUPTOR-S - SUPERCARBIDE



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	22 mm
TYPE	Root
MODEL	DISRUPTOR



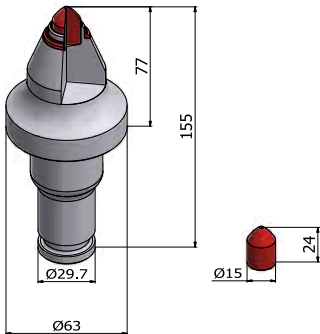
CODE V00-2700-118



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	24,5 mm
TYPE	Root
MODEL	CRUSHER



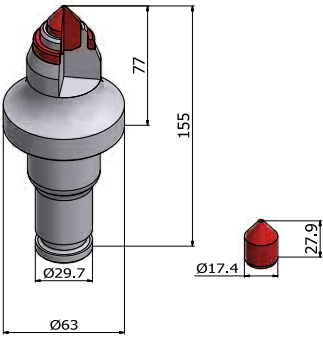
CODE V00-2700-194



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	15mm
TYPE	Bullet
MODEL	CR15 (CARBIDE RING)



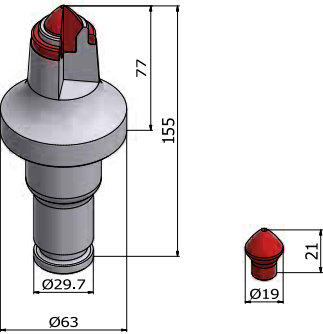
CODE V00-2700-197



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	17.4 mm
TYPE	Bullet
MODEL	CR 17 (CARBIDE RING)



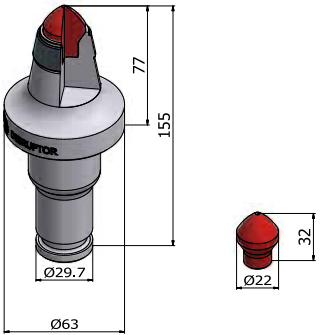
CODE V00-2700-192



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	19 mm
TYPE	Root
MODEL	CR19 (CARBIDE RING)



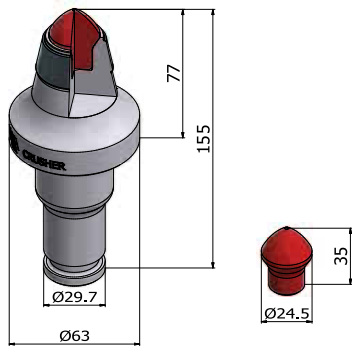
CODE V00-2700-184



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	22 mm
TYPE	Root PLASMA HARD FACING
MODEL	T- REX 22



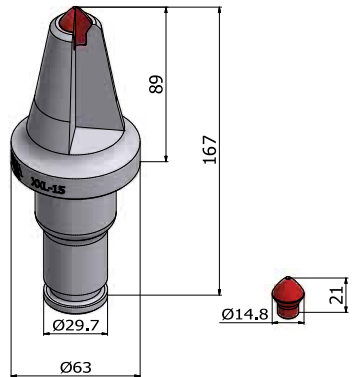
CODE V00-2700-181



LINE	TESMEC
SHANK	30/38
LENGTH	3"
CARBIDE Ø	24,5 mm
TYPE	Root PLASMA HARD FACING
MODEL	T- REX 25



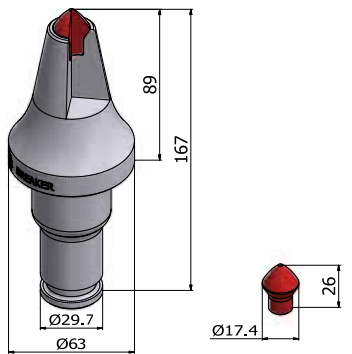
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LINE	TESMEC
SHANK	30/38
LENGTH	3,5"
CARBIDE Ø	14,8 mm
TYPE	Root
MODEL	XXL-15



