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MAXIMIZE YOUR MINERAL CUTTING PRODUCTIVITY

MINERAL GROUND TOOLS



PUTTING YOUR SAFETY FIRST

The mining industry continues to demand even higher levels of safety and productivity. In order to meet these requirements, we work continuously to develop safer products, and to produce comprehensive manuals on the safe and effective use of our products.

IT'S ALL ABOUT EVERYONE'S HEALTH

Helping you to ensure a safer workplace and healthier workforce is of the utmost importance to us. The wellbeing of any person coming into contact with our equipment is paramount. Therefore, we strive to identify and assess potential risk factors that could threaten the health of you and your employees.

All products in this catalogue are designed to meet safety requirements.

BE AWARE OF ALL SAFETY PROCEDURES

We ask that you start by obeying all instructions given. Never work under an unsupported roof or close to potential pinch point locations. Beware of the potential hazards of a loose roof and ribs, and scale down roof and ribs prior to bolting. It is important to bolt early in the mining process – as soon as is safely and practically possible.

Safe work procedures should incorporate inspection – before the machine operates, and also through regular monitoring based upon mining conditions, safety and hazard management systems. Workers should be provided with safety information, instruction and training on transportation, installation, operational care and disposal of drilling tools.

DRESS RIGHT FROM HEAD TO TOE

You must wear appropriate personal protective equipment (PPE) at all times. This is what we strongly recommend to help avoid injury:

- Safety helmet
- Hearing protection
- Safety glasses
- Protective, high visibility clothing
- Respiratory protection
- Safety boots
- Any site-specific PPE as required

MAKE A RISK ANALYSIS BEFORE YOU START

Pay attention to safety when planning all of your work. Before you start, always take the time to go through all operations. Identify any potential risks and take appropriate measures to avoid them. If necessary, seek expert advice on how to help minimize risks. Finally, make sure that you have the right resources to perform all tasks in the safest manner possible.

"TAKE FIVE" TO IDENTIFY HAZARDS

A great safety tool to use before you start working is our app "Sandvik Mining Take Five". The app consists of a simple, step-by-step checklist with five questions that you should ask yourself to identify potential hazards. The app is free to download for smartphones and tablets, both on the App Store and Google Play.





HOW TO WORK WITH SAFETY IN MIND

LIFTING

Use the correct safe lifting practices when working with heavy items. Consider your body position, the awkwardness of the item, and its weight. Are two people required for the job, or is a lifting device needed? Be aware that tools can fall out of their containers during lifting.

INSTALLATION

Cemented tungsten carbide tipped tools have tough, wear-resistant edges. These can fracture or cause hard objects, such as steel hammers, to chip when struck during the installation or removal process. During installation, spring-tensioned clips can become dislodged, leading to the risk of crushing a finger. Use a brass or copper hammer to reduce this risk. Wear safety glasses and gloves as standard.

USE

- Beware that rotating tools can break or become dislodged during use.
- Personal protective equipment (PPE) such as eye protection and suitable clothing should be worn around machinery which uses carbide tipped tools.

- We recommend that you set up a barrier between the cutting drum and the mines personnel. Do this either by placing flexible shielding next to the cutting drum to catch flying objects from the cutting area, or through appropriate PPE.
- Rock cutting generates dust. Some dust is hazardous if inhaled. The use of water spray or exhaust ducting and suitable PPE is always recommended.
- Rock cutting generates noise: suitable hearing protection is recommended.
- The cutting of rock, particularly pyrites and sandstone, can generate heat that may ignite methane in the mine, which in turn can lead to an explosion. Selection of the correct pick design can significantly minimize the risk of frictional ignition during the cutting cycle. Our range contains a variety of designs that minimize this risk: they are suitable for continuous/bolter miners, road headers and long wall shearers.
- A blunt, worn, bent, cracked or damaged pick or pick block can significantly increase the risk of frictional ignition and must be replaced immediately. Safe work and operational procedures should incorporate an

inspection of the machine picks and pick blocks before use, and regular monitoring and review, based upon mining conditions, mine health and safety management systems requirements and hazard management plans. Workers should be provided with safety information, instructions, and training on the transport, installation, operational care and use, service and maintenance and removal of machine picks and pick blocks.

- Inspect tools before use and at regular intervals. If they are loose, dull, bent, cracked, burred, or otherwise unsuitable, DO NOT USE THEM! Replace them.

BLOCKS/SLEEVES

Do not use these if they are cracked, bent, or damaged. The use of tools in holders with excessively worn bores can cause loss of the cutting tool while it is in use, thereby creating a dangerous situation.

GRINDING

Our rock tools have drill bits with cemented carbide tips. Cemented carbide is made up of tungsten carbide and cobalt. Grinding tips will produce hazardous substances

and particles. These can be inhaled or swallowed, or come into contact with the skin or eyes. Wear protective gloves, protective clothing and eye protection. In case of inadequate ventilation, wear respiratory protection. In particular, avoid dry grinding.

DEALING WITH WORN PARTS

Worn parts should be removed and disposed of appropriately. Your used tools can be recycled. Please contact your local Sandvik Mining representative for support and further information about how to recycle tools.

STORING

All products should be stored in a dry place and in their original packaging until required for use.



Sandvik was founded in 1862 by Göran Fredrik Göransson, who was the first in the world to succeed in using the Bessemer method for steel production on an industrial scale.

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TOGETHER WE WILL TAKE YOUR BUSINESS FURTHER

For more than 150 years we have been committed to providing the highest quality products and solutions to the mining industry. Our spirit and business ethics have remained unchanged, and developments in society and the industry have contributed to our innovative solutions.

“Today, the hallmark of great work is innovation and technology. Being second best in this aspect is not an option for us.”

Today, we continue to conduct business in close cooperation with you and other customers all over the world, with the promise of being a proactive and innovative partner.

We believe that we can make a difference to the successful running of your business. You need to get the best out of your equipment – with no compromise on quality, delivery time or service. As your partners, we will create solutions that make your operations run as effectively as possible.

One thing is certain: our products and solutions will continue to meet the ever-growing needs of the mining industry, and your business.

AT YOUR SERVICE AROUND THE WORLD

THE SANDVIK GROUP

Sandvik was established in 1862: today, it is a global industrial group with advanced products and world-leading positions in selected areas. In 2013, we had about 47,000 employees and sales of just over 87 billion SEK in more than 130 countries. Our operations are based on unique expertise in materials technology, and significant insight into customer processes. This combination has provided us with a world-leading position in three primary areas:

- Tools for metal cutting in cemented carbide and high-speed steel as well as components in cemented carbide and other hard materials.
- Rock tools and equipment for the mining and construction industries.
- Products in advanced stainless materials, special alloys, metallic and ceramic resistance materials and process systems.

“We are a leading global supplier of rock tools and equipment, service and technical solutions for the mining industry. Our offering covers rock drilling, rock cutting, rock crushing, loading and hauling and handling of materials.”

Our goal is to actively contribute to improving your productivity and, consequently, your profitability. Our products and services provide maximum value to you in terms of performance, quality, speed, safety, flexibility and – not least – total economy. Successful development is a result of our goal-oriented investment in research,

development and quality assurance. We invest over 3 billion SEK annually and have more than 2,700 employees working in these areas. Many of them are specialists with advanced educational backgrounds and skills.

Our long-term and consistent strategy is based on the interaction between a number of strength factors. This includes advanced and customer focused research and development activities, highly value-added products, integrated manufacturing, direct sales to customers, effective logistics systems, financial strength and a strong corporate culture. Additionally, the significance of Sandvik as an advanced knowledge company is becoming increasingly apparent. Information technology is concentrated upon areas that enhance customer benefits, improve productivity and strengthen profitability.

SANDVIK MINING

We are a leading global supplier of rock tools and equipment, services and technical solutions for the mining industry. Our offering covers rock drilling, rock cutting, rock crushing, loading and hauling and handling of materials. Additionally, we offer a complete assortment of rock drilling tools. In fact, we are the only producer of rock drilling tools with in-house steel and cemented carbide research, development and production facilities.

OUR ORGANIZATION

Every product is preceded by extensive research and development, and backed with application expertise; a worldwide service network, offering on-site service, training and round-the-clock support. We have a tradition of localization and a conviction that there can be no substitute for direct service and direct contact with you. Our service oriented, global organization is well developed and contains more than 3,500 service technicians located strategically around the world.



Our worldwide business activities are conducted through representation in more than 130 countries.



WHICH INVENTION DO YOU NEED?

We invest over 3 billion SEK each year in research and development: more than 2700 of our employees are active in this area. We have 8 000 active patents.

Through close collaboration with our customers, we develop products that are genuinely needed. We also study trends to ascertain what customer needs will be in the future. We are continuously working on unique solutions that help you to improve their productivity and safety.

"The spirit of innovation and involvement runs through every product."

Our focus and continual development give you the latest technical solutions for the most demanding rock conditions, and for the most powerful rock tools. Our products undergo extensive laboratory studies and are mercilessly tested in the field. Finally, they are evaluated and refined to provide the highest grade of equipment quality – something that characterizes all of our products.

A spirit of innovation and high involvement runs through every product. It is preceded by our extensive research and development. This is supported by a worldwide service network offering on-site service, training and round-the-clock support. We have technical service specialists strategically located around the world to quickly give you help – whenever you need it.

RECYCLING THAT PAYS OFF FOR YOU

Environmental considerations are crucial in all of our operations, and never more so than when it comes to the recycling of cemented carbide.

The global shortage of raw material has inspired us to create an extensive scrap-recycling program. We recognize today's increasing environmental concerns and we are the only mining company that recycles both steel and cemented carbide.

In fact, we have been collecting and recycling both scrap and discarded drilling consumables for conversion back into basic raw materials for almost 10 years. A large number of customers have joined our recycling program during this period. One major reason for this is that we make it easy for them to recycle, by collecting scrap from their own premises.

All of our customer service centers are now set up to receive used cemented carbide-enhanced products. Our recycling plant in Chiplun, India complies with the most stringent environmental standards, and is certified to the ISO 14001 and OHSAS 18001 (ISO 45001) international standard.

WHAT WE OFFER:

- Recycling of cemented carbide available worldwide
- Sustainable recycling process with low environmental impact
- Cost recovery and reduced waste disposal for you
- Money received for worn tools can be used to purchase new inserts or finance new tooling projects
- Consumables and tools from all manufacturers are accepted
- A win-win situation for all

Adopting sustainable business practices and handling them in the right way is a foundation that contributes across the entire business value chain. The whole supply chain will be improved by incorporating recycling into the business process. For instance, our recycling process significantly reduces energy consumption and carbon dioxide emissions, thereby reducing environmental impact.



MECHANICAL CUTTING THAT KEEPS BUSINESS MOVING

Our comprehensive range of mechanical cutting equipment will keep your operations moving forward. With optimized cutting technology and equipment designs you can expect higher productivity, longer service life and lower operating costs.

BOLTER MINERS

Sandvik MB series bolter miners are electrically powered, track-mounted continuous mining machines designed to excavate roadways and install roof bolts simultaneously. They are safer, uniquely efficient, high-capacity solutions for both rapid entry development in longwall mining and full-scale production in room-and-pillar mining. Since the cutter drum is mounted on a hydraulically actuated sliding frame, it is able to sump into the face independently of the mainframe and tracks. And since the roof and rib bolters are mounted on the stationary mainframe, they can be operated throughout the cutting cycle.

According to country regulations the machines can be delivered with FLP (flameproof) certifications from various international approval authorities.



CONTINUOUS MINERS

Our electrically-powered, track-mounted continuous miners are designed to cut coal and soft minerals continuously, eliminating the need for drill-and-blast. Using advanced cutting technology, they cut and gather the material simultaneously and convey it into shuttle cars, haul trucks or a continuous haulage system. Extremely productive and reliable, they are used for full-scale production in room-and-pillar operations.

According to country regulations the machines can be delivered with FLP (flameproof) certifications from various international approval authorities.



ROADHEADERS

Sandvik roadheaders are extremely powerful rock-cutting machines designed to excavate roadways, tunnels and chambers continuously without using explosives. They are equipped with powerful, geometrically optimized, transverse cutter heads proven to give the best cutting performance in a wide range of rock formations. Powered

electro-hydraulically, they emit no fumes and are used extensively in coal mining, mineral mining and underground construction projects, where their ability to excavate the desired profile without causing harmful vibrations is highly valued for both environmental and safety reasons. The roadheaders are available as PLC (programmable logical controlled) or hydraulically controlled machine. According to country regulations the machines can be delivered with FLP (flameproof) certifications from various international approval authorities.



BORER MINERS

The Sandvik borer miner MF type is a boring type, variable height and width machine that cuts and delivers material to auxiliary haulage equipment in a truly continuous operation. The machine can be used to drive entries, mine rooms and extract pillars/headings as rapidly as haulage equipment can remove material to the main haulage way. The instantaneous advance rate of the machine can be as high as 23.5 mt per minute or 0.5 meters per minute (borer miner MF420).

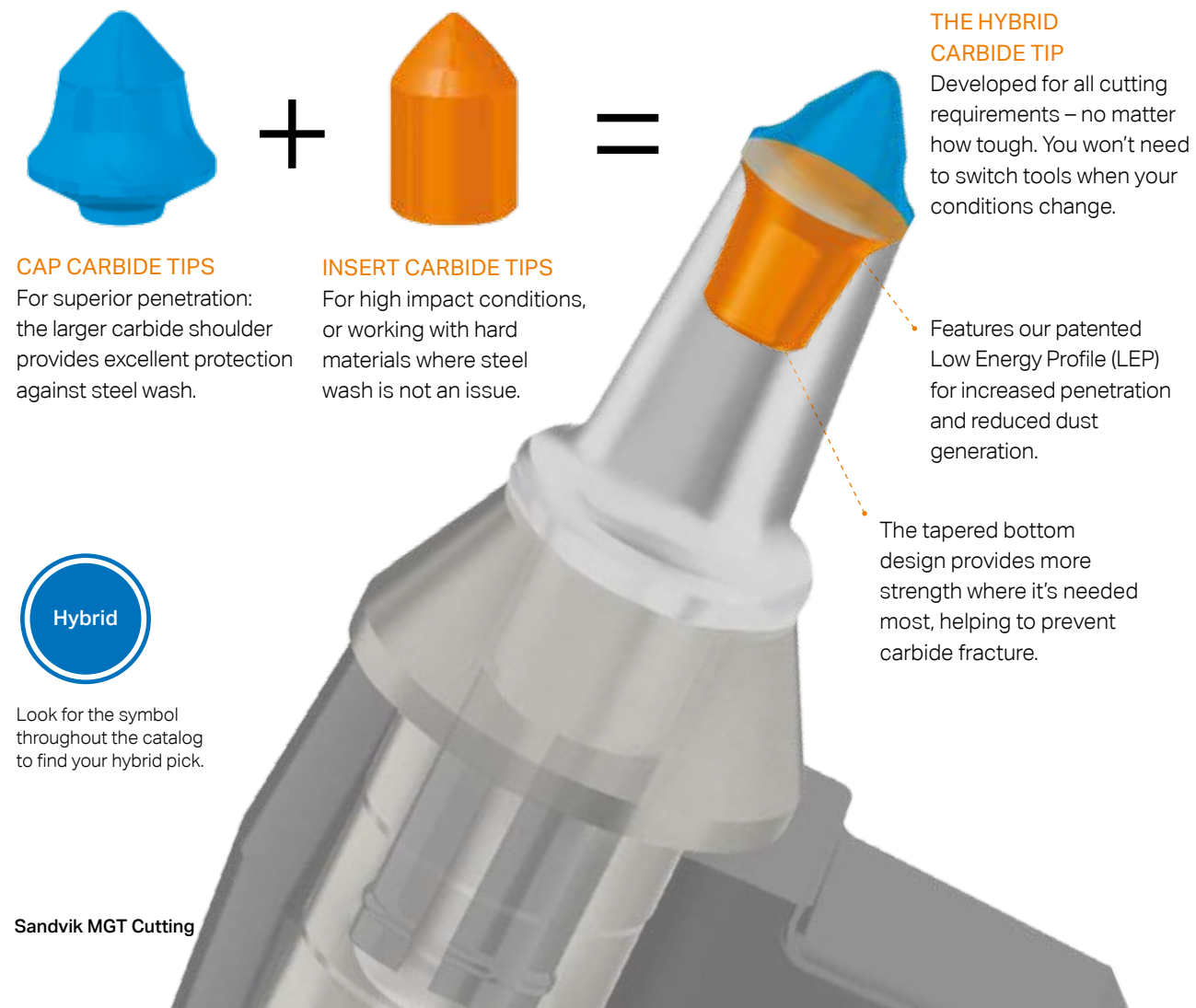
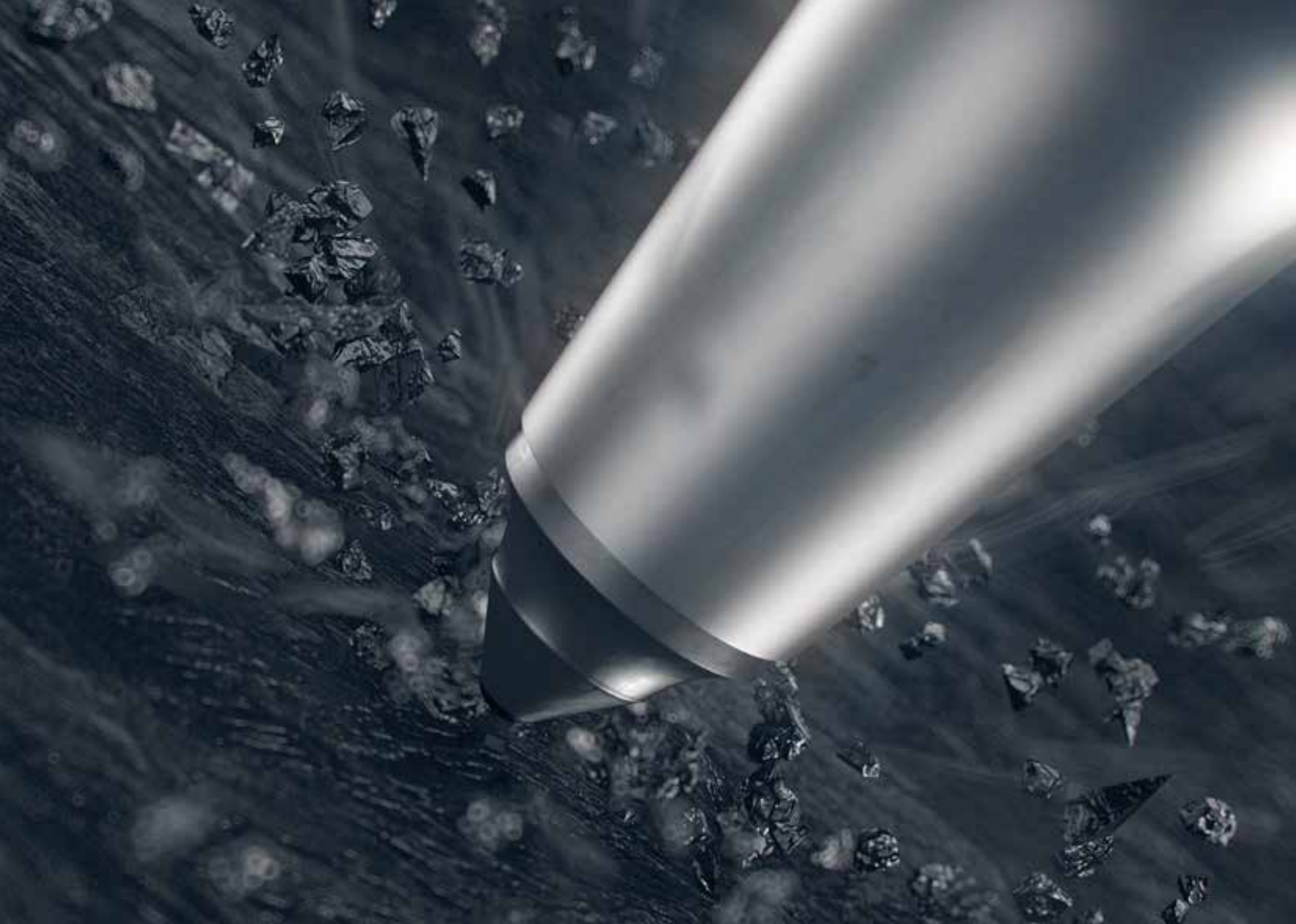


We have a wide range of rigs available. Please contact your local representation for more information.

NEW HYBRID DESIGN

BENEFIT FROM THE BEST OF ALL WORLDS

Our hybrid design gives you a blend of the efficient cutting characteristics of our patented CAP designs, combined with the durability and long life of an insert tip. Hybrid tips are developed to work just as well in extremely demanding cutting conditions as they are in any others, in room and pillar or longwall mining. They are best suited for medium to hard materials where steel wash can be an issue. They include a flared nose, valve seat braze joint and extended base to provide excellent penetration while maintaining maximum strength, shear resistance and durability in difficult conditions. Their design improves safety, efficiency and working conditions; leading to increased productivity and lowered production costs.



WHY CHOOSE THE HYBRID DESIGN?

DESIGNED WITH SAFETY IN MIND

- Ensure a safe working environment
- Hybrid tips are designed to help significantly improve working conditions.
- Our tip penetrates better and generates less dust.
- With our robust design you spend less time changing tools, reducing your exposure to the working face.

MAINTAIN THE PRODUCTION PACE

- Hybrid tools are robust, and they feature an optimized profile for speed and productivity.
- Their unique design offers a tool with an efficient "slim" profile but which outlasts larger tools with wide, blunt designs.
- They offer higher production rates and increased revenue.

INCREASE YOUR UPTIME

- Hybrid tips enable you to focus on mining, thanks to their sturdy, reliable design.
- The tapered lower portion provides added strength and stability precisely where it's needed, minimizing the risk of breakage.
- The hybrid tips run for a longer period with significantly fewer interruptions for maintenance, resulting in more time spent doing what you do best.

HANDLES VARYING WORKING CONDITIONS

- The new Hybrid design can deal with the harshest conditions as well as more forgiving environments.
- Maintain maximum strength, shear resistance and durability in difficult conditions.

CEMENTED CARBIDE: UP FOR ANY TASK

WORLD-LEADING EXPERTISE

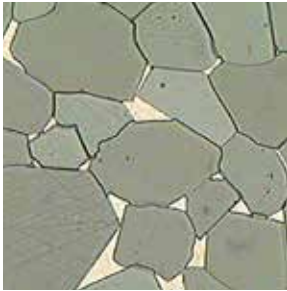
We are the world's leading supplier of machines and tool systems for all rock, surface and mineral excavation applications. We deliver millions of tools annually: for small road planning, ice scraping, projects which require roof drilling bits to be used for all types of coal and soft minerals, up to the biggest tunnelling, trenching and surface mining tools.

We constantly develop new hard material alloys which function in today's demanding environments. One of our extensive research projects in this field has resulted in the development of a new generation of carbide grades and larger, stronger and more stable and efficient tools. Demands on tool performance, particularly relating to cemented carbide tip material and its resistance to wear and fracture, become more critical as we progress into harder rock and mineral formations. Larger continuous cutting machines are being used to replace the drill and blast process in many mining projects. This continuous process offers a lower cost per ton of excavated material, ensures worker safety and has a positive effect on the environment.

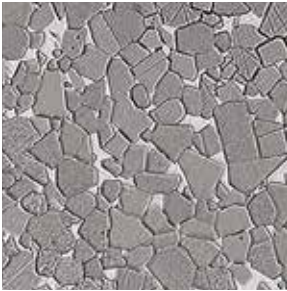
TOUGHEST IN THE INDUSTRY

This latest generation of patented carbide grades is manufactured using an innovative process technique with completely new raw materials. The process has made it possible to create new, extra-coarse, super tough alloys with perfectly uniform grain structure. It has also allowed us to better match tip material grade to hard rock and soft rock applications.

The creation of this material, with a significantly stronger carbide matrix and a perfect grain size configuration, has contributed to superior toughness and the high temperature wear resistance required for many operations. Our range of standard grades are cost



Hard rock grade
(image magnified)



Soft rock grade
(image magnified)

effective in all general surface and underground applications, and can meet or exceed the performance of competitors' brands. The XT-Grade has proven to be 1.5 to 3 times more effective than anything else on the market in hard-to-extreme tunnelling, trenching and coal mining applications.

ADVANCED MINING TOOLS

We have applied our carbide expertise to develop a complete line of mining tools for continuous and long wall mining applications. These include coal, salt, gypsum, limestone, kimberlite and potash. The tools are manufactured to be used with any small, medium or large pieces of mining equipment.

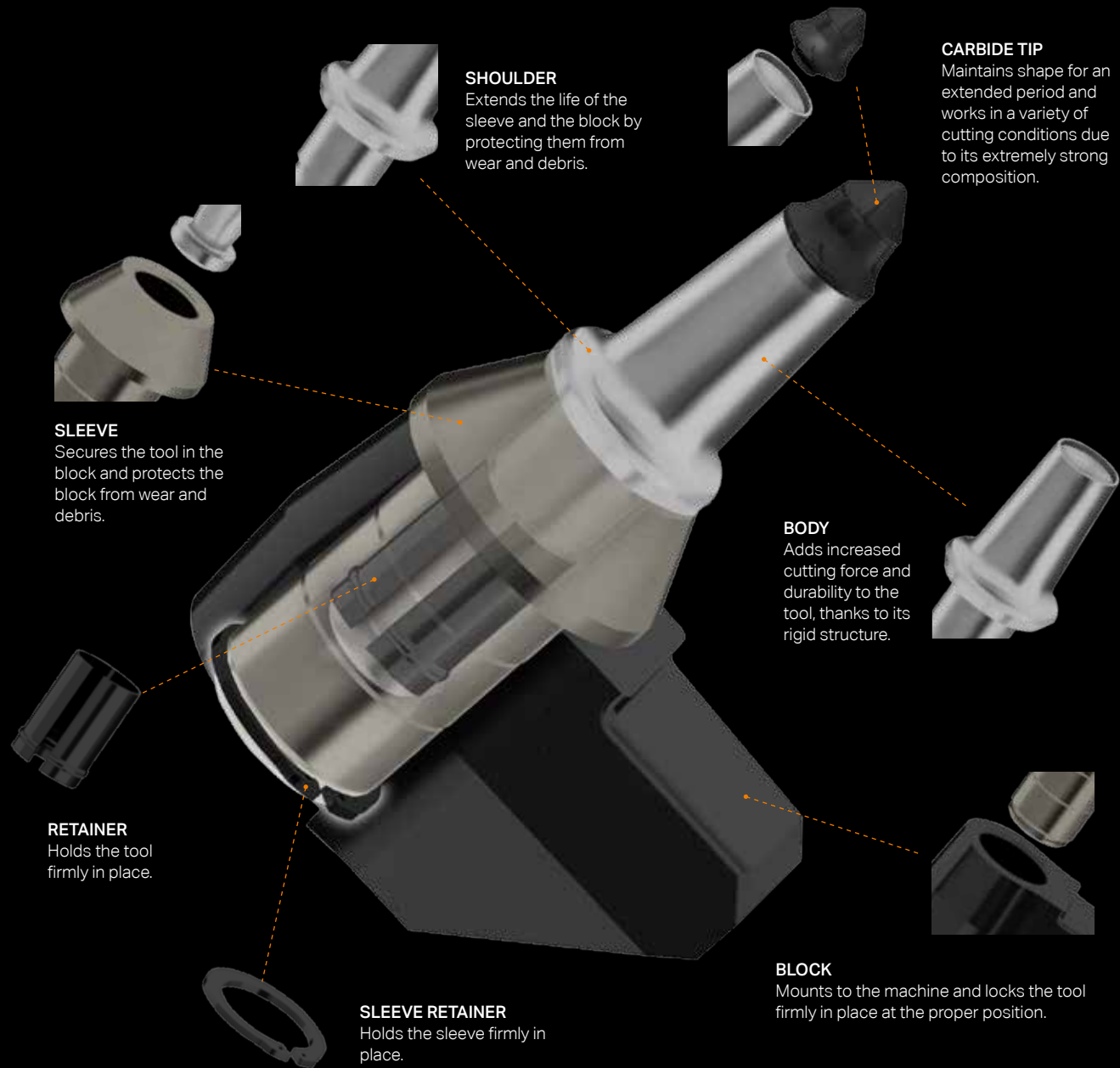
As a result of our extensive research and development, we have designed special tools with spark resistant characteristics that reduce the possibility of frictional ignition, thereby increasing the safety in coal mines. We have also developed our TriSpec™ tools which feature a carbide ring strategically placed slightly below the tip to prevent body wear, maximizing carbide tip use.

CONICAL MINING TOOL SYSTEMS

FIND THE PERFECT TOOL FOR YOU

The key to achieving maximum productivity is having the right tool. We offer a wide selection of advanced conical mining tools that can effectively match your application. Our tool system consists of high-quality components

which help you to achieve greater efficiency. To find the best tool for your machine and your job, take a look at our detailed Tool Selection Guide on page 28.



CARBIDE TIPS



HYBRID
Our hybrid tip combines the best properties of our CAP and insert carbide tips. They are best suited for medium to hard materials where steel wash can be an issue. They include a flared nose, valve seat braze joint and extended base to provide excellent penetration while maintaining maximum strength, shear resistance and durability in difficult conditions.



CAP
Our market leading CAP carbide tips are best suited for soft to medium-hard materials and applications. A valve seat braze joint increases strength and shear resistance. These tips offer superior penetration, and the larger carbide shoulder provides excellent protection against steel wash.



INSERT
Insert carbide tips prevail in high impact conditions or when you are working with hard materials. These industry-leading tips are ideal for penetration applications where steel wash is not an issue.



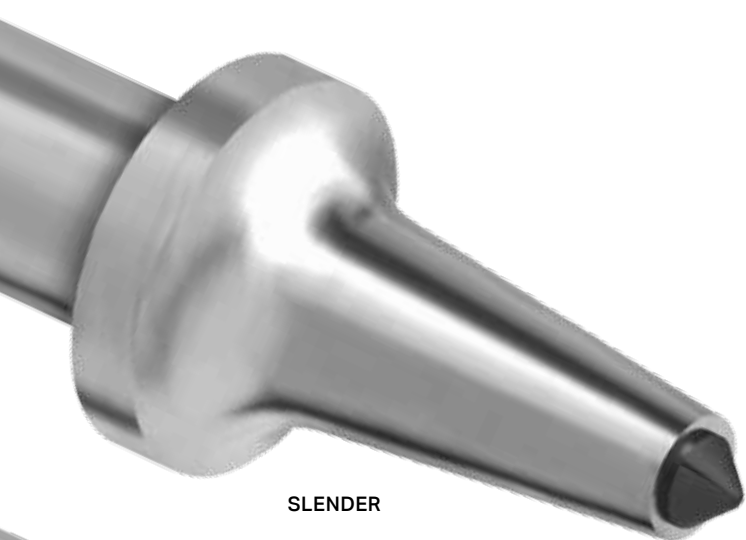
TRISPEC® (TIP-RING COMBINATION)
These tools are equipped with a carbide ring placed slightly below the tip to prevent body wear and maximize carbide tip use. Each tool is available with either an insert or CAP carbide tip. TriSpec® tools reign supreme in high body-wash conditions.



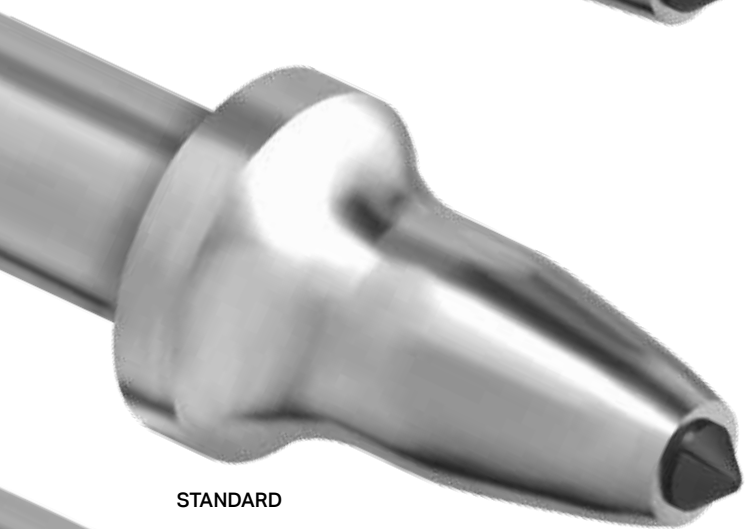
SPARK RESISTANT
These special tools reduce the likelihood of frictional ignition caused by tool impact during the mining process. A carbide ring placed just below a carbide CAP covers all exposed steel on the nose of the tool. Spark resistant tools are ideal for coal mines with high methane levels. Please note that frictional ignitions may still be possible: methane levels should always be monitored closely, regardless of the tools used. Ensure proper maintenance of the water spray at all times.

Top View

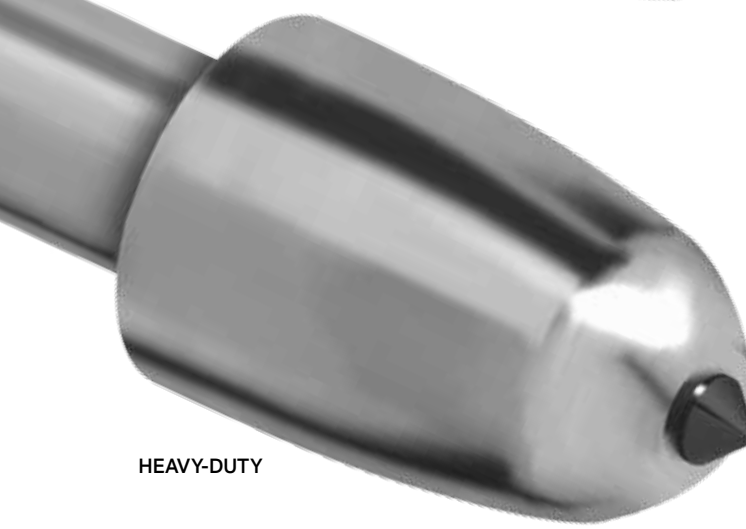
COMPONENTS



SLENDER



STANDARD



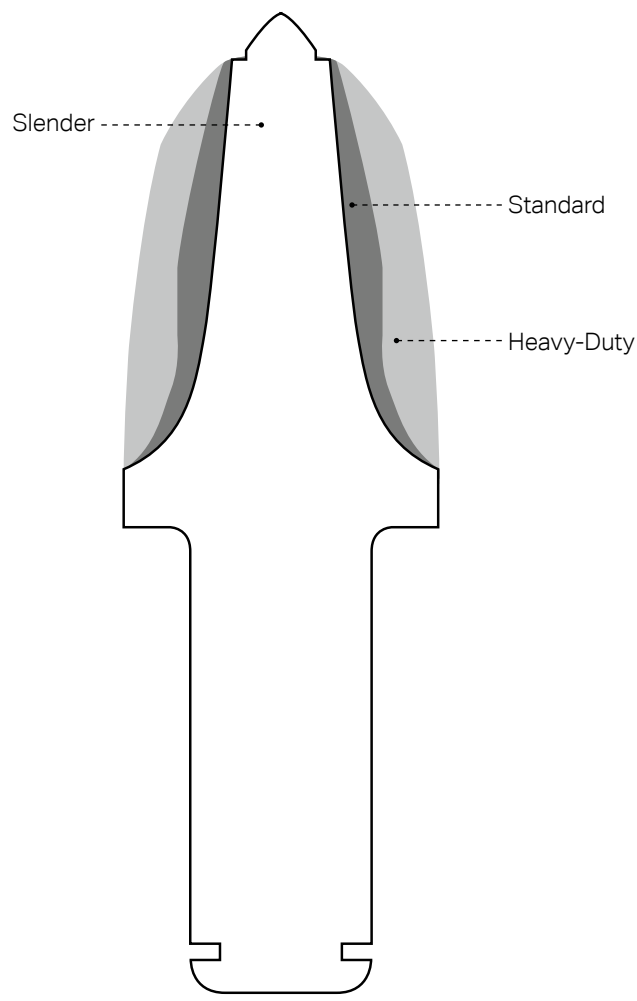
HEAVY-DUTY

TOOL BODIES

We offer the following range of body types to match your machine and application:

- Slender: provides better breakout and penetration while producing fewer fines.
- Standard: provides a powerful combination of penetration and durability.
- Heavy-duty: provides greater strength and maximum durability.

These body types are available in solid and/or finned body styles to meet your requirements and personal preferences. We also offer versions with step shanks to match your machine specifications.



CHAMFER / STANDARD



PULLER



WIDE

The tool shoulder is designed to extend the wear life of the sleeve and block by deflecting material and debris away, and by reducing build-up at the base of the tool. Our standard shoulder design provides excellent sleeve and block protection, but for extreme applications and environments our wide shoulder design delivers an increased level of protection.



SIMPLIFIED TOOL REPLACEMENT

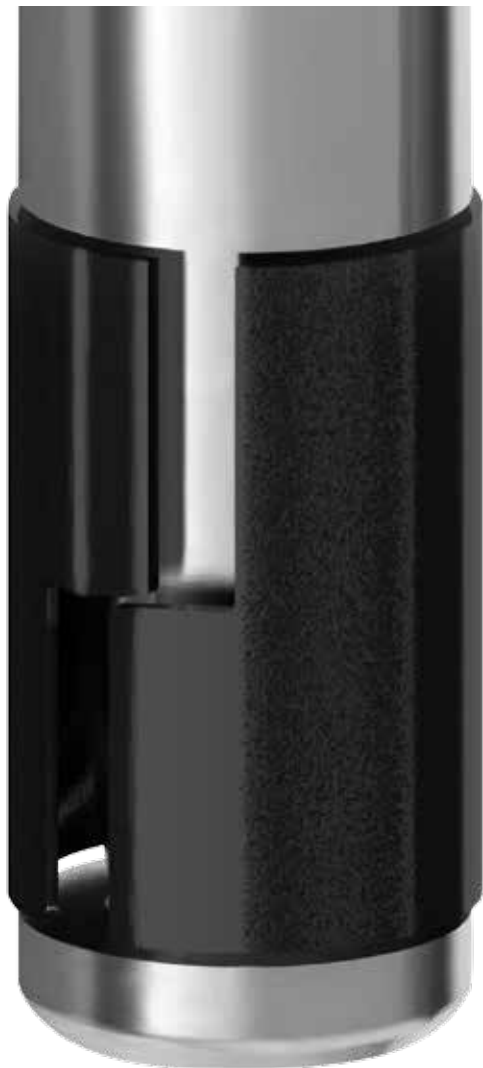
Our full line of puller and extractor accessories makes it easy for you to change tools.



RETAINERS

BUMPED / RAISED RETAINER

An internal retainer made of either metal or plastic that fits on the tool shaft and has a raised section which snaps into a groove within the sleeve, creating a positive lock for better retention.



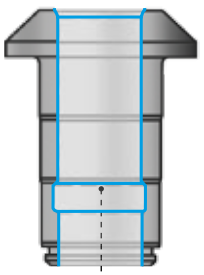
FRICTION RETAINER

We have numerous internal friction retainers which hold the tool in the sleeve, and which are determined by the sleeve design.



SLEEVES

Sleeves extend block life by minimizing its exposure to wear, protecting it from material and debris. The block's shape, style and measurements determine the type of sleeve that is required for your machine. Your block also determines whether you should use a slip-fit sleeve that uses an external retainer to hold it in place, or a press-fit sleeve, which does not require a retainer.



INNER BORE

BLOCKS

Blocks are welded to the machines, holding the sleeves and tools in their proper positions. A block is protected by the sleeve and the shoulder of the tool, which help to extend its life and minimize the need for replacement.



HOSE CLAMP

SNAP-RING

HAIR PIN

EXTERNAL RETAINER

External retainers provide maximum tool retention and are placed on the grooves at the end of the tools after they are placed in their sleeves. There are many different styles of external retainers available: hairpin, hose clamp, and snap-ring. All of these retainers are available in metal, with some also available in plastic. We can provide accessories to help you install and remove these retainers.



WHAT TO CONSIDER WHEN WORKING WITH TOOLS



Check the water spray system (proper flow and pressure, plugged nozzles, etc.).

TOOL PERFORMANCE AND LIFE

To get the most out of your tools, please make sure that they are checked thoroughly and maintained well.

TOOL SELECTION PARAMETERS

The guidelines below provide a suggested reference to help you choose between tools. Many other factors affect tool performance, including the drum condition, water flow, rock abrasivity and machine power. The best way to find the tools that suits your requirements is by contacting your local Sandvik representative.



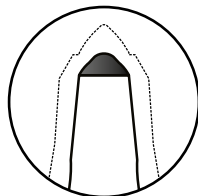
Check tool rotation.



Change sleeves before they display excessive wear. Walled bores will inhibit tool rotation and retention.

HARDNESS CLASSIFICATION FOR ROCK

Description	Compressive Strength (MPa)
Soft	$\sigma_c < 30$
Medium	$20 < \sigma_c < 50$
Hard	$40 < \sigma_c < 80$
Extreme	$70 < \sigma_c$



Change tools before they fail. A broken tool used during operation can damage the entire system, and any tools that replace it. Consult the tool wear guide on next page.