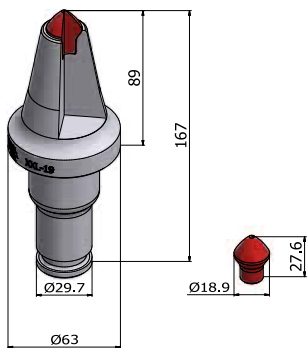
CODE V00-2700-202



LINE	TESMEC
SHANK	30/38
LENGTH	3,5"
CARBIDE Ø	17,65 mm
TYPE	Root
MODEL	BREAKER



CODE V00-2700-202



LINE	TESMEC
SHANK	30/38
LENGTH	3,5"
CARBIDE Ø	18,9 mm
TYPE	Root
MODEL	XXL-19

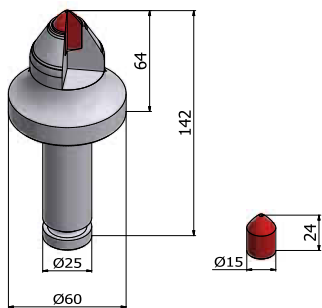


PICKS
Tesmec original Digging Picks

SHANK 25



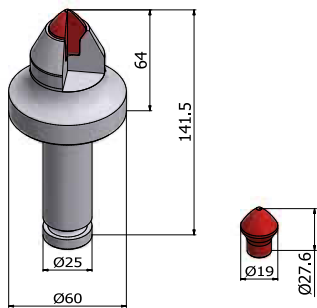
CODE V00-2700-137



LINE	TESMEC
SHANK	25
LENGTH	2,5"
CARBIDE Ø	15 mm
TYPE	Bullet
MODEL	HAVOC 7



CODE V00-2700-139

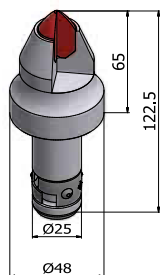


LINE	TESMEC
SHANK	25
LENGTH	2,5"
CARBIDE Ø	19 mm
TYPE	Root
MODEL	HAVOC 9



SHANK 25

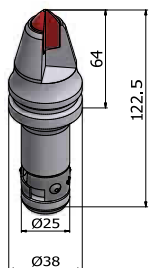
CODE V00-2700-164



LINE	MARAIS
SHANK	25
LENGTH	65 mm
CARBIDE Ø	19 mm
TYPE	Bullet
MODEL	164



CODE V00-2700-163



LINE	MARAIS
SHANK	25
LENGTH	64 mm
CARBIDE Ø	15 mm
TYPE	Bullet
MODEL	163

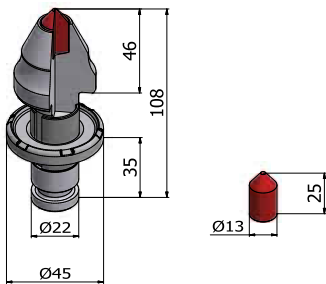


PICKS
Tesmec original Digging Picks

SHANK 22



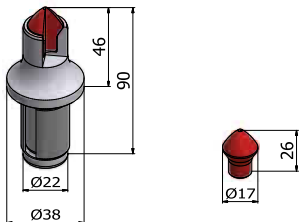
CODE V00-2700-131



LINE	TESMEC
SHANK	22
LENGTH	46 mm
CARBIDE Ø	13 mm
TYPE	Bullet
MODEL	131



CODE V00-2700-132



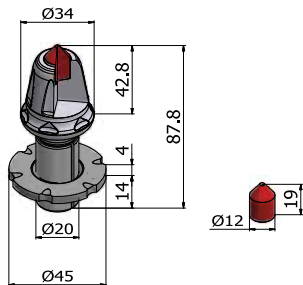
LINE	TESMEC
SHANK	22
LENGTH	46 mm
CARBIDE Ø	17,4 mm
TYPE	Root
MODEL	132



PICKS
Tesmec original Digging Picks
SHANK 20



CODE V00-2700-196



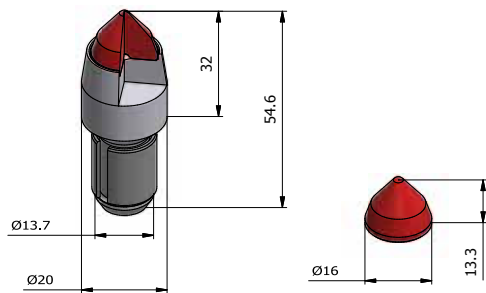
LINE	TESMEC
SHANK	20 mm
LENGTH	42,8 mm
CARBIDE Ø	12mm
TYPE	Bullet
MODEL	MYNI



SHANK 14



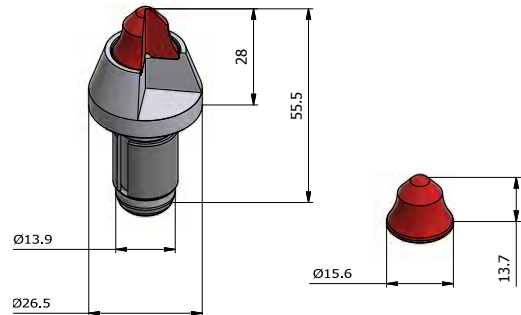
CODE V00-2700-162



LINE	MARAIS
SHANK	14
LENGTH	32 mm
CARBIDE Ø	16 mm
TYPE	Cap
MODEL	162



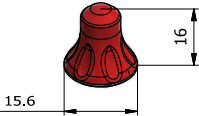
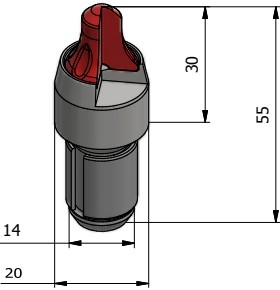
CODE V00-2700-161



LINE	MARAIS
SHANK	14 mm
LENGTH	28 mm
CARBIDE Ø	16 mm
TYPE	Cap
MODEL	161



CODE V00-2700-180



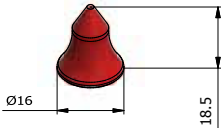
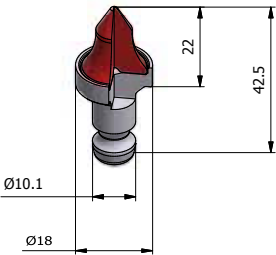
LINE	MARAIS
SHANK	14
LENGTH	55 mm
CARBIDE Ø	15,6 mm
TYPE	Cap
MODEL	180



PICKS
Tescmec original Digging Picks
SHANK 10



CODE V00-2700-186



LINE	MARAIS
SHANK	10 mm
LENGTH	22 mm
CARBIDE Ø	16 mm
TYPE	Cap
MODEL	MYCRO



PICKS
Tescmec original Digging Picks

COMBO BLOCK & SPADE TOOLS



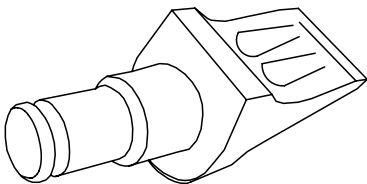
Utilizing only one equipment (group composed by baseplates and digging chain), the use of Combo blocks allows to dig in a very wide variety of soils, from hard rock, utilizing conical tools, to the softer soil, with spade tools.

The shape of the block is anti-spin when used with spade tools, but it allows the perfect rotation when used with standard conicals tools.

It is required the use of tools with 30/38mm shank.

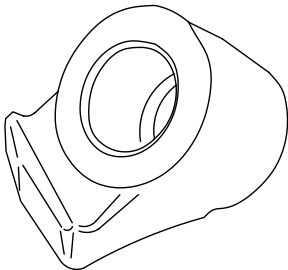
Years of experience in very tough conditions confirm that it is a good solution in many applications.