ABRASIVITY CLASSIFICATIONS FOR ROCK

Description	Cherchar Abrasivity Index Value (CAI)
Low	$CAI < 1.0$
Moderate	$1.0 < CAI < 2.0$
High	$2.0 < CAI < 3.0$
Extreme	$3.0 < CAI$

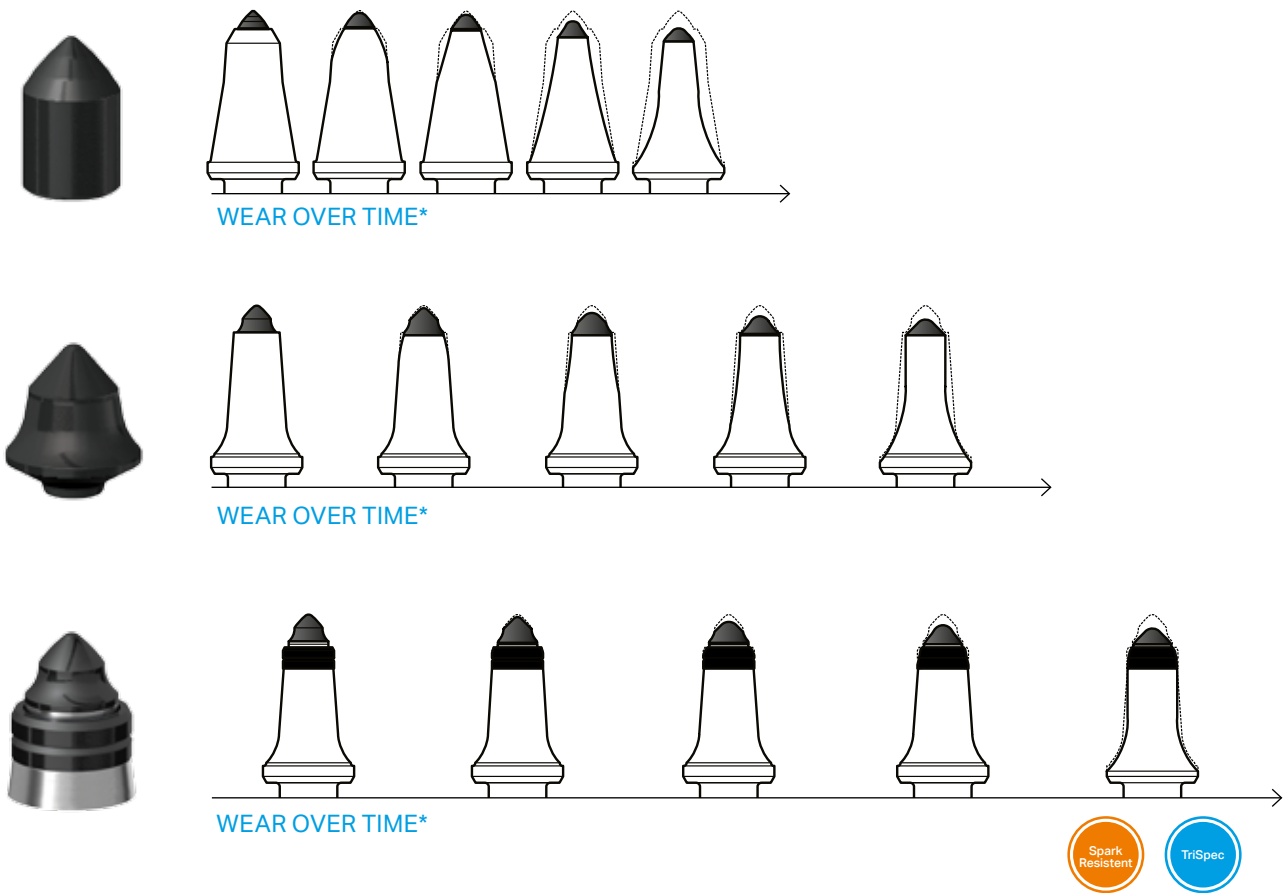


Make sure that you are using the right tool for your conditions. Consult the tool selection guide on page 28, or contact your local Sandvik representative to help find the best equipment for your needs.

WARNING

Cemented carbide tipped tools have extremely hard and wear-resistant edges that may fracture, or cause less hard objects (such as steel hammers) to chip when struck during installation or removal.

TOOL WEAR



MAXIMIZED USE AND OPTIMIZED SAFETY

XT GRADE

Our XT-Grade (XT = Extra Tough), with its high wear resistance and optimized toughness, has proven to be 1.5 to 3 times more effective than other products on the market for hard-to-extreme tunnelling, trenching and coal mining applications.

TRISPEC®

TriSpec® tools are equipped with a carbide ring placed slightly below the tip to prevent body wear and maximize carbide tip use. Each tool is available with either an insert or CAP carbide tip. TriSpec® tools reign supreme in high body-wash conditions.

SPARK RESISTANT

Spark Resistant tools reduce the risk of frictional ignition caused by tool impact during the mining process. A carbide ring placed just below a carbide CAP covers all exposed steel on the nose of the tool. Spark Resistant tools are ideal for coalmines with high methane levels.

HYBRID

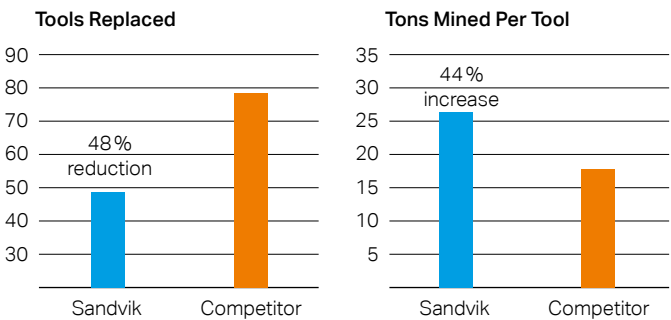
The new hybrid tools offer a blend of efficient cutting from the Sandvik patented cap design with the durability and long life of our insert style tip. Eliminating the need to stop and change tools. They are robust and feature an optimized profile for speed and productivity.

*Results may vary. Based on typical medium abrasiveness

NO GROUND CONDITIONS ARE TOO TOUGH

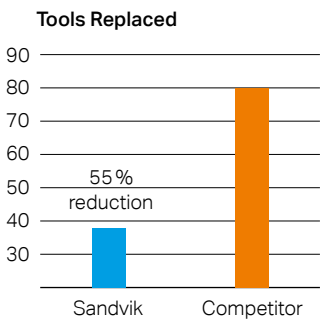
MEDIUM ROCK COAL WITH HARD SHALE & SANDSTONE

Condition: 762 mm (30") coal with 762 mm (30") hard shale & sandstone inclusions.
Mining: Coal with continuous miner.
Method: Room and pillar.
Sandvik Tool: Q8KX-3084-5790 (XT-Grade).
Competitor Tool: Standard grade (best equivalent with similar geometry).



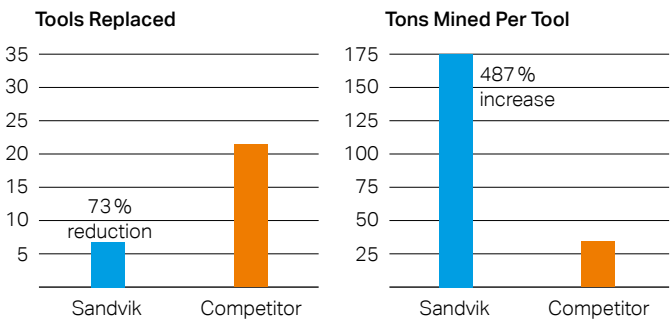
MEDIUM ROCK COAL WITH HARD SHALE, SANDSTONE & HARD SOAPSTONE

Condition: 127 mm (5") coal with 457 mm (18") medium shale, 305 mm (12") sandstone, 305 mm (12") hard soapstone (steatite).
Mining: Coal with continuous miner.
Method: Room and pillar.
Sandvik Tool: Q8KF-3084-5762 (standard grade).
Competitor Tool: Standard grade (best equivalent with similar geometry).



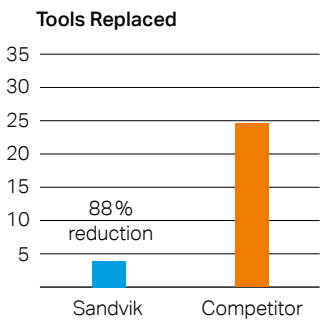
MEDIUM ROCK COAL WITH HARD SHALE & SULFUR BALLS

Condition: 1,651 mm (65") coal with 1,092 mm (43") hard shale & sulfur balls (carbonate nodules).
Mining: Coal with continuous miner.
Method: Room and pillar.
Sandvik Tool: Q8KX-3084-5062 (standard grade).
Competitor Tool: Standard grade (best equivalent with similar geometry).



EXTREME HARD ROCK

Condition: Silver with quartz veins & flintstone.
Mining: Silver with a road header.
Method: Room and pillar.
Sandvik Tool: Q7AU-3870-1790 (XT-Grade).
Competitor Tool: Standard grade (best equivalent with similar geometry).



TOOL SELECTION GUIDE

For more information of each component, review the overview on page 17.

Product	Cutting condition				Retainer type		Penetration	Life	Body type		Tip type	Additional feature	Page
	Soft	Medium	Hard	Extreme	Friction	Bumped	External	Good Heavy-Duty	Better Standard	Best Slender	Standard	Finned	
25 mm													
P9QA-2561-4262	●					●		●			Good	●	Insert NP42 Puller groove 37
P9MS-2563-4262	●						●	●			Good	●	CAP NP42 39
P7MS-2564-2462	●						●	●			Better	●	CAP NP24 39
P9MS-2569-1265	●						●			●	Better	●	CAP NP12 39
P8JA-2563-3262		●			●				●		Best	●	Insert NP32 35
P9XJ-2569-5762		●			●		●	●			Better	●	CAP NP57 Puller groove 34
P9AA-2563-0562		●				●			●		Good	●	Insert NP05 Puller groove 36
P9AA-2569-2462		●				●			●		Best	●	CAP NP24 Puller groove 36
P9QA-2565-1862		●				●				●	Best	●	CAP NP18 Puller groove 37
Q7MS-2569-3562		●					●			●	Good	●	Insert NP32 39
Q7MF-2569-5762		●					●			●	Best	●	CAP NP57 41
Q7MF-2569-3562		●					●			●	Best	●	Insert NP35 41
P9XJ-2563-5062			●		●		●	●			Best	●	CAP NP50 Puller groove 34
P9QA-2560-3562			●			●			●		Better	●	Insert NP35 Puller groove 37
P9AA-2563-1362			●			●			●		Best	●	Insert NP13 Puller groove 36
Q7AF-2569-5762			●			●				●	Best	●	CAP NP57 38
P9MS-2563-5062			●				●	●			Best	●	CAP NP50 40
Q7MS-2563-3562			●				●		●		Better	●	Insert NP35 40
Q7MS-2569-5762			●				●			●	Better	●	CAP NP57 40
30 mm													
Q8AF-3084-5762	●					●			●		Best	●	CAP NP57 45
Q8AX-3084-1862	●					●				●	Good	●	CAP NP18 42
Q8AX-3084-5762	●					●				●	Best	●	CAP NP57 34
Q8AF-3095-5762	●					●				●	Best	●	CAP NP57 42
Q8KX-3084-1862	●						●			●	Better	●	CAP NP18 46
P8AA-3084-5762		●				●			●		Better	●	CAP NP57 42
P8AA-3084-4362		●				●			●		Better	●	CAP NP43 42
Q8AZ-3084-7462		●				●			●		Best	●	Hybrid NP74 46
Q8TA-3089-4362		●				●				●	Good	●	CAP NP43 Extended shank 44
Q8AX-3084-4362		●				●				●	Better	●	CAP NP43 42
Q8KD-3085-3262		●					●		●		Good	●	Insert NP32 47
Q8KD-3080-4562		●					●		●		Better	●	CAP NP45 47
W8KD-3085-4562		●					●		●		Best	●	Insert NP45 Spark resistant 46
P8KD-3084-5762		●					●		●		Best	●	CAP NP57 46
Q8KX-3084-7462		●					●		●		Best	●	Hybrid NP74 46
Q8KZ-3084-7462		●					●		●		Best	●	Hybrid NP74 Washer 46
Q8KX-3084-3562		●					●			●	Better	●	Insert NP35 47
Q8KX-3084-5762		●					●			●	Best	●	CAP NP57 46
Q8KF-3084-5762		●					●			●	Best	●	CAP NP57 50
Q8TA-3089-4562			●			●		●			Better	●	CAP NP45 Extended shank 44
Q8TA-3070-5662			●			●		●			Best	●	CAP NP56 Extended shank 44
Q2AA-3077-4162			●			●			●		Good	●	Insert NP41 Extended shank 44
Q8TA-3070-4162			●			●			●		Good	●	Insert NP41 Extended shank 44

Product	Cutting condition				Retainer type		Penetration	Life	Body type		Tip type	Additional feature	Page
	Soft	Medium	Hard	Extreme	Friction	Bumped	External	Good Heavy-Duty	Better Standard	Best Slender	Standard	Finned	
P8AA-3084-2362			●			●			●		Best	●	CAP NP23 43
P8AA-3084-5662			●			●			●		Best	●	CAP NP56 43
Q8TA-3089-4162			●			●				●	Good	●	Insert NP41 Extended shank 44
P8AA-3084-5062			●			●				●	Better	●	CAP NP50 43
Q8AF-3084-3562			●			●				●	Good	●	Insert NP35 45
Q8KD-3085-4162			●				●		●		Good	●	Insert NP41 48
Q8KD-3070-4162			●				●		●		Good	●	Insert NP41 48
P5KS-3075-3962			●				●	●			Better	●	Insert NP39 48
Q8KD-3085-4562			●				●		●		Better	●	CAP NP45 47
Q6XX-3090-4562			●				●		●		Better	●	CAP NP45 Extended shank 49
P8KD-3084-2362			●				●		●		Best	●	CAP NP23 48
Q6XX-3090-5662			●				●		●		Best	●	CAP NP56 Extended shank 49
Q8KF-3084-3562			●				●		●		Good	●	Insert NP35 50
Q8KZ-3084-7562			●				●			●	Best	●	Hybrid NP75 Washer 47
Q8KX-3084-5062			●				●			●	Best	●	CAP NP50 48
P8AA-3084-5690				●		●			●		Best	●	CAP NP56 XT-grade 43
35 mm													
T6JA-3525-6062	●				●					●	Good	●	Insert NP60 TriSpec 53
T6JA-3500-6062	●				●					●	Good	●	Insert NP60 TriSpec 53
Q7JK-3585-4362	●				●					●	Best	●	CAP NP43 53
Q7JX-3585-4362	●				●					●	Best	●	CAP NP43 53
Q7AX-3502-4362	●					●				●	Better	●	CAP NP43 52
Q7MR-3502-5762	●						●			●	Best	●	CAP NP57 55
Q7AK-3502-5062		●			●	●				●	Better	●	CAP NP50 51
Q7AX-3502-5062		●				●				●	Better	●	CAP NP50 52
Q7AR-3502-2362		●				●				●	Better	●	CAP NP23 52
Q6MR-3500-2362		●					●		●		Better	●	CAP NP23 Puller groove 55
Q7MR-3502-5062		●					●			●	Good	●	CAP NP50 55
Q6JA-3580-2162			●		●			●			Good	●	Insert NP21 54
Q7JA-3589-5662			●		●			●			Best	●	CAP NP56 54
Q7JX-3502-5662			●		●				●		Best	●	CAP NP56 54
W7AR-3502-3962			●			●			●		Better	●	Insert NP39 TriSpec 52
Q7AR-3502-5662			●			●			●		Best	●	CAP NP56 52
Q6MR-3580-3962			●				●		●		Better	●	Insert NP39 Puller groove 55
Q7MR-3502-7662			●				●			●	Best	●	Hybrid NP76 55
Q7JA-3589-5690				●	●			●			Best	●	CAP NP56 XT-Grade 54
38 × 30 mm													
Q6EC-3897-4362	●						●			●	Best	●	CAP NP43 Plastic retainer 58
Q6EC-3877-4362		●					●		●		Better	●	CAP NP43 Plastic retainer 58
Q3DS-3870-2362		●					●		●		Best	●	CAP NP23 57
Q7VG-3875-1962			●			●		●			Best	●	Insert NP19 56
Q2VA-3877-2162			●			●			●		Better	●	Insert NP21 56
Q5EC-3877-2162			●				●		●		Better	●	Insert NP21 58

CONICAL TOOLS

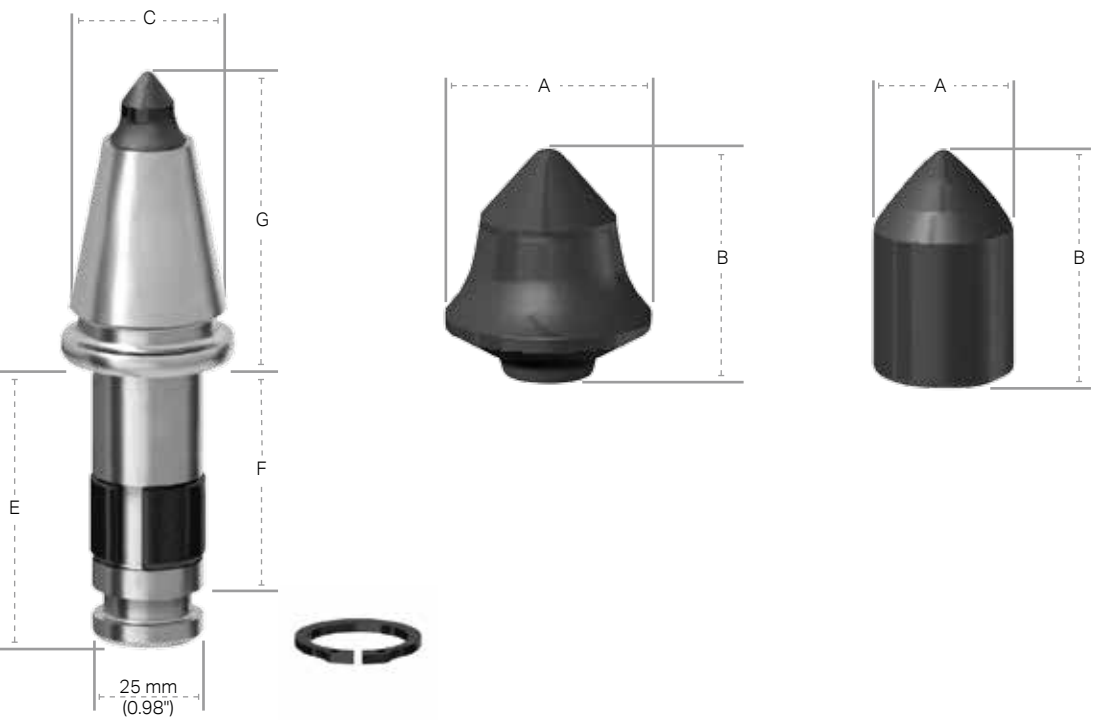
Our conical tools are available in shank diameter sizes ranging from 25 mm to 43 mm, for use on road headers, long wall and continuous miners, and crushers for the mining and tunnelling industries. These tools are manufactured in production facilities in the United States, India, China and Australia, according to the highest quality standards.



Product	Cutting condition				Retainer type		Penetration			Life	Body type		Tip type	Additional feature	Page
	Soft	Medium	Hard	Extreme	Friction	Bumped	External	Good Heavy-Duty	Better Standard	Best Slender		Standard	Finned		
38 mm															
Q7AU-3885-2362	●					●			●		Good	●		CAP NP23	60
Q7AU-3870-2162		●				●		●			Good	●		Insert NP21	60
P7JU-3870-1962			●		●			●			Better	●		Insert NP19	59
P7AU-3870-1962			●			●		●			Better	●		Insert NP19	60
Q7AU-3870-1962			●			●		●			Better	●		Insert NP19	60
P7AU-3870-1762			●			●		●			Best	●		Insert NP17	60
Q7AU-3870-1762			●			●		●			Best	●		Insert NP17	61
Q7AU-3870-5662			●			●		●			Best	●		CAP NP56	60
P7JU-3870-1970				●	●			●			Better	●		Insert NP19	XT-Grade 59
Q7AU-3870-1970				●		●		●			Better	●		Insert NP19	XT-Grade 61
Q7AU-3870-1990				●		●		●			Better	●		Insert NP19	XT-Grade 61
Q7AU-3870-1770				●		●		●			Best	●		Insert NP17	XT-Grade 61
Q7AU-3870-1790				●		●		●			Best	●		Insert NP17	XT-Grade 61
43 × 35 mm															
Q3JX-4314-2366	●				●					●	Best	●		CAP NP23	62
W3XA-4314-3962		●			●				●		Best	●		Insert NP39	63
W3XA-4314-2362		●			●				●		Best	●		CAP NP23	Spark Resistant 62
Q3JX-4314-2362		●			●					●	Good	●		CAP NP23	62
Q3XA-4337-5662		●			●					●	Better	●		CAP NP56	62
Q3XA-4314-5662			●		●				●		Better	●		CAP NP56	63
Q3XA-4302-5662			●		●				●		Best	●		CAP NP56	63
Q3XA-4314-7662			●		●						Better	●		Hybrid NP76	63
Q3XZ-4319-5662			●		●		●		●		Better	●		CAP NP56	Washer Dual retention 64
Q3XD-4395-2062			●				●	●			Best	●		CAP NP20	64
W3XD-4302-3962			●				●		●		Best	●		Insert NP39	TriSpec 64
Q3XD-4314-5662			●				●		●		Best	●		CAP NP56	64
Q3XZ-4319-5690				●	●		●		●		Best	●		CAP NP56	Washer. Dual retention. XT-grade 65
Q3XD-4302-1990				●			●		●		Best	●		Insert NP19	XT-grade 64
Q3XD-4302-7590				●			●				Best	●		Hybrid NP75	XT-grade 64

25 MM TOOL

FRICTION/EXTERNAL RETAINER



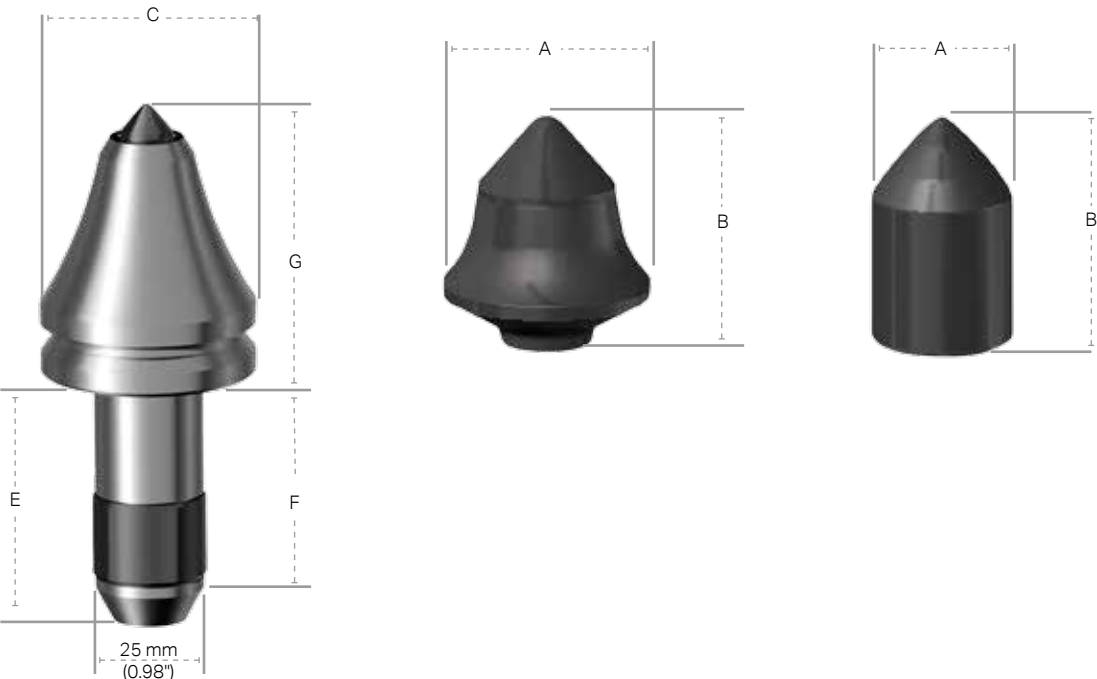
CUTTING CONDITIONS

		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		40 mm	70 mm	66 mm	54 mm	18 mm	21 mm	P9XJ-2569-5762	25	60	1500
		1.59"	2.75"	2.59"	2.13"	0.70"	0.81"				
HARD		40 mm	63 mm	66 mm	54 mm	22 mm	25 mm	P9XJ-2563-5062	25	60	1500
		1.59"	2.50"	2.59"	2.13"	0.87"	1.00"				

EU: European pallet. STD: Standard pallet.