CODE T002700108B



LINE	DIRT
SHANK	30/38
MODEL	SPADE

CODE V00-2700-002



LINE	DIRT
SHANK	30/38
MODEL	COMBO BLOCK

PICKS

Tesmec original Digging Picks

CUP CUTTER



Cup-Cutters are the good tools to be used in soft soil, with a proper equipment.

Cup-Cutters guarantee an high productivity and a long working life.

They are ideal tools for making trenching for drainage applications.

Cup-Cutters are made of very hard steel with surfacing of hard material on the cutting border.

The shape is optimized for the maximization of the productivity.

CODE V00-2700-054

LINE	DIRT
MODEL	CUP CUTTER DX

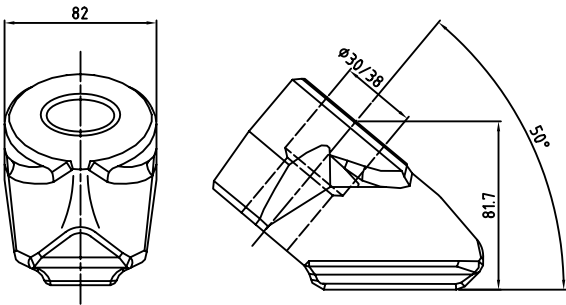


CODE V00-2700-055

LINE	DIRT
MODEL	CUP CUTTER SX



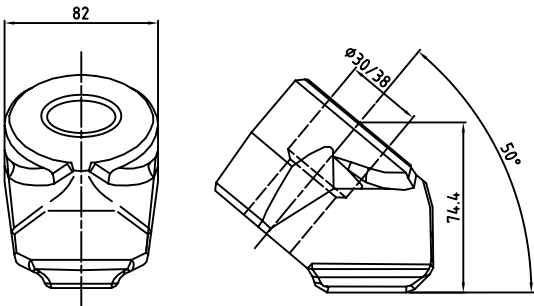
CODE V00-2700-105



SHANK	30/38
SHAPE	Long 50°
SIZE	BIG



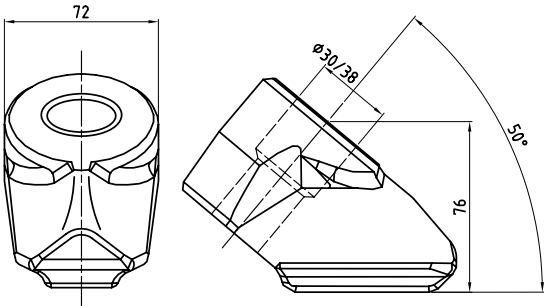
CODE V00-2700-106



SHANK	30/38
SHAPE	Long 50°
SIZE	BIG



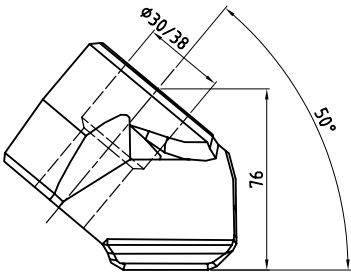
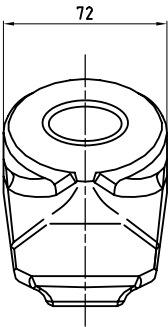
CODE V00-2700-125



LINE	30/38
SHANK	Short 50°
LENGTH	BIG



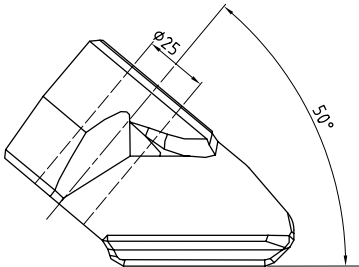
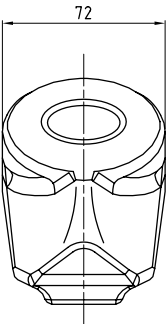
CODE V00-2700-126