25 MM TOOL

FRICTION RETAINER



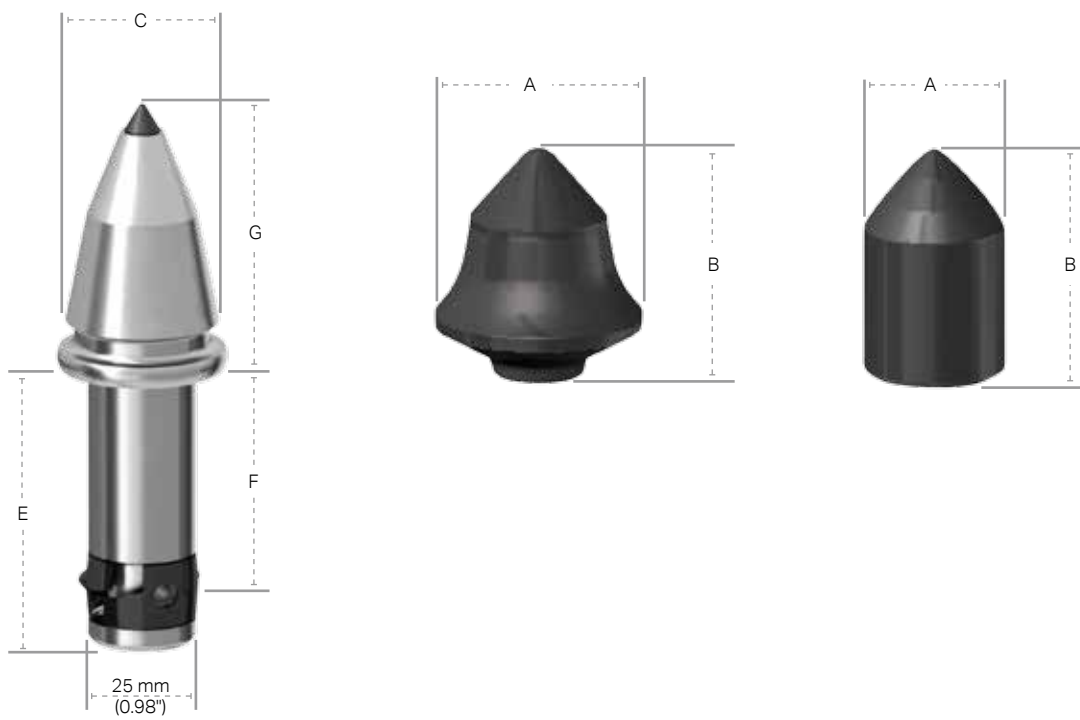
CUTTING CONDITIONS

		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		50 mm	64 mm	58 mm	54 mm	12 mm	22 mm	P8JA-2563-3262	25	60	1500
		1.96"	2.5"	2.28"	2.13"	0.48"	0.88"				

EU: European pallet. STD: Standard pallet.

25 MM TOOL

BUMPED RETAINER



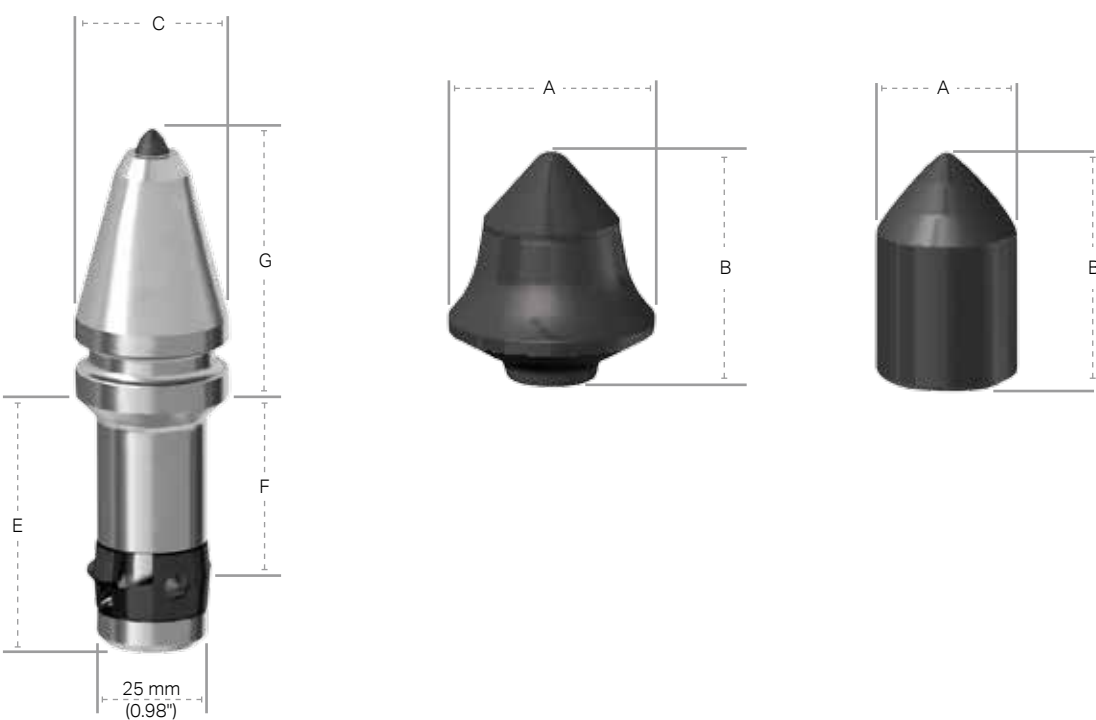
CUTTING CONDITIONS

		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		40 mm	70 mm	66 mm	52 mm	16 mm	17 mm	P9AA-2569-2462	25	60	1500
		1.59"	2.75"	2.59"	2.06"	0.64"	0.65"				
		40 mm	63 mm	66 mm	52 mm	8 mm	18 mm	P9AA-2563-0562	25	60	1500
		1.59"	2.50"	2.59"	2.06"	0.33"	0.69"				
HARD		40 mm	63 mm	66 mm	52 mm	15 mm	23 mm	P9AA-2563-1362	25	60	1500
		1.59"	2.50"	2.59"	2.06"	0.60"	0.91"				

EU: European pallet. STD: Standard pallet.

25 MM SHORT TAIL TOOL

BUMPED RETAINER



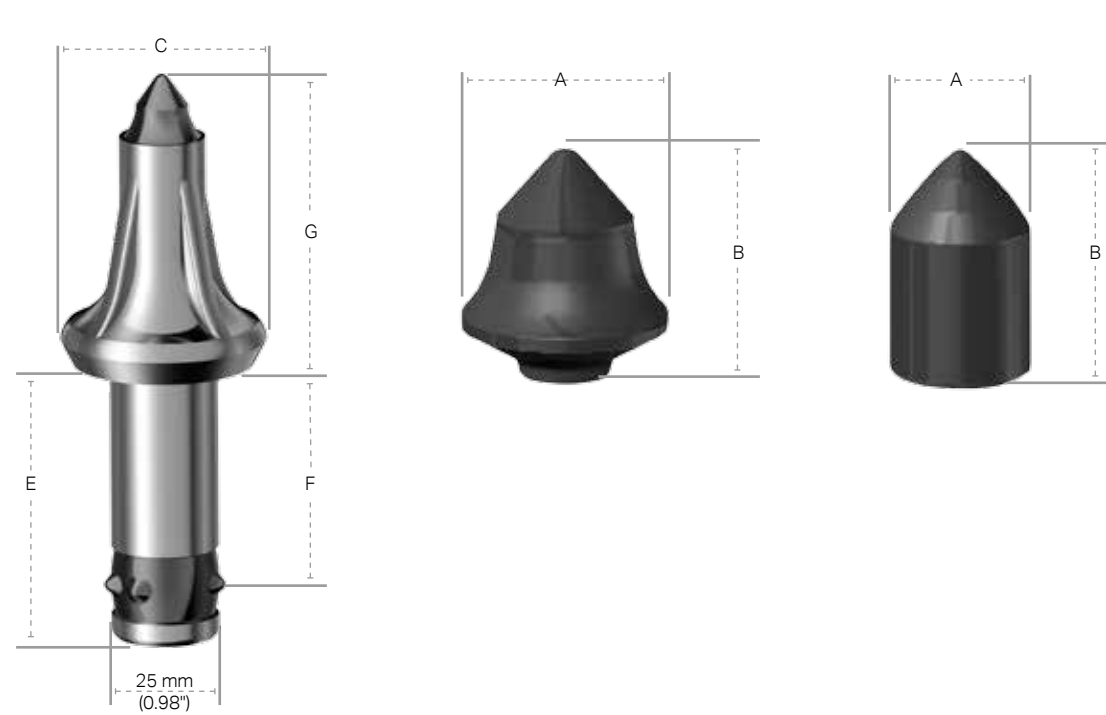
CUTTING CONDITIONS

		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		35 mm	62 mm	58 mm	42 mm	8 mm	17 mm	P9QA-2561-4262	25	60	1500
		1.38"	2.44"	2.29"	1.65"	0.33"	0.67"				
		35 mm	65 mm	58 mm	42 mm	16 mm	20 mm	P9QA-2565-1862	25	60	1500
		1.38"	2.54"	2.29"	1.65"	0.64"	0.77"				
MEDIUM		35 mm	58 mm	58 mm	42 mm	12 mm	19 mm	P9QA-2560-3562	25	60	1500
		1.38"	2.30"	2.29"	1.65"	0.48"	0.76"				

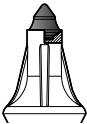
EU: European pallet. STD: Standard pallet.

25 MM FINNED TOOL

BUMPED RETAINER



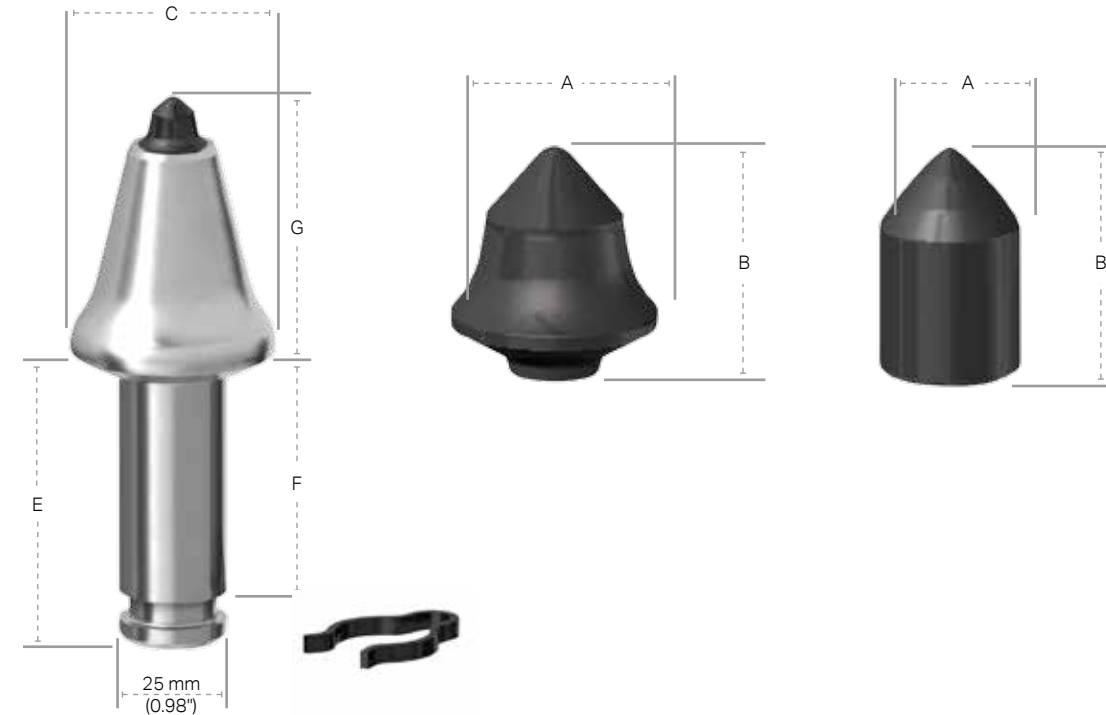
CUTTING CONDITIONS

	C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD 	48 mm	70 mm	66 mm	52 mm	18 mm	20 mm	Q7AF-2569-5762	25	60	1500
	1.9"	2.75"	2.59"	2.03"	0.7"	0.81"				


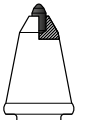
EU: European pallet. STD: Standard pallet.

25 MM TOOL

EXTERNAL RETAINER



CUTTING CONDITIONS

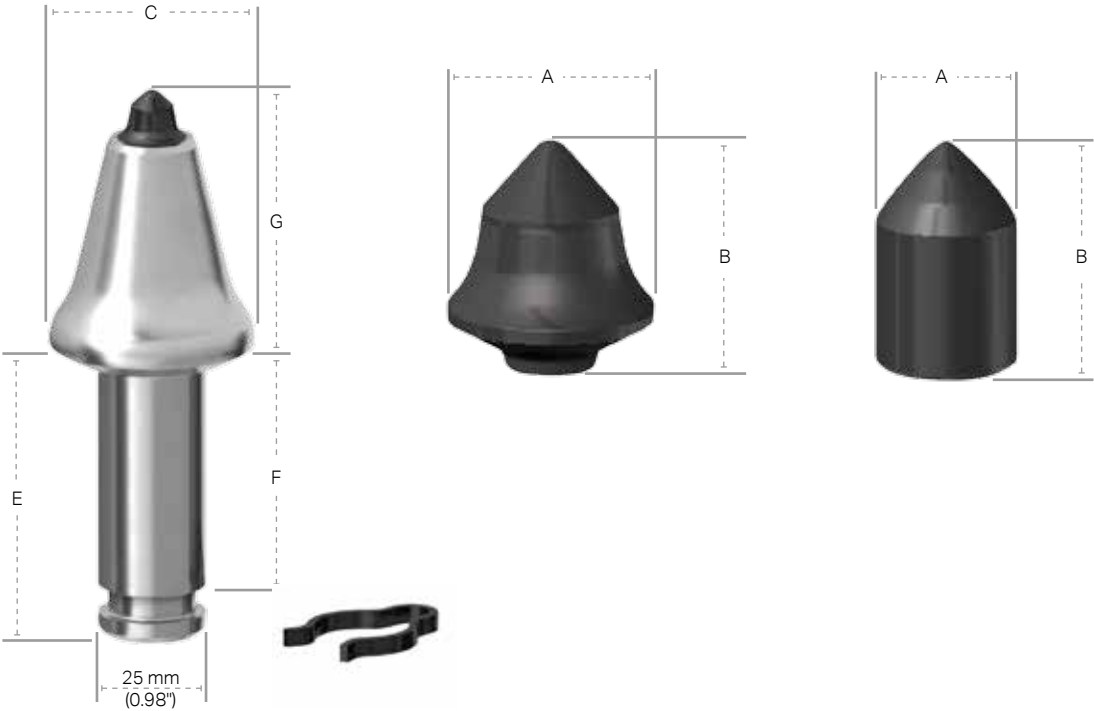
	C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT 	40 mm	70 mm	66 mm	54 mm	16 mm	19 mm	P9MS-2569-1265	25	60	1500
	1.59"	2.75"	2.59"	2.13"	0.64"	0.74"				
	46 mm	63 mm	66 mm	54 mm	16 mm	17 mm	P7MS-2564-2462	25	60	1500
	1.83"	2.50"	2.58"	2.13"	0.64"	0.65"				
MEDIUM 	40 mm	63 mm	66 mm	54 mm	8 mm	17 mm	P9MS-2563-4262	25	60	1500
	1.59"	2.50"	2.59"	2.13"	0.33"	0.67"				
	46 mm	70 mm	66 mm	54 mm	12 mm	19 mm	Q7MS-2569-3562	25	60	1500
	1.83"	2.75"	2.58"	2.13"	0.48"	0.76"				

EU: European pallet. STD: Standard pallet.

CONTINUED -->

25 MM TOOL

EXTERNAL RETAINER



CUTTING CONDITIONS

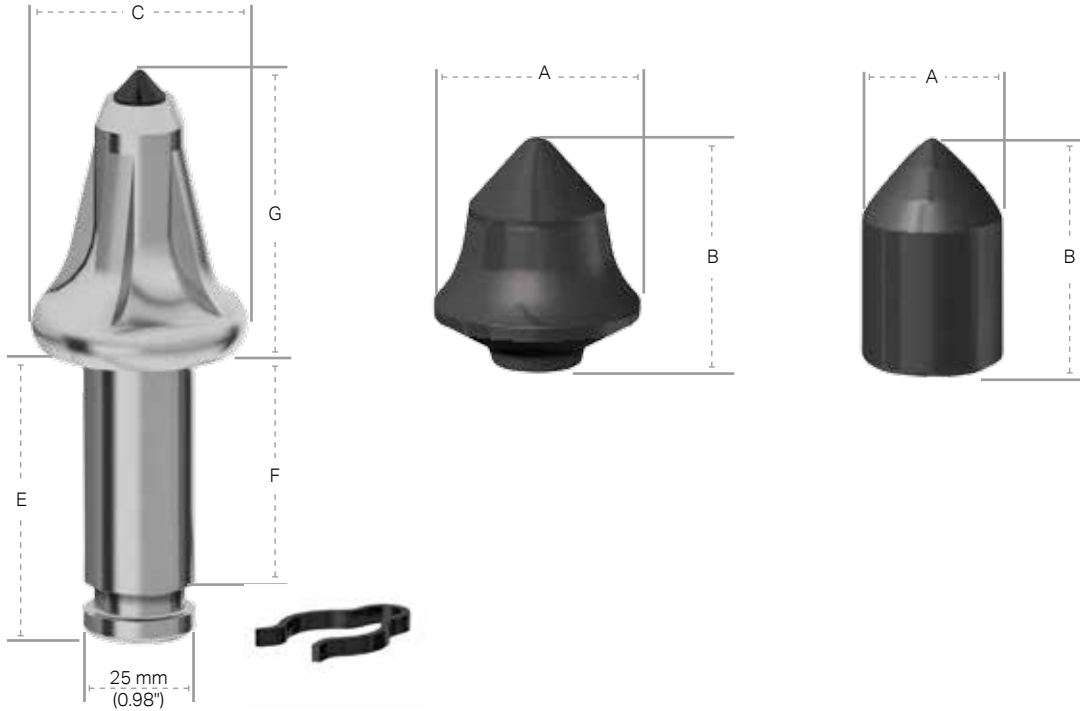
		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		46 mm	70 mm	66 mm	54 mm	18 mm	21 mm	Q7MS-2569-5762	25	60	1500
		1.83	2.75"	2.58"	2.13"	0.70"	0.83"				
		40 mm	63 mm	66 mm	54 mm	22 mm	25 mm	P9MS-2563-5062	25	60	1500
		1.59"	2.50"	2.59"	2.13"	0.87"	1.00"				
HARD		46 mm	63 mm	66 mm	54 mm	12 mm	19 mm	Q7MS-2563-3562	25	60	1500
		1.83	2.50"	2.58"	2.13"	0.48"	0.75"				

EU: European pallet. STD: Standard pallet.