LINE	30/38
SHANK	Short 50°
LENGTH	REGULAR



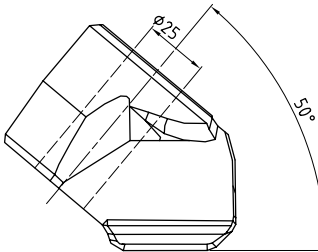
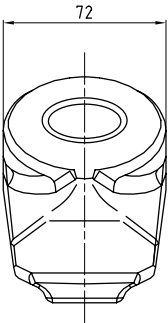
CODE V00-2700-091



LINE	25
SHANK	Long 50°
LENGTH	REGULAR



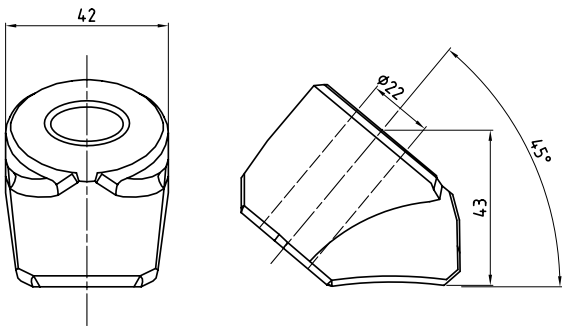
CODE V00-2700-092



LINE	25
SHANK	Short 50°
LENGTH	REGULAR



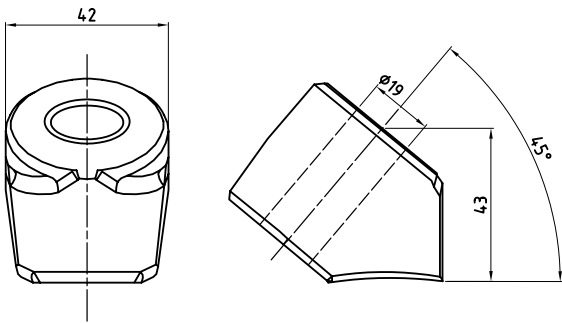
CODE V00-2700-150



SHANK	22 mm
SHAPE	Short 45°
SIZE	REGULAR



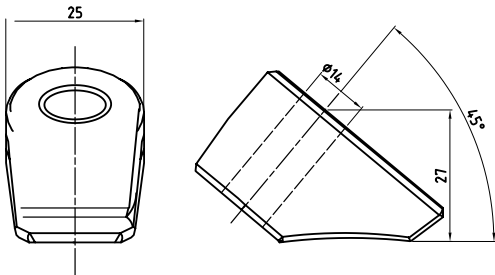
CODE V00-2700-160



SHANK	19 mm
SHAPE	Short 45°
SIZE	REGULAR



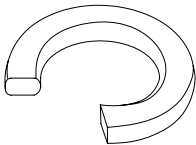
CODE V00-2700-078



SHANK	14 mm
SHAPE	Long 45°
SIZE	REGULAR

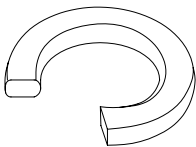


CODE V00-2700-053



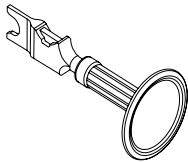
SHANK	1" 1/2
	RETAINER

CODE V00-2700-051



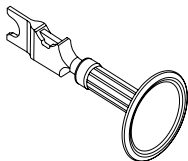
SHANK	1"
	RETAINER

CODE V00-6800-141



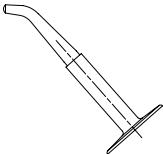
SHANK	1"
	PULLER"

CODE V00-6800-190



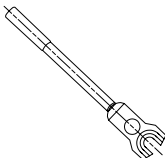
SHANK	1" 1/2
	PULLER

CODE V00-6800-042



	HAMMER PUNCH
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CODE V00-6800-008



	HAMMER - TYPE PULLER FOR REMOVAL OF CUTTING TOOLS
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