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25 MM FINNED TOOL

EXTERNAL RETAINER



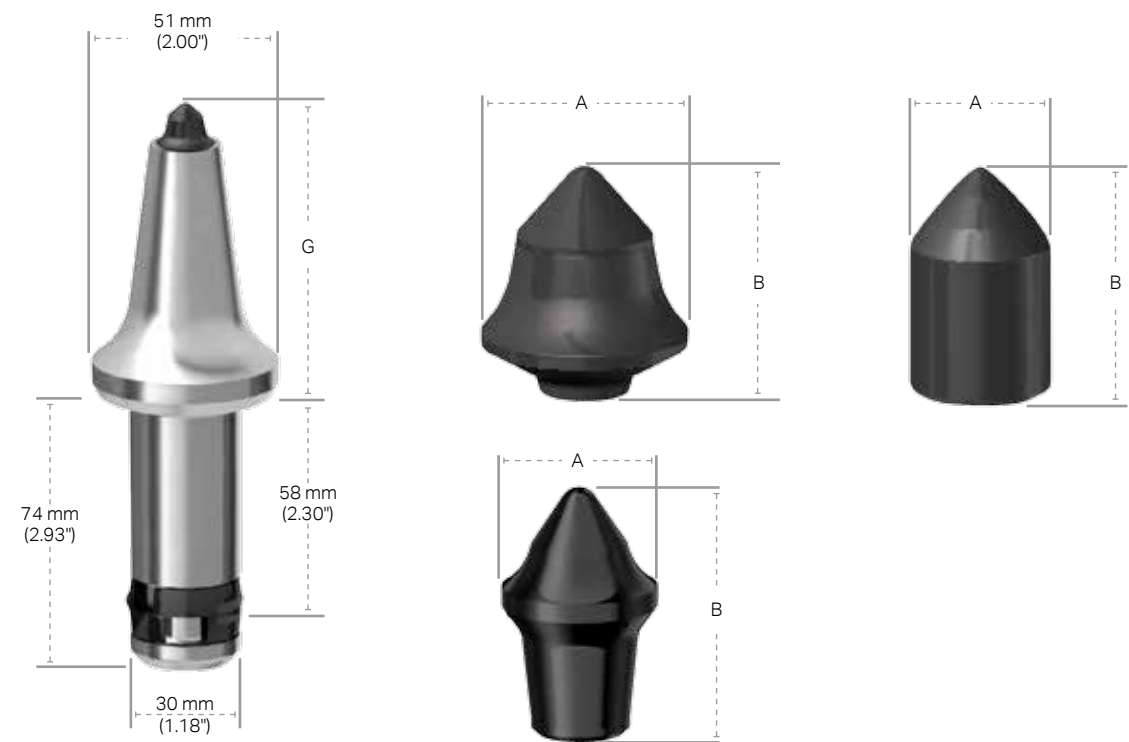
CUTTING CONDITIONS

		C	G	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		48 mm	70 mm	66 mm	54 mm	18 mm	21 mm	Q7MF-2569-5762	25	60	1500
		1.90"	2.75"	2.59"	2.13"	0.70"	0.81"				
MEDIUM		48 mm	70 mm	66 mm	54 mm	12 mm	19 mm	Q7MF-2569-3562	25	60	1500
		1.90"	2.75"	2.59"	2.13"	0.48"	0.76"				

EU: European pallet. STD: Standard pallet.

30 MM TOOL

BUMPED RETAINER



CUTTING CONDITIONS

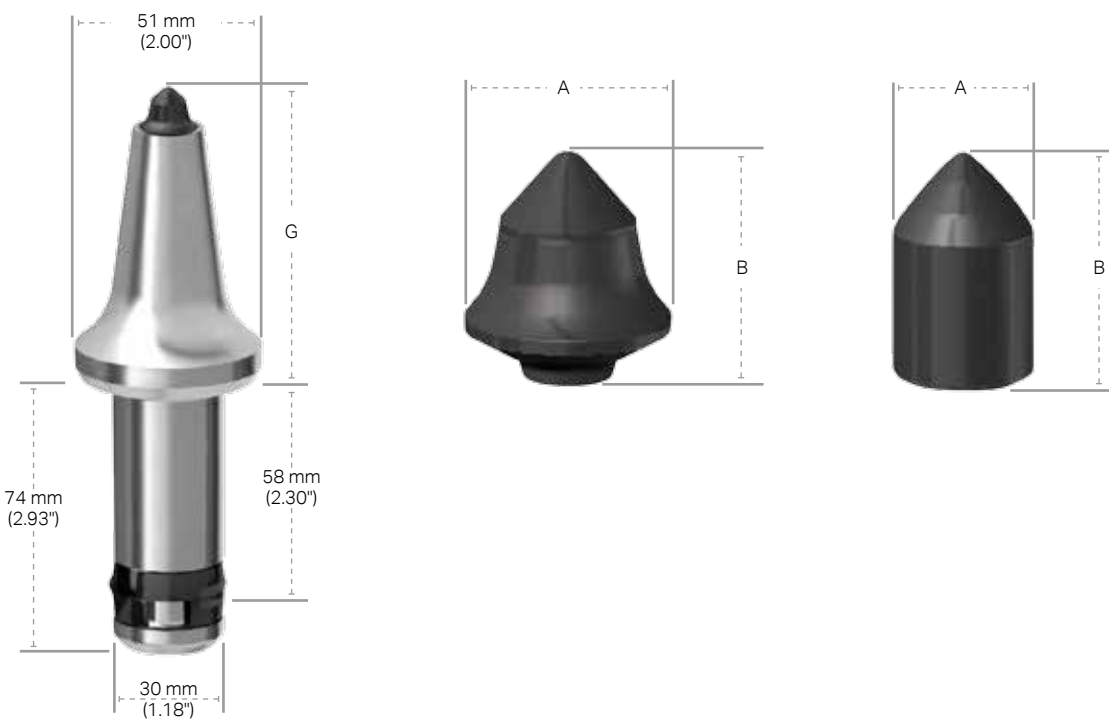
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		84 mm	16 mm	20 mm	Q8AX-3084-1862	15	60	900
		3.31"	0.64"	0.77"				
		84 mm	18 mm	21 mm	Q8AX-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
		84 mm	20 mm	24 mm	Q8AX-3084-4362	15	60	900
		3.31"	0.79"	0.95"				
MEDIUM		84 mm	20 mm	24 mm	P8AA-3084-4362	15	60	900
		3.31"	0.79"	0.95"				
		84 mm	18 mm	21 mm	P8AA-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
		84 mm	18 mm	24 mm	Q8AZ-3084-7462	15	60	900
		3.31"	0.70"	0.81"				

EU: European pallet. STD: Standard pallet.

CONTINUED --->

30 MM TOOL

BUMPED RETAINER



CUTTING CONDITIONS

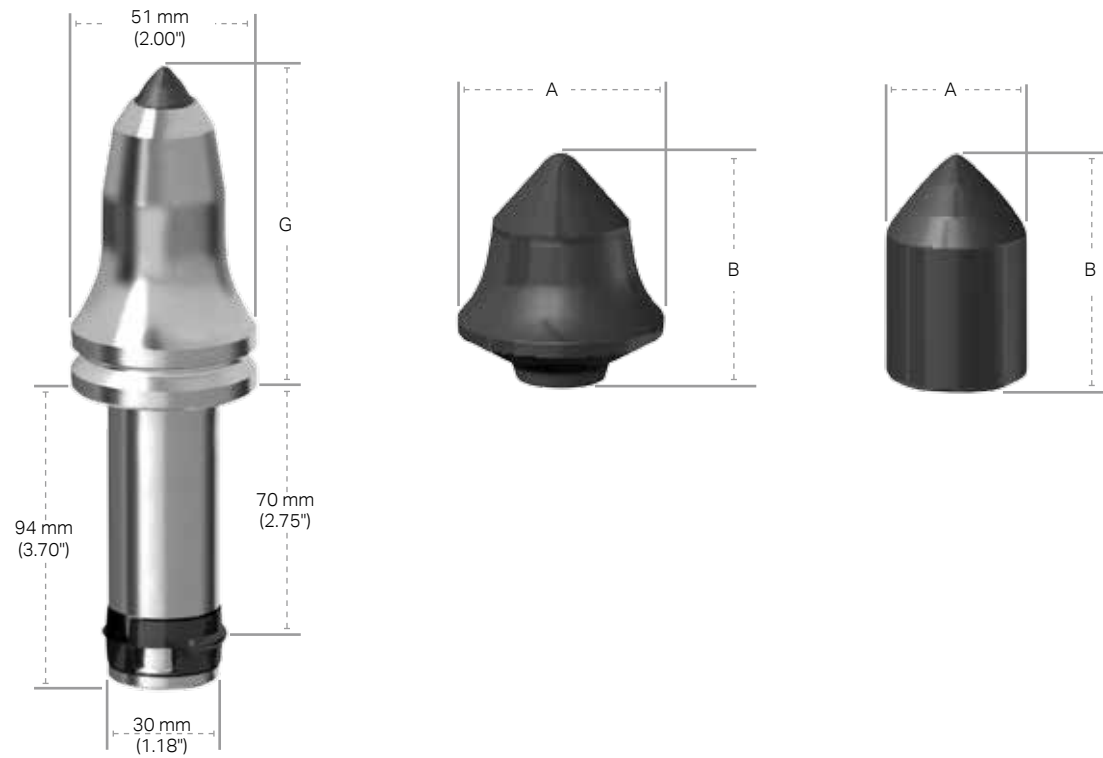
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		84 mm	24 mm	24 mm	P8AA-3084-2362	15	60	900
		3.31"	0.95"	0.93"				
		84 mm	22 mm	25 mm	P8AA-3084-5062	15	60	900
		3.31"	0.87"	1.00"				
HARD		84 mm	29 mm	33 mm	P8AA-3084-5662	15	60	900
		3.31"	1.3"	1.14"				
		84 mm	29 mm	33 mm	P8AA-3084-5690	15	60	900
		3.31"	1.3"	1.14"				

EU: European pallet. STD: Standard pallet.

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30 MM EXTENDED TAIL TOOL

BUMPED RETAINER



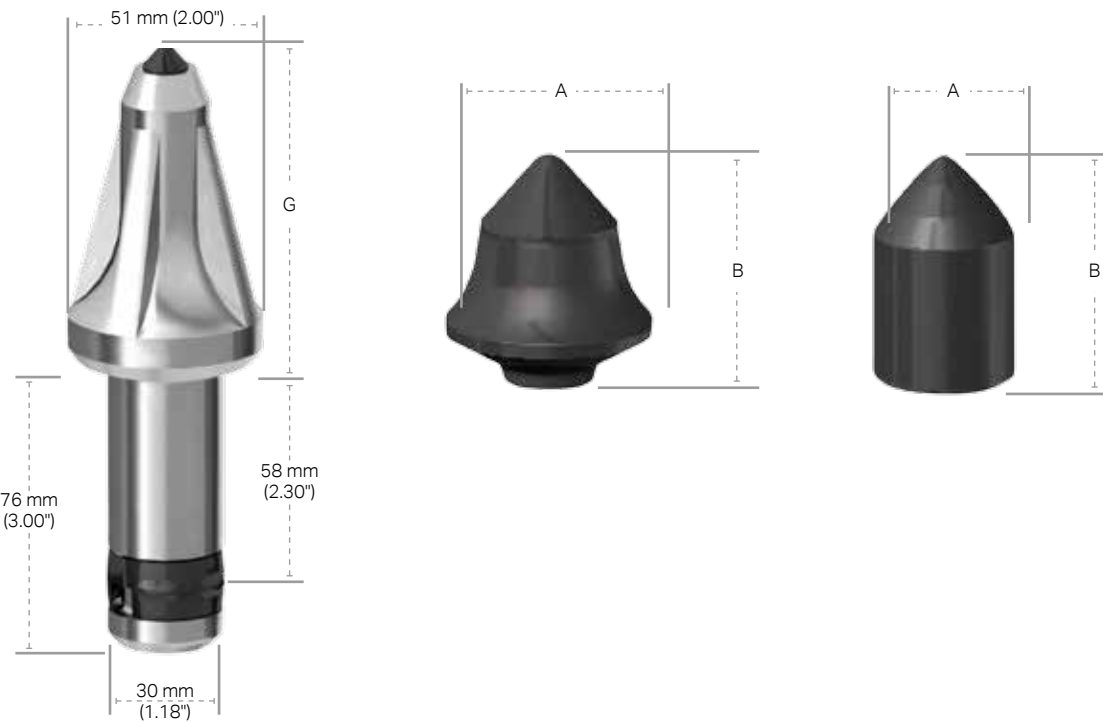
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		89 mm	20 mm	24 mm	Q8TA-3089-4362	12	60	720
		03.50"	0.79"	0.93"				
		89 mm	24 mm	24 mm	Q8TA-3089-4562	12	60	720
		03.50"	0.95"	0.93"				
		89 mm	15 mm	26 mm	Q8TA-3089-4162	12	60	720
		03.50"	0.6"	1.03"				
HARD		77 mm	15 mm	26 mm	Q2AA-3077-4162	12	60	720
		3.03"	0.60"	1.03"				
		70 mm	15 mm	15 mm	Q8TA-3070-4162	12	60	720
		2.75"	0.60"	0.60"				
		70 mm	29 mm	33 mm	Q8TA-3070-5662	12	60	720
		2.75"	1.14"	1.30"				

EU: European pallet. STD: Standard pallet.

30 MM FINNED TOOL

BUMPED RETAINER



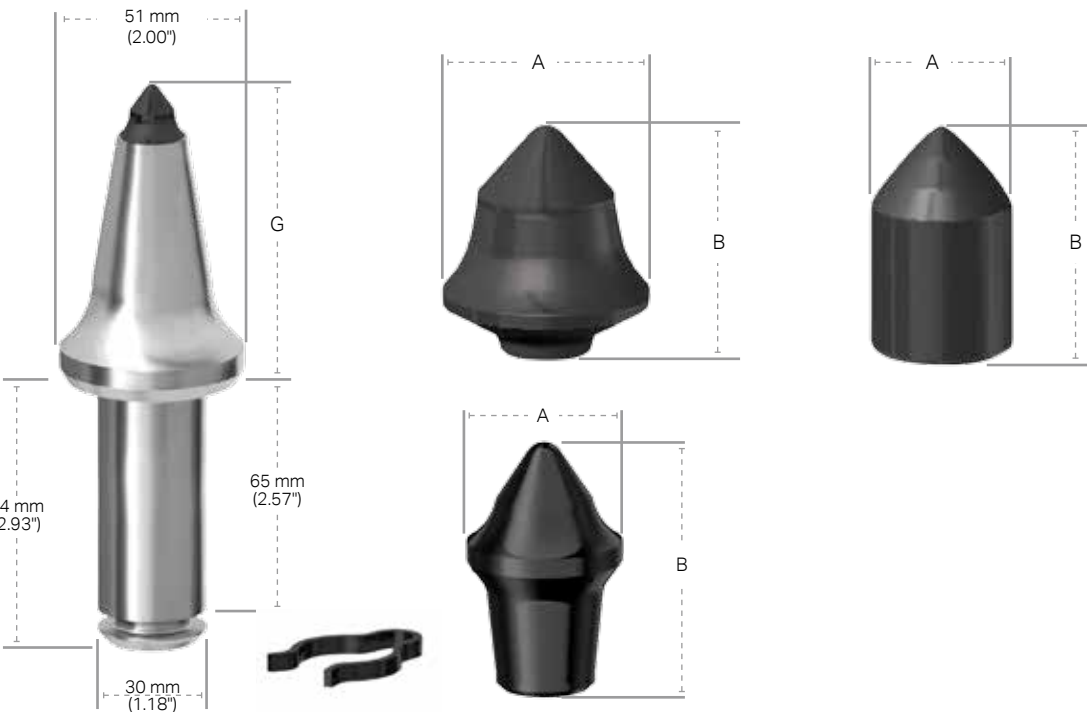
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		84 mm	18 mm	21 mm	Q8AF-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
		95 mm	18 mm	21 mm	Q8AF-3095-5762	15	60	900
		3.74"	0.70"	0.81"				
HARD		84 mm	12 mm	19 mm	Q8AF-3084-3562	15	60	900
		3.31"	0.48"	0.76"				

EU: European pallet. STD: Standard pallet.

30 MM TOOL

EXTERNAL RETAINER



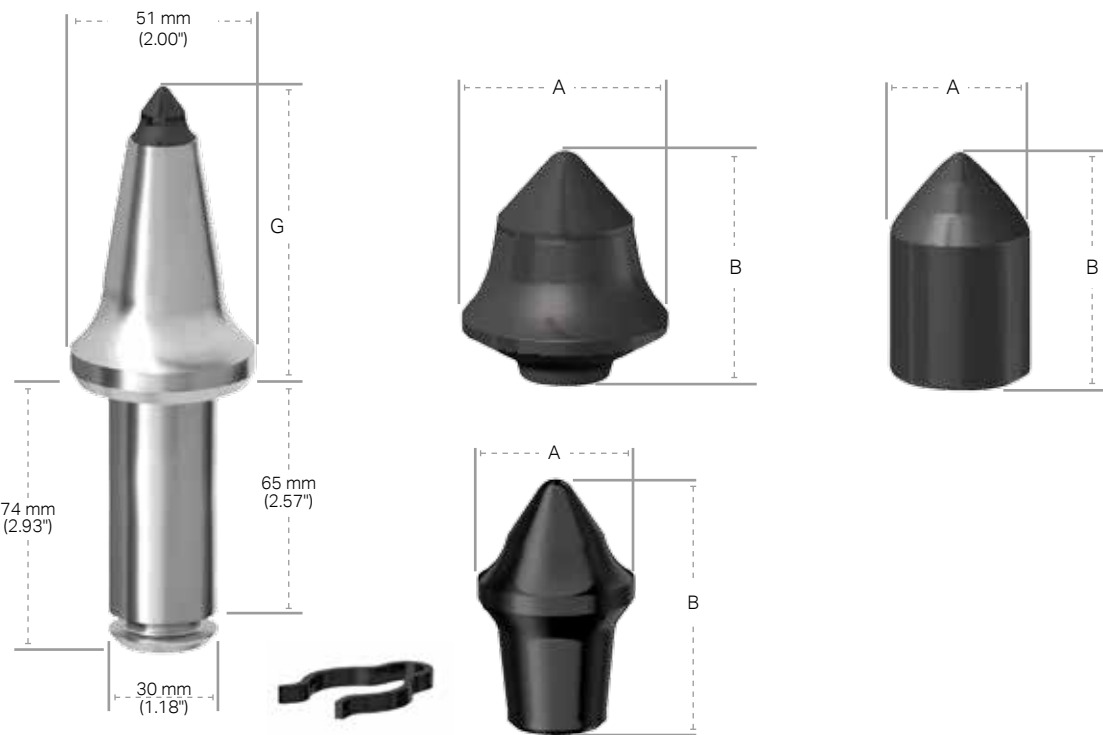
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		84 mm	16 mm	20 mm	Q8KX-3084-1862	15	60	900
		3.31"	0.64"	0.77"				
		84 mm	18 mm	21 mm	Q8KX-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
		84 mm	18 mm	21 mm	P8KD-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
MEDIUM		85 mm	24 mm	24 mm	W8KD-3085-4562	15	60	900
		3.35"	0.95"	0.93"				
		84 mm	18 mm	24 mm	Q8KX-3084-7462	15	60	900
		3.31"	0.70"	0.93"				
		84 mm	18 mm	24 mm	Q8KZ-3084-7462	15	60	900
		3.31"	0.70"	0.93"				

EU: European pallet. STD: Standard pallet.

30 MM TOOL

EXTERNAL RETAINER



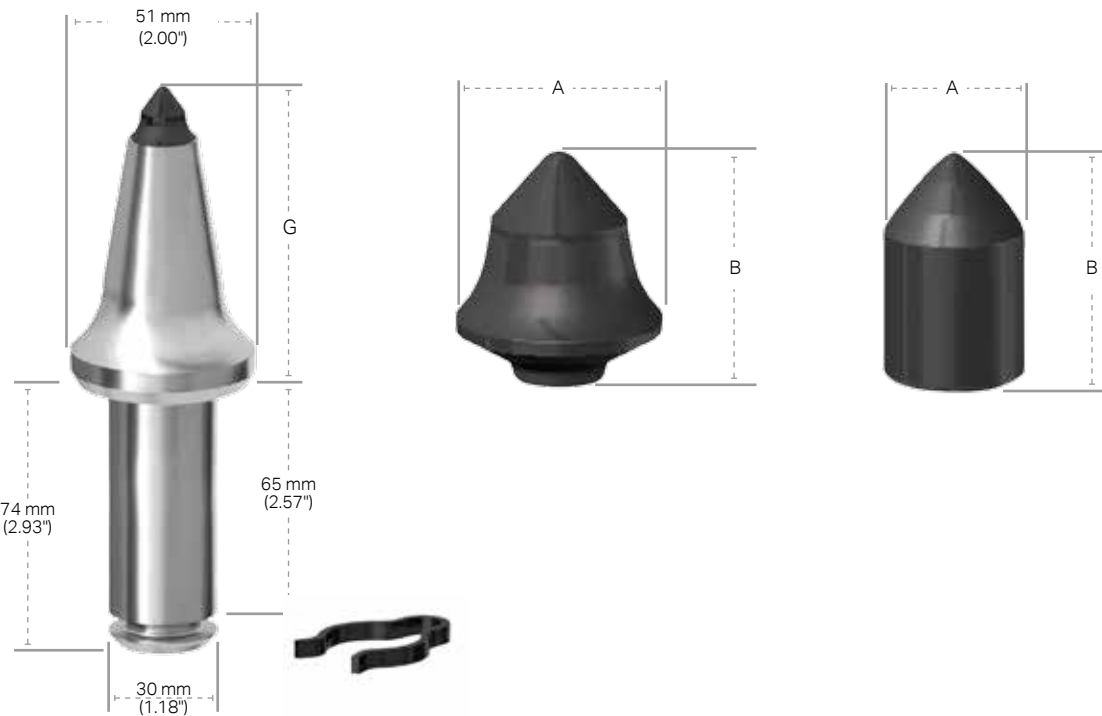
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		84 mm	12 mm	19 mm	Q8KX-3084-3562	15	60	900
		3.31"	0.48"	0.76"				
		85 mm	24 mm	24 mm	Q8KD-3085-4562	15	60	900
		3.35"	0.95"	0.93"				
		85 mm	24 mm	24 mm	Q8KD-3080-4562	15	60	900
		3.35"	0.95"	0.93"				
HARD		85 mm	12 mm	22 mm	Q8KD-3085-3262	15	60	900
		3.35"	0.48"	0.88"				
		84 mm	21 mm	34 mm	Q8KZ-3084-7562	15	60	900

EU: European pallet. STD: Standard pallet.

30 MM TOOL

EXTERNAL RETAINER



CUTTING CONDITIONS

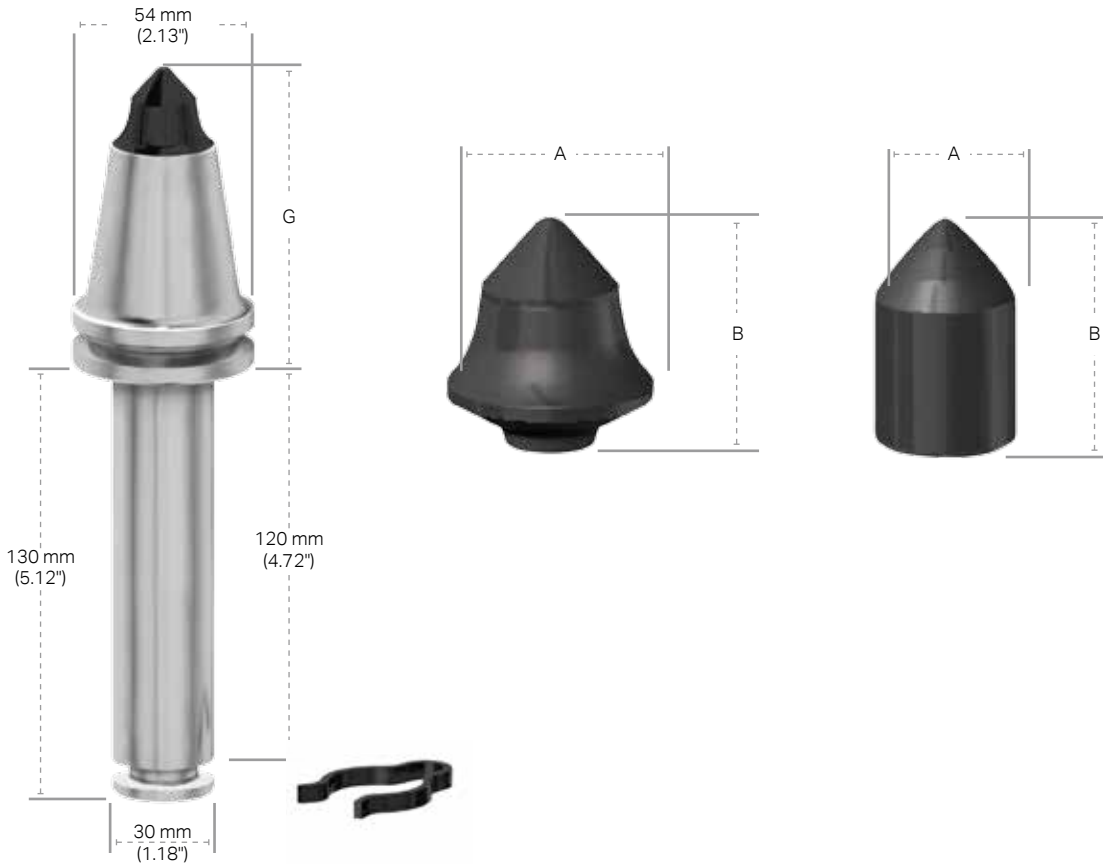
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		85 mm	15 mm	26 mm	Q8KD-3085-4162	15	60	900
		3.35"	0.60"	1.03"				
		84 mm	22 mm	25 mm	Q8KX-3084-5062	15	60	900
		3.31"	0.87"	1.00"				
		84 mm	24 mm	24 mm	P8KD-3084-2362	15	60	900
		3.31"	0.95"	0.93"				
		70 mm	15 mm	26 mm	Q8KD-3070-4162	15	60	900
		2.75"	0.6"	1.03"				
		75 mm	20 mm	34 mm	P5KS-3075-3962	15	60	900
		2.95"	0.78"	1.33"				

<- - CONTINUED

EU: European pallet. STD: Standard pallet.

30 MM EXTENDED TAIL TOOL

EXTERNAL RETAINER



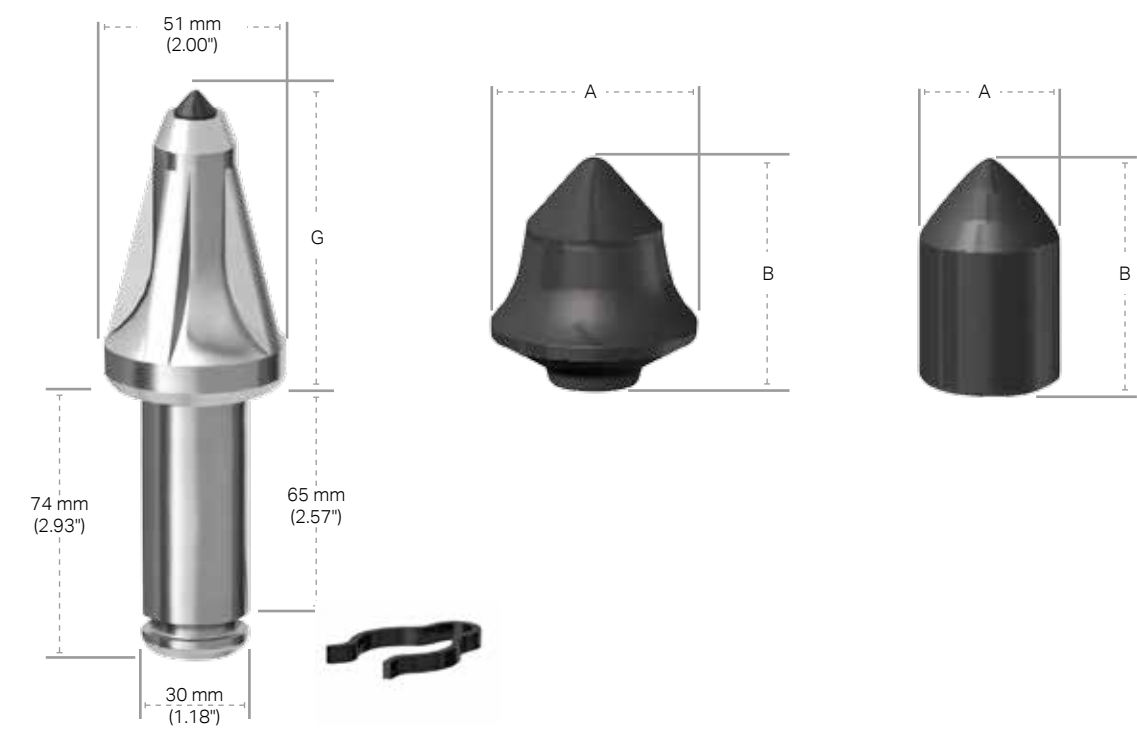
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		90 mm	24 mm	24 mm	Q6XX-3090-4562	EU: 8	24	192
		3.54"	0.95"	0.93"		STD: 8	36	288
		90 mm	29 mm	33 mm	Q6XX-3090-5662	EU: 8	24	192
		3.54"	1.14"	1.30"		STD: 8	36	288

EU: European pallet. STD: Standard pallet.

30 MM FINNED TOOL

EXTERNAL RETAINER



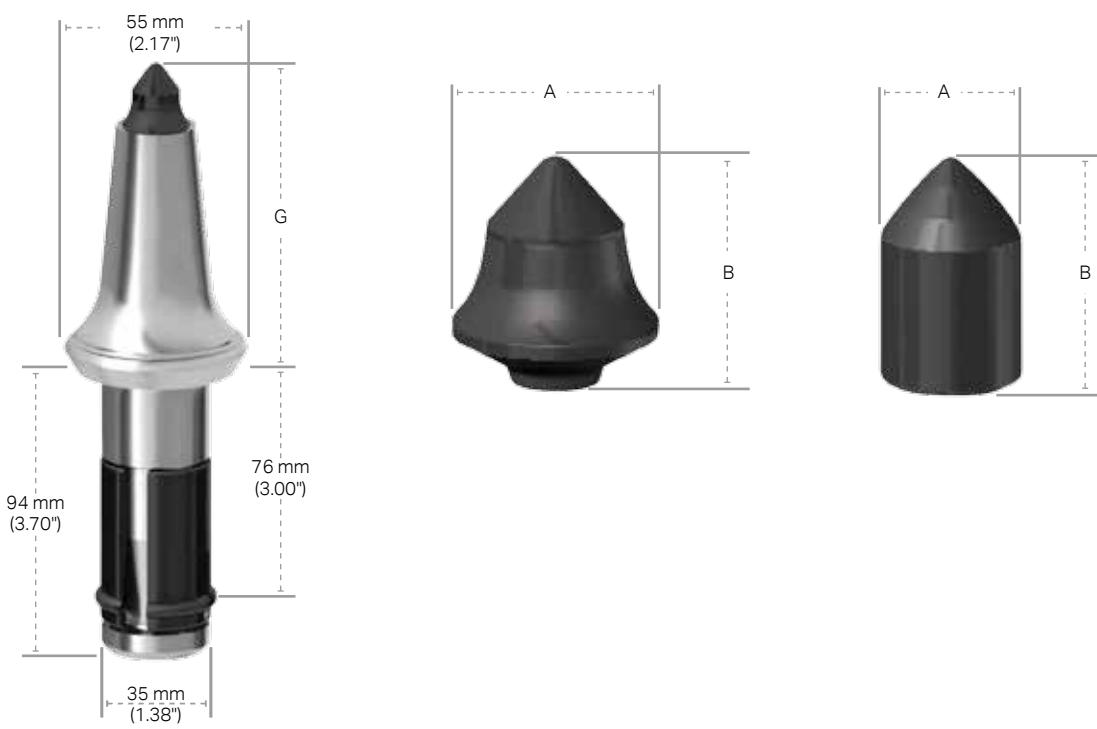
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		84 mm	18 mm	21 mm	Q8KF-3084-5762	15	60	900
		3.31"	0.70"	0.81"				
HARD		84 mm	12 mm	19 mm	Q8KF-3084-3562	15	60	900
		3.31"	0.48"	0.76"				

EU: European pallet. STD: Standard pallet.

35 MM TOOL

BUMPED/FRICTION RETAINER



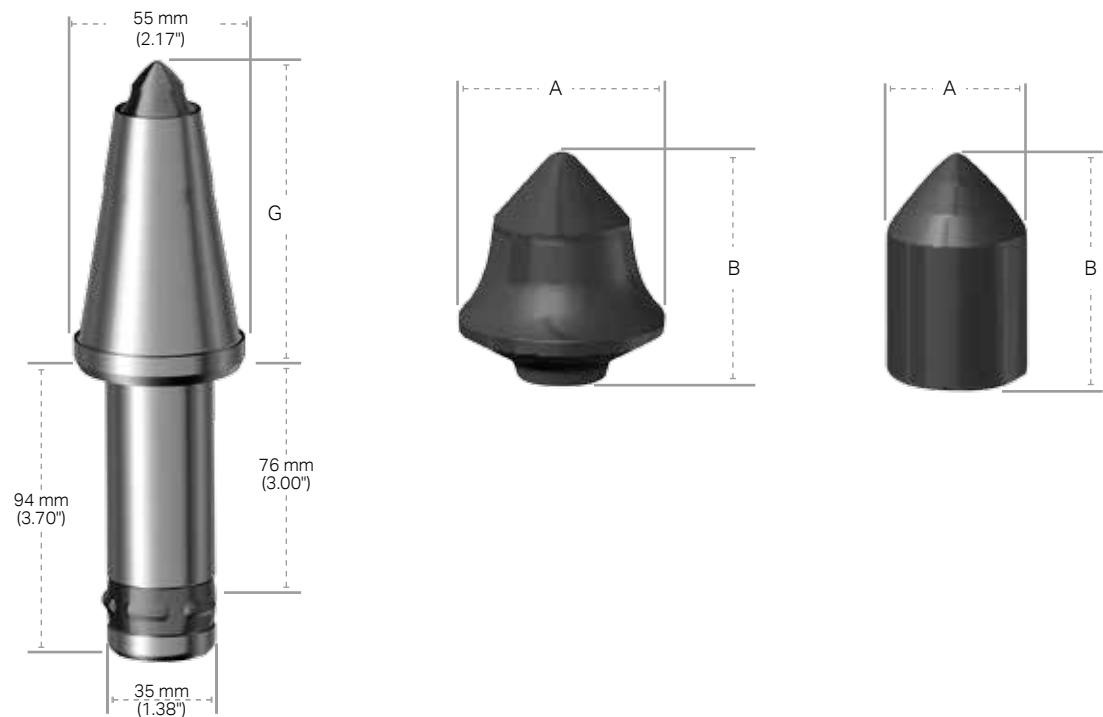
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		102 mm	24 mm	24 mm	W7AK-3502-2362	8	60	480
		4.00"	0.95"	0.93"				
MEDIUM		102 mm	22 mm	25 mm	Q7AK-3502-5062	8	60	480
		4.00"	0.87"	1.00"				

EU: European pallet. STD: Standard pallet.

35 MM TOOL

BUMPED RETAINER



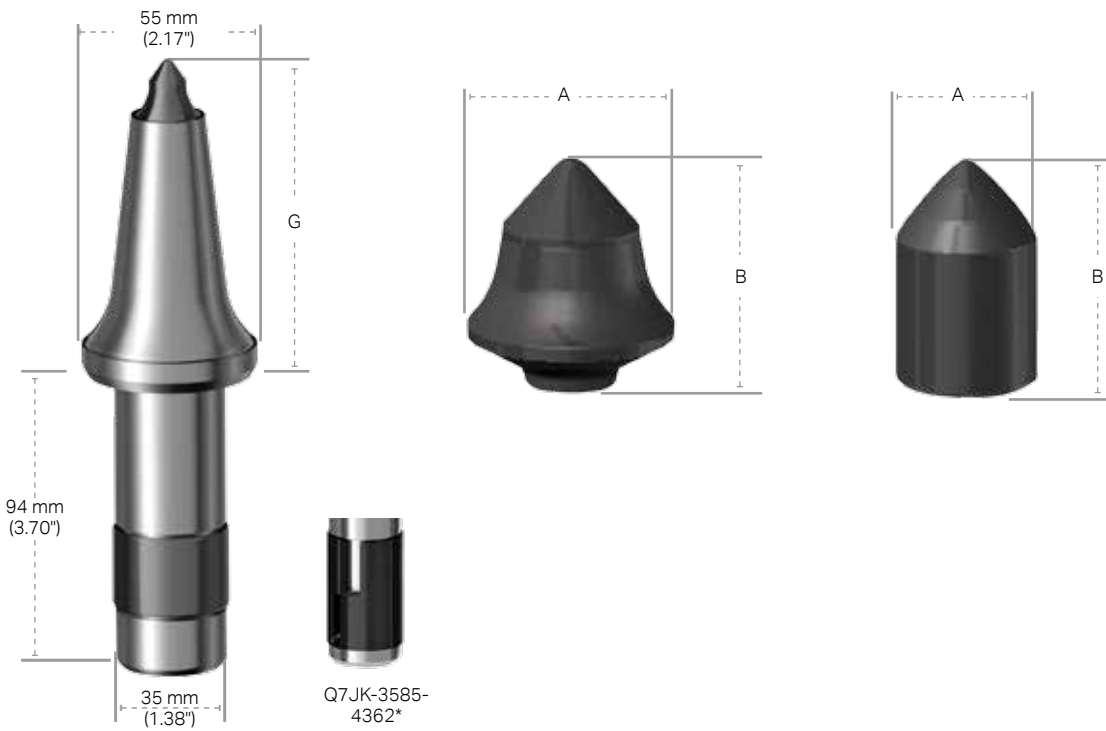
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		102 mm	20 mm	24 mm	Q7AX-3502-4362	8	60	480
		4.00"	0.79"	0.95"				
		102 mm	22 mm	25 mm	Q7AX-3502-5062	8	60	480
		4.00"	0.87"	1.00"				
HARD		102 mm	24 mm	24 mm	Q7AR-3502-2362	8	60	480
		4.00"	0.95"	0.93"				
		102 mm	29 mm	33 mm	Q7AR-3502-5662	8	60	480
		4.00"	1.14"	1.3"				
		102 mm	20 mm	34 mm	W7AR-3502-3962	8	60	480
		4.00"	0.78"	1.33"				

EU: European pallet. STD: Standard pallet.

35 MM TOOL

FRICTION RETAINER



CUTTING CONDITIONS

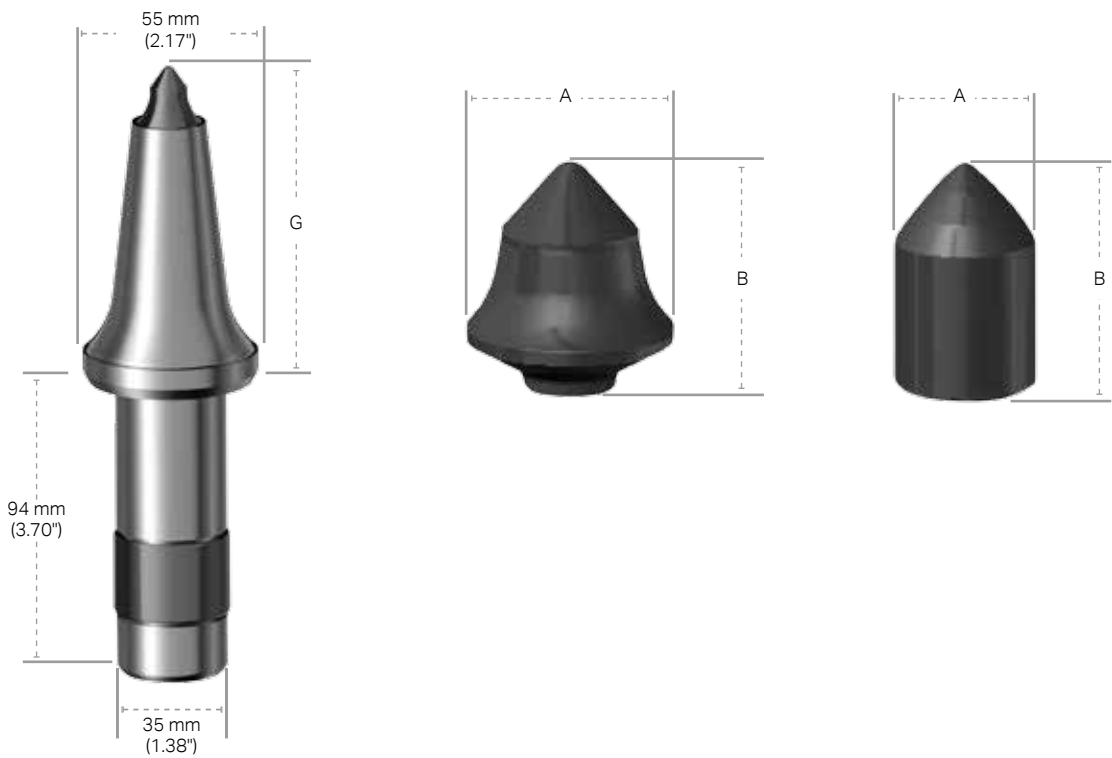
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		125 mm	16 mm	29 mm	T6JA-3525-6062	8	60	480
		4.9"	0.62"	1.16"				
		100 mm	16 mm	29 mm	T6JA-3500-6062	8	60	480
		3.9"	0.62"	1.16"				
		84 mm	20 mm	24 mm	Q7JK-3585-4362*	8	60	480
		3.30"	0.79"	0.95"				
		84 mm	20 mm	24 mm	Q7JX-3585-4362	8	60	480
		3.30"	0.79"	0.95"				

EU: European pallet. STD: Standard pallet.

CONTINUED -->

35 MM TOOL

FRICTION RETAINER



CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		80 mm	18 mm	29 mm	Q6JA-3580-2162	8	60	480
		3.15"	0.71"	1.13"				
HARD		102 mm	29 mm	33 mm	Q7JX-3502-5662	8	60	480
		4"	1.14"	1.3"				
		89 mm	29 mm	33 mm				
EXTREME		3.5"	1.14"	1.3"	Q7JA-3589-5662	8	60	480
		89 mm	29 mm	33 mm				

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EU: European pallet. STD: Standard pallet.

35 MM EXTENDED TAIL TOOL

EXTERNAL RETAINER



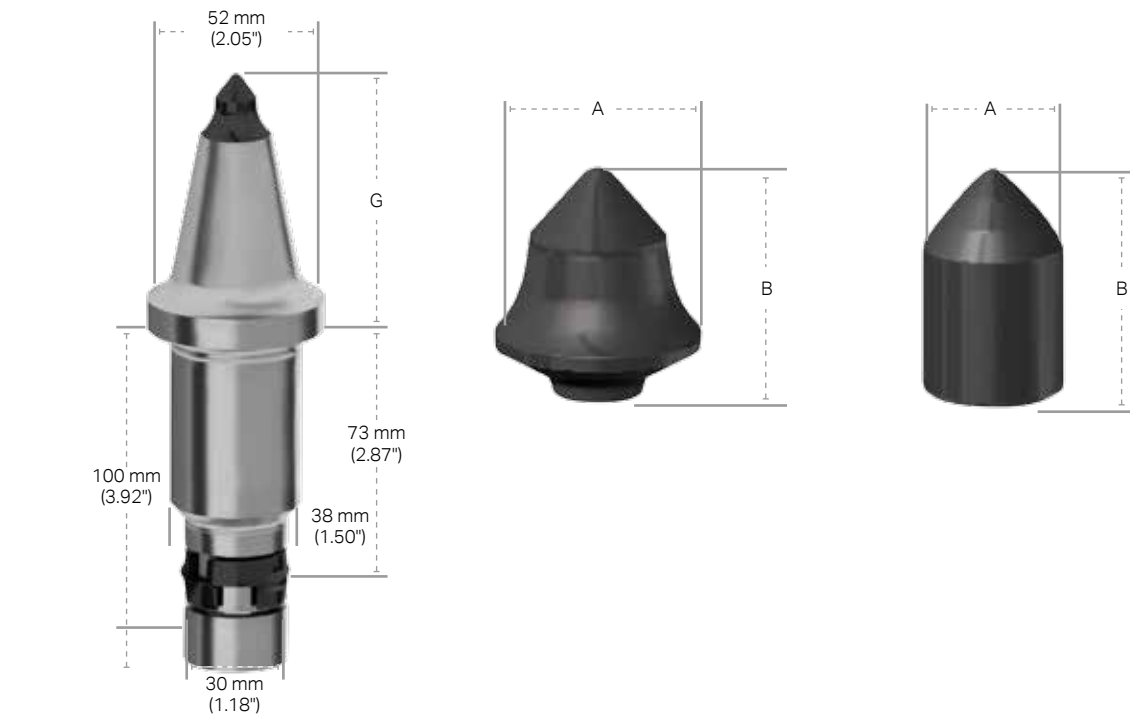
CUTTING CONDITIONS

		C	D	E	F	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		55 mm	102 mm	128 mm	102 mm	18 mm	20 mm	Q7MR-3502-5762	8	60	480
		2.17"	4"	5.03"	4.03"	0.7"	0.81"				
		55 mm	102 mm	128 mm	102mm	22 mm	25 mm	Q7MR-3502-5062	8	60	480
		2.17"	4"	5.03"	4.03"	0.87"	1.00"				
		54 mm	100 mm	130 mm	115 mm	24 mm	24 mm	Q6MR-3500-2362	8	60	480
		2.13"	3.94"	5.12"	4.53"	0.95"	0.93"				
		54 mm	80 mm	130 mm	115 mm	20 mm	34 mm	Q6MR-3580-3962	8	60	480
		2.13"	3.15"	5.12"	4.53"	0.78"	1.33"				
HARD						24 mm	38 mm	Q7MR-3502-7662	15	60	900
						0.95"	1.50"				

EU: European pallet. STD: Standard pallet.

38 × 30 MM TOOL

BUMPED RETAINER



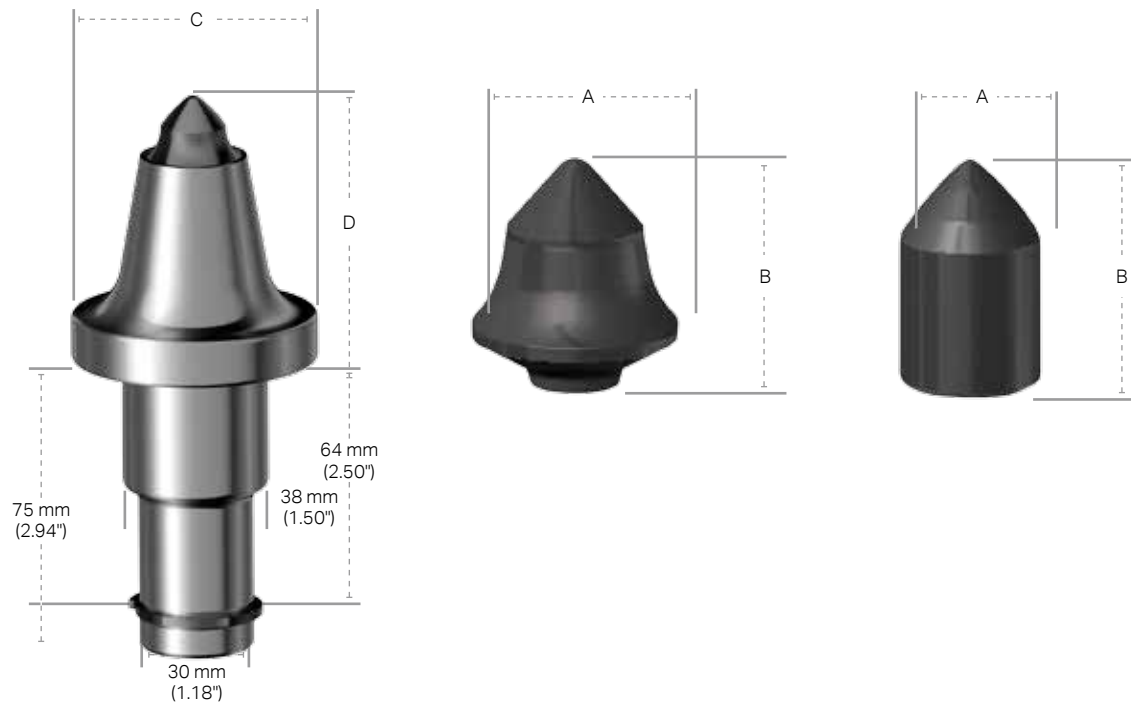
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		77 mm	18 mm	29 mm	Q2VA-3877-2162	8	60	480
		3.03"	0.71"	1.13"				
		75 mm	22 mm	35 mm	Q7VG-3875-1962	8	60	480
		2.95"	0.87"	1.37"				

EU: European pallet. STD: Standard pallet.

38 × 30 MM TOOL

EXTERNAL RETAINER



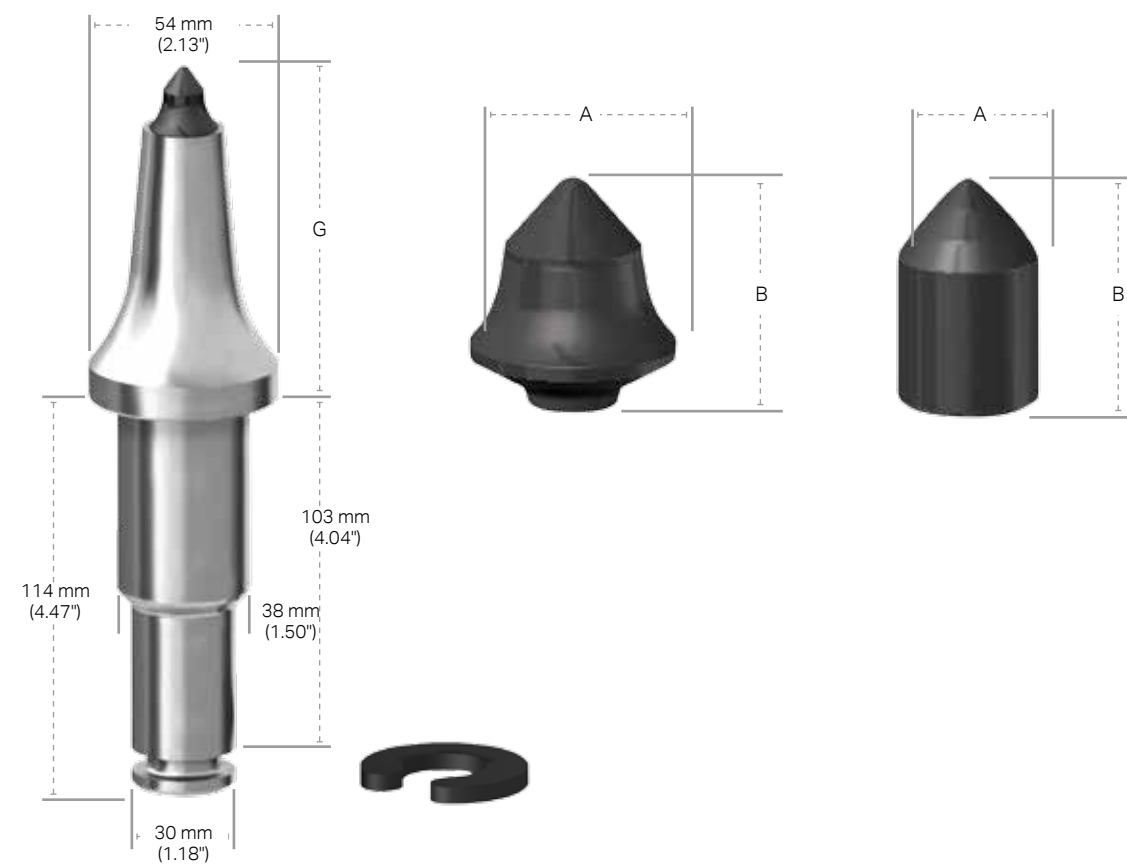
CUTTING CONDITIONS

		C	D	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		64 mm	70 mm	24 mm	24 mm	Q3DS-3870-2362	10	60	480
		2.5"	2.75"	0.95"	0.93"				

EU: European pallet. STD: Standard pallet.

38 × 30 MM EXTENDED TAIL TOOL

EXTERNAL RETAINER

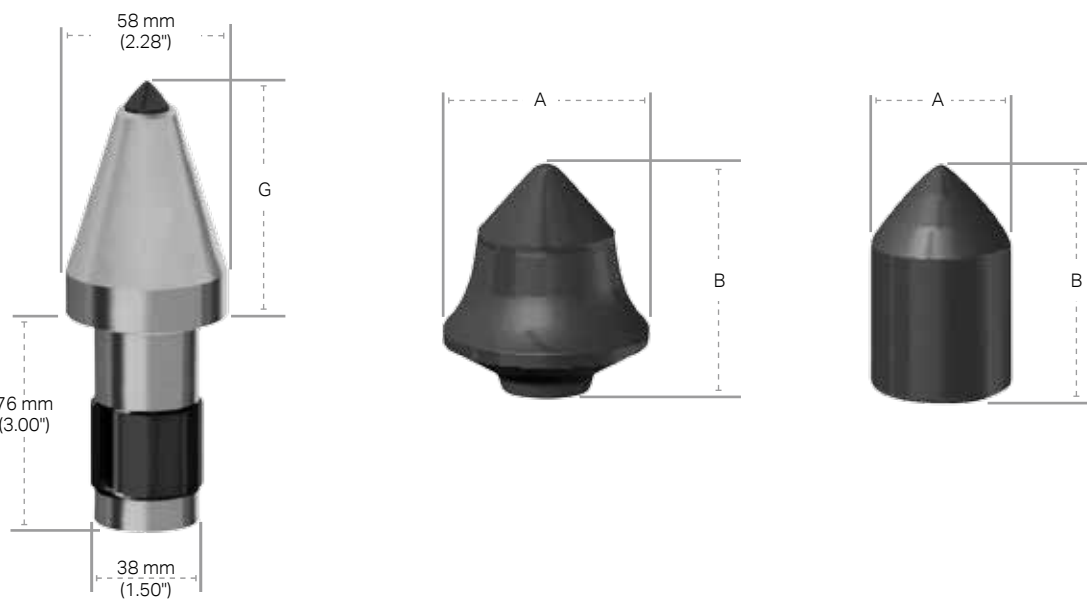


CUTTING CONDITIONS							
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet
SOFT		97 mm	20 mm	24 mm	Q6EC-3897-4362	8	60
		3.83"	0.79"	0.95"			
MEDIUM		77 mm	20 mm	24 mm	Q6EC-3877-4362	8	60
		3.03"	0.79"	0.95"			
HARD		77 mm	18 mm	29 mm	Q5EC-3877-2162	8	60
		3.03"	0.71"	1.13"			

EU: European pallet. STD: Standard pallet.

38 MM TOOL

FRICTION RETAINER

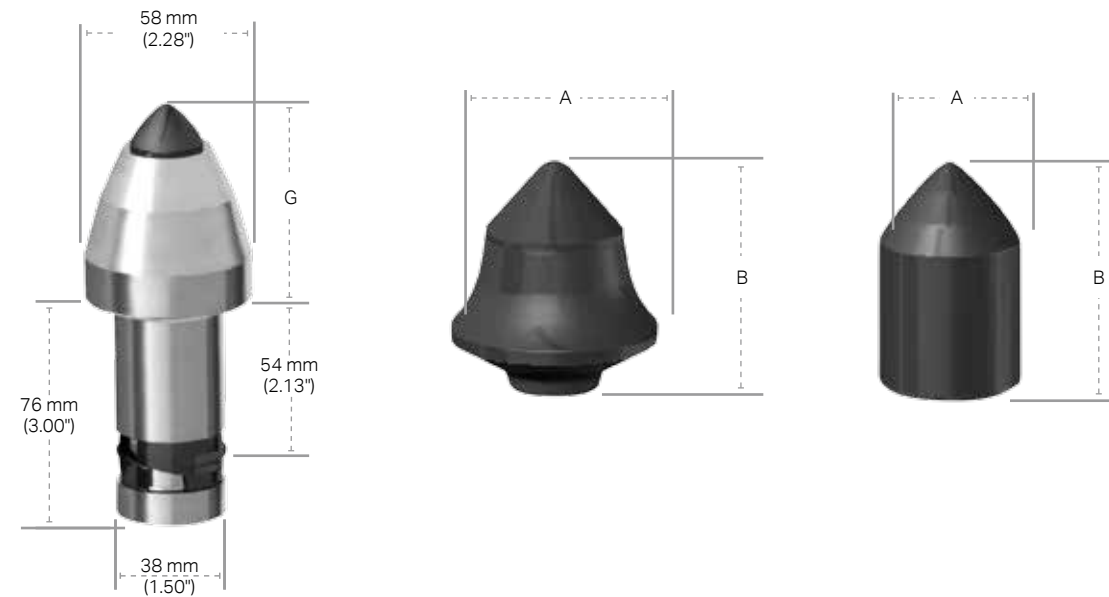


CUTTING CONDITIONS							
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet
SOFT		70 mm	18 mm	29 mm	P7JU-3870-2162	10	60
		2.75"	0.71"	1.13"			
MEDIUM		70 mm	22 mm	35 mm	P7JU-3870-1962	10	60
		2.75"	0.87"	1.37"			
HARD		70 mm	22 mm	35 mm	P7JU-3870-1970	10	60
		2.75"	0.87"	1.37"			

EU: European pallet. STD: Standard pallet.

38 MM TOOL

BUMPED RETAINER



CUTTING CONDITIONS

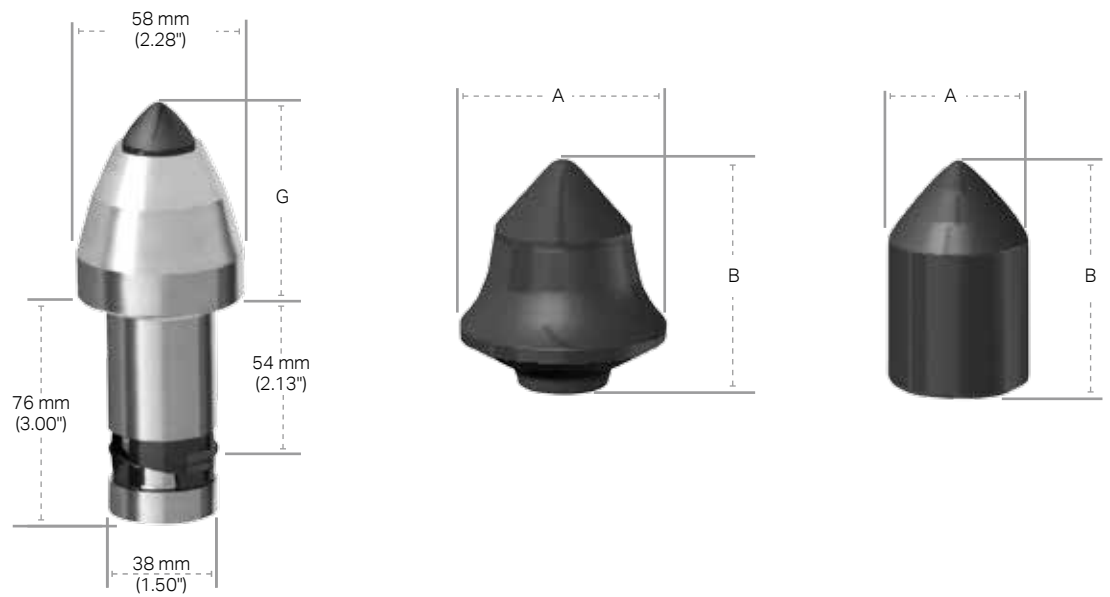
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		85 mm	24 mm	24 mm	Q7AU-3885-2362	10	60	600
		3.35"	0.95"	0.93"				
		70 mm	18 mm	29 mm	Q7AU-3870-2162	10	60	600
		2.75"	0.71"	1.13"				
		70 mm	29 mm	33 mm	Q7AU-3870-5662	10	60	600
		2.75"	1.14"	1.30"				
HARD		70 mm	22 mm	35 mm	P7AU-3870-1962	10	60	600
		2.75"	0.87"	1.38"				
		70 mm	22 mm	35 mm	Q7AU-3870-1962	10	60	600
		2.75"	0.87"	1.37"				
		70 mm	26 mm	35 mm	P7AU-3870-1762	10	60	600
		2.75"	1.01"	1.38"				

EU: European pallet. STD: Standard pallet.

CONTINUED -->

38 MM TOOL

BUMPED RETAINER



CUTTING CONDITIONS

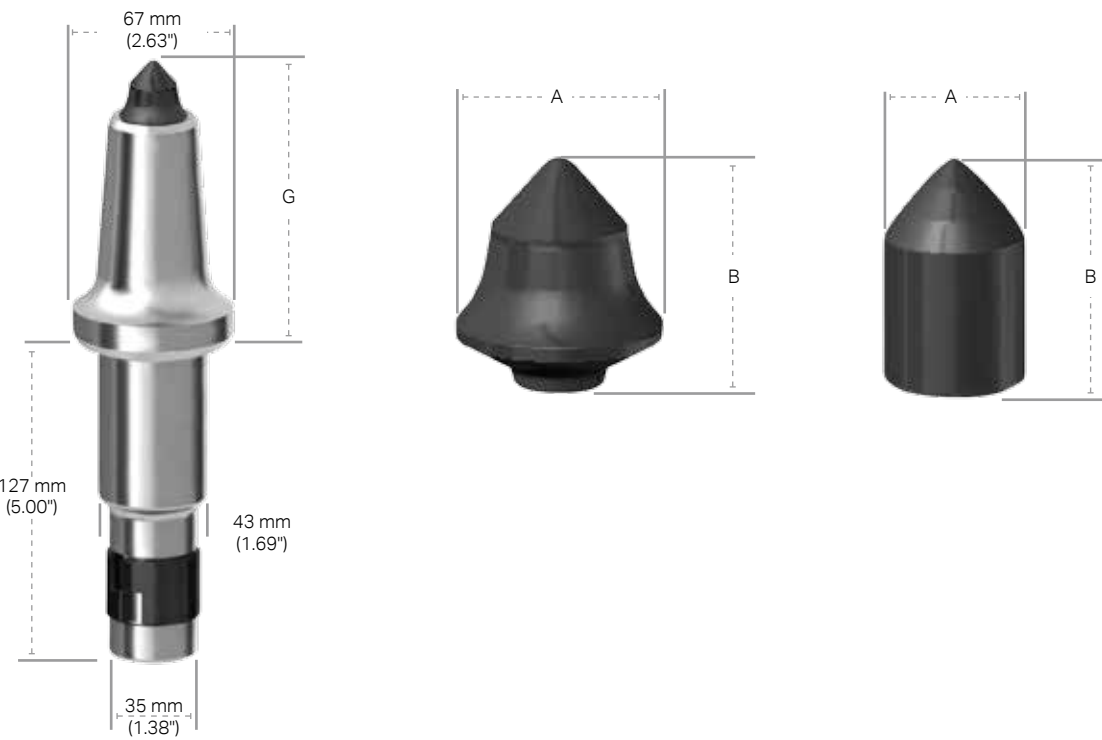
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		70 mm	26 mm	35 mm	Q7AU-3870-1762	10	60	600
		2.75"	1.01"	1.38"				
		70 mm	22 mm	35 mm	Q7AU-3870-1970	10	60	600
		2.75"	0.87"	1.37"				
		70 mm	22 mm	35 mm	Q7AU-3870-1990	10	60	600
		2.75"	0.87"	1.37"				
EXTREME		70 mm	26 mm	35 mm	Q7AU-3870-1770	10	60	600
		2.75"	1.01"	1.37"				
		70 mm	26 mm	35 mm	Q7AU-3870-1790	10	60	600
		2.75"	1.01"	1.37"				

<-- CONTINUED

EU: European pallet. STD: Standard pallet.

43 × 35 MM TOOL

FRICTION RETAINER



CUTTING CONDITIONS

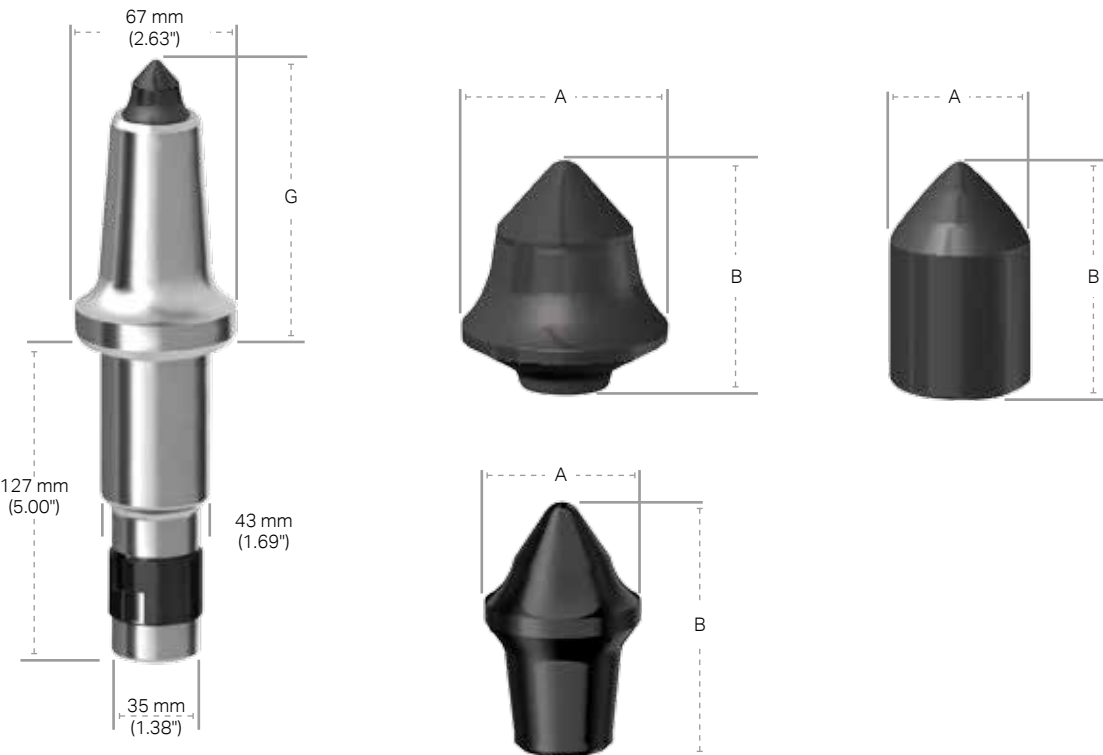
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
SOFT		114 mm	24 mm	35 mm	Q3JX-4314-2366	EU: 8	24	192
		4.50"	0.95"	1.37"		STD: 8	32	256
		114 mm	24 mm	24 mm	W3XA-4314-2362	EU: 8	24	192
		4.50"	0.95"	0.93"		STD: 8	32	256
		137 mm	29 mm	33 mm	Q3XA-4337-5662	EU: 8	24	192
		5.40"	1.14"	1.30"		STD: 8	32	256
MEDIUM		114 mm	24 mm	24 mm	Q3JX-4314-2362	EU: 8	24	192
		4.50"	0.95"	0.93"		STD: 8	32	256

EU: European pallet. STD: Standard pallet.

CONTINUED -->

43 × 35 MM TOOL

FRICTION RETAINER



CUTTING CONDITIONS

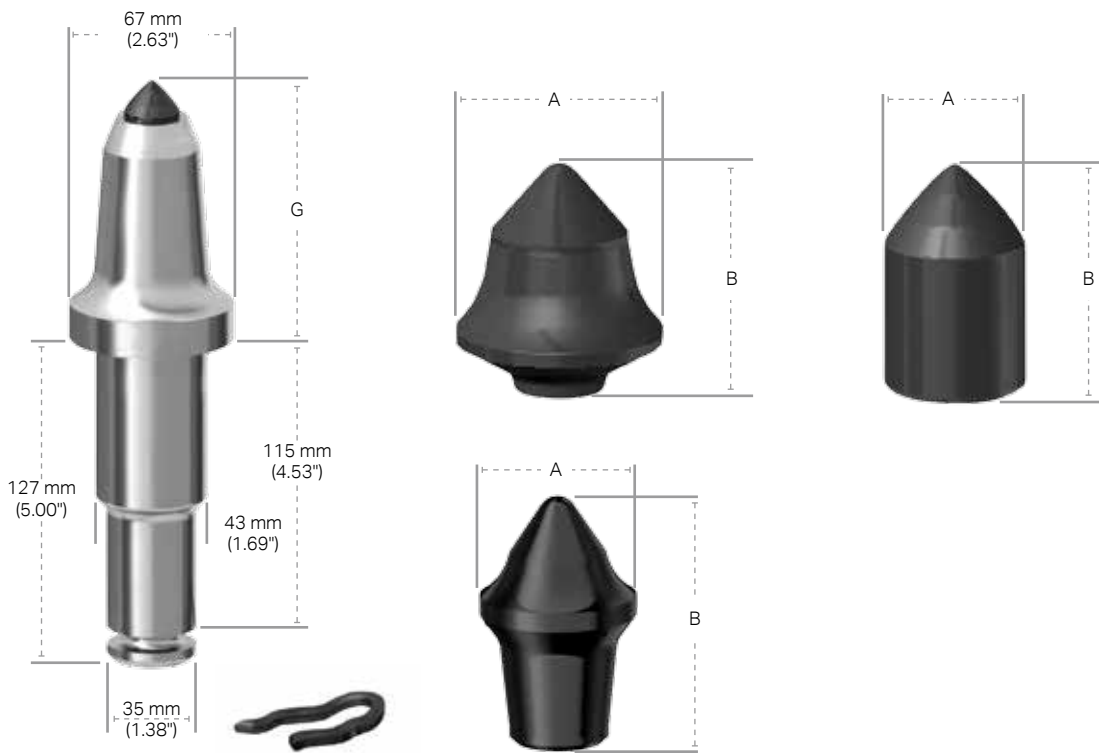
		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		114 mm	20 mm	34 mm	W3XA-4314-3962	EU: 8	24	192
		4.50"	0.78"	1.33"		STD: 8	32	256
		102 mm	29 mm	33 mm	Q3XA-4302-5662	EU: 8	24	192
		4.00"	1.14"	1.30"		STD: 8	32	256
		114 mm	29 mm	33 mm	Q3XA-4314-5662	EU: 8	24	192
		4.50"	1.14"	1.30"		STD: 8	32	256
		114 mm	24 mm	38 mm	Q3XA-4314-7662	EU: 8	24	192
		4.50"	1.14"	1.50"		STD: 8	32	256

EU: European pallet. STD: Standard pallet.



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43 × 35 MM TOOL

EXTERNAL RETAINER



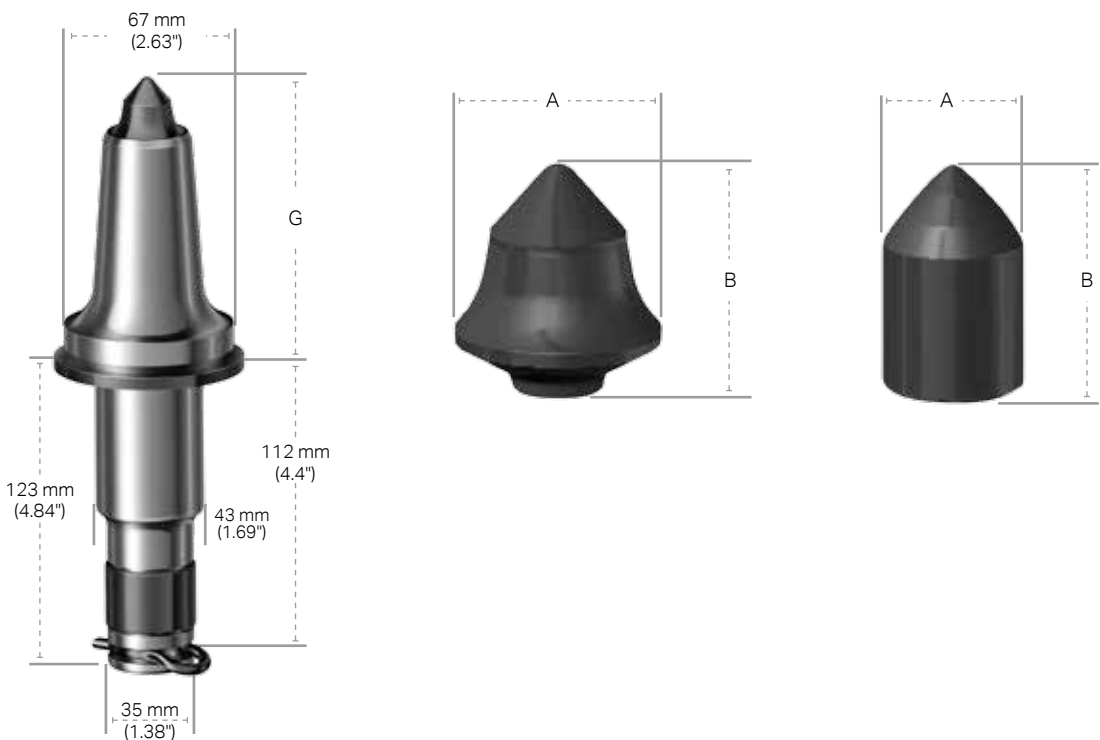
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
MEDIUM		102 mm	20 mm	34 mm	W3XD-4302-3962	EU: 8	24	192
		4.00"	0.78"	1.33"		STD: 8	32	256
		114 mm	29 mm	33 mm	Q3XD-4314-5662	EU: 8	24	192
		4.5"	1.14"	1.3"		STD: 8	32	256
EXTREME		95 mm	33 mm	36 mm	Q3XD-4395-2062	EU: 8	24	192
		3.74"	1.30"	1.41"		STD: 8	32	256
		102 mm	22 mm	35 mm	Q3XD-4302-1990	EU: 8	24	192
		4.00"	0.87"	1.37"		STD: 8	32	256
		102 mm	21 mm	34 mm	Q3XD-4302-7590	EU: 8	24	192
		4.00"	0.81"	1.33"		STD: 8	32	256



EU: European pallet. STD: Standard pallet.

43 × 35 MM TOOL

DUAL RETENTION



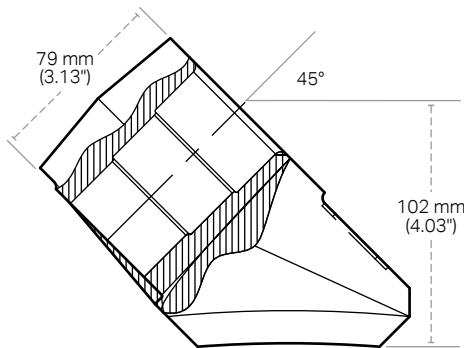
CUTTING CONDITIONS

		G	A	B	Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
HARD		119 mm	29 mm	33 mm	Q3XZ-4319-5662	EU: 8	24	192
		4.69"	1.14"	1.3"		STD: 8	32	256
EXTREME		119 mm	29 mm	33 mm	Q3XZ-4319-5690	EU: 8	24	192
		4.69"	1.14"	1.3"		STD: 8	32	256

EU: European pallet. STD: Standard pallet.

BLOCKS & SLEEVES

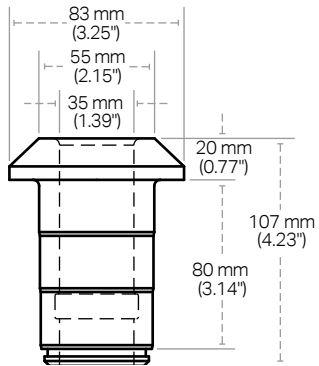
35 MM TOOLS



This standard block is intended for use with the standard sleeves shown below.

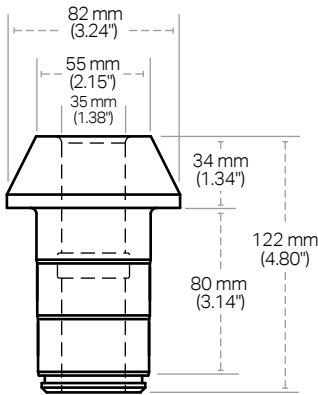
Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
B3GC-3525-4500	EU: 2	63	126
	STD: 2	45	90

EU: European pallet. STD: Standard pallet.



C2AG-4920-3500

Loose-fit step sleeve for use with 35 mm tools with internal clip. The sleeve has a groove for external retention.

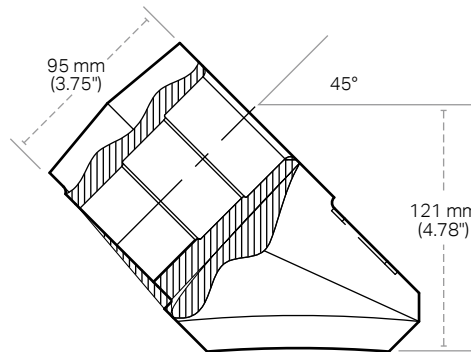


C2AG-4934-3500

Taller version of sleeve C2AG-4920-3500. Loose-fit step sleeve for use with 35 mm tools.

BLOCKS & SLEEVES

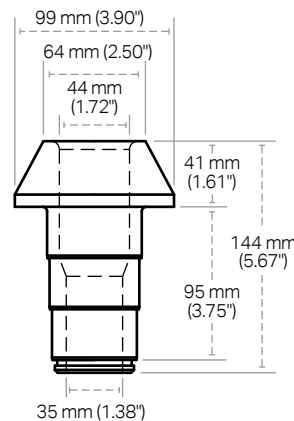
43 × 35 MM TOOLS



This standard block is intended for use with the following large sleeve.

Product Code	Pieces Per Box	Boxes Per Pallet	Pieces Per Pallet
B3GC-4350-4500	EU: 2	63	126
	STD: 2	45	90

EU: European pallet. STD: Standard pallet.



C2LG-4341-5900

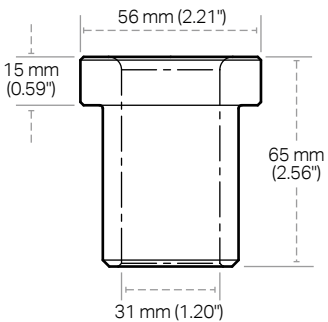
Loose-fit step sleeve for use with 43 × 35 mm step-shank tools. Sleeve has groove for external retention.

REPLACEMENT SLEEVES

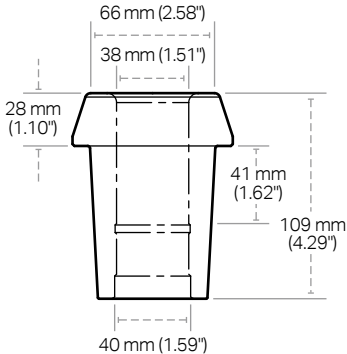


FOR USE WITH CONICAL TOOLS

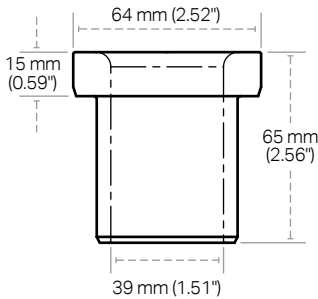
The sleeve extends block life by minimizing its exposure to wear and protecting it from material and debris. The block shape, style and measurements determine the type of sleeve that is required for your machine. Your block also determines whether you should use a slip-fit sleeve that uses an external retainer to hold it in place or a press-fit sleeve which does not require a retainer.



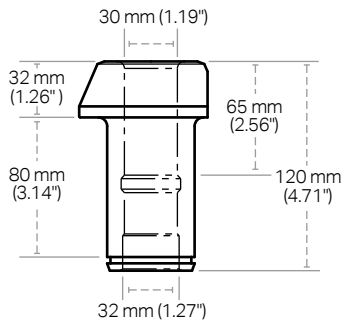
C3BB-3015-4200
Press-fit sleeve, compatible with Mitsui Miike S200 block.



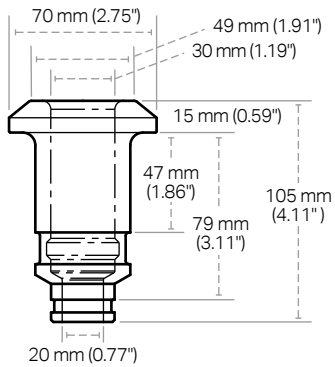
C4AS-3828-6700
Press-fit sleeve, compatible with AM105 block.



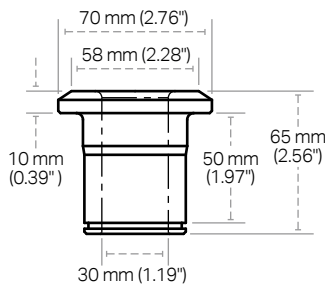
C4BB-3815-4800
Press-fit sleeve, compatible with Mitsui Miike S300 block.



C4PA-3032-5000-MF
Loose-fit sleeve, compatible with ABM25 block.



C3PH-3015-4500
Compatible with ABM20 block.

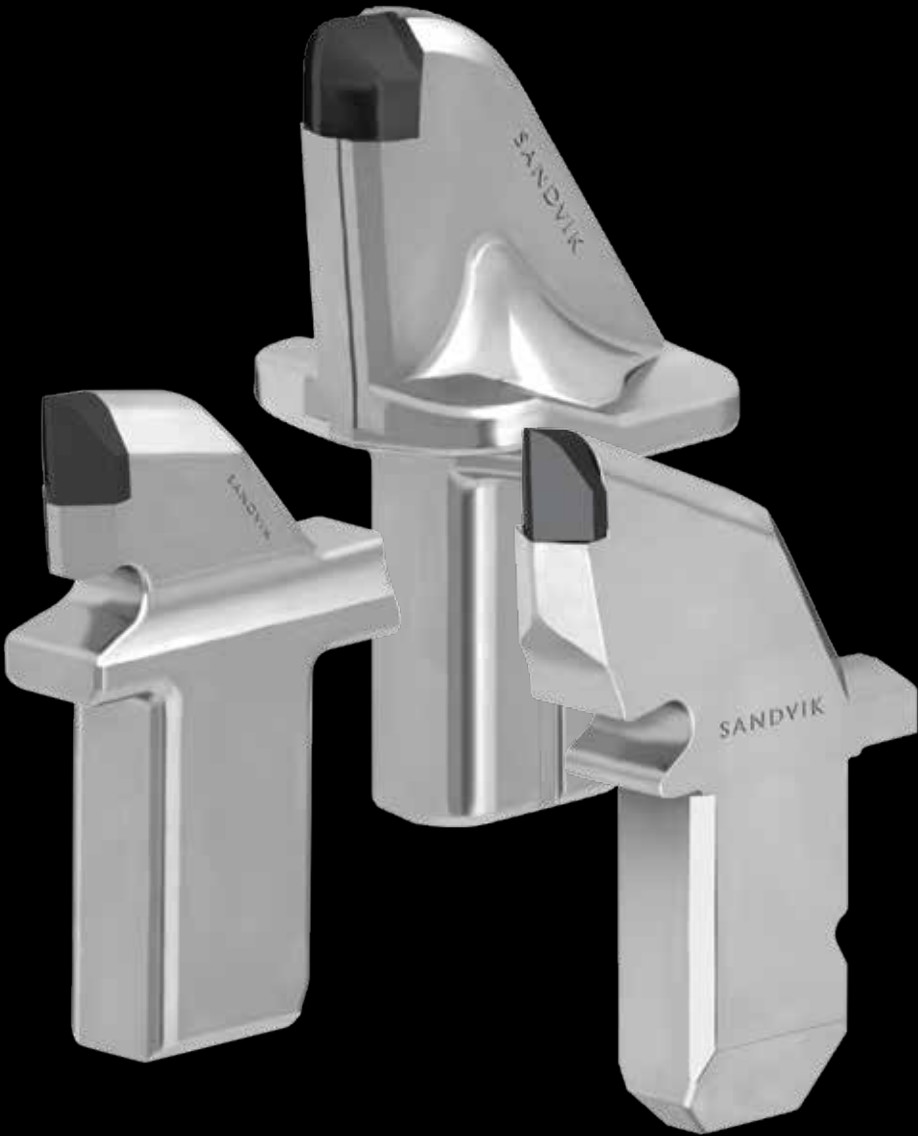


C4BU-3010-4700
Replacement sleeve for Joy® J30 block.

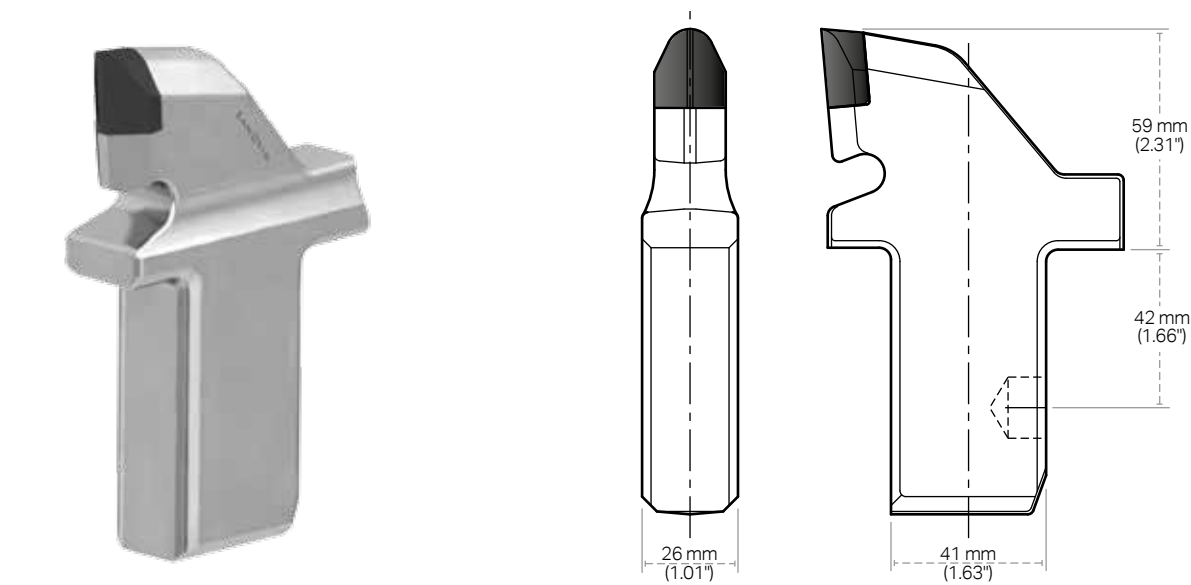
® Registered mark of Joy Manufacturing Company

RADIAL TOOLS

We offer radial tools for the mining and tunnelling industries. These products are manufactured in production facilities in the United States and Australia in accordance with the highest quality standards.



RADIAL TOOLS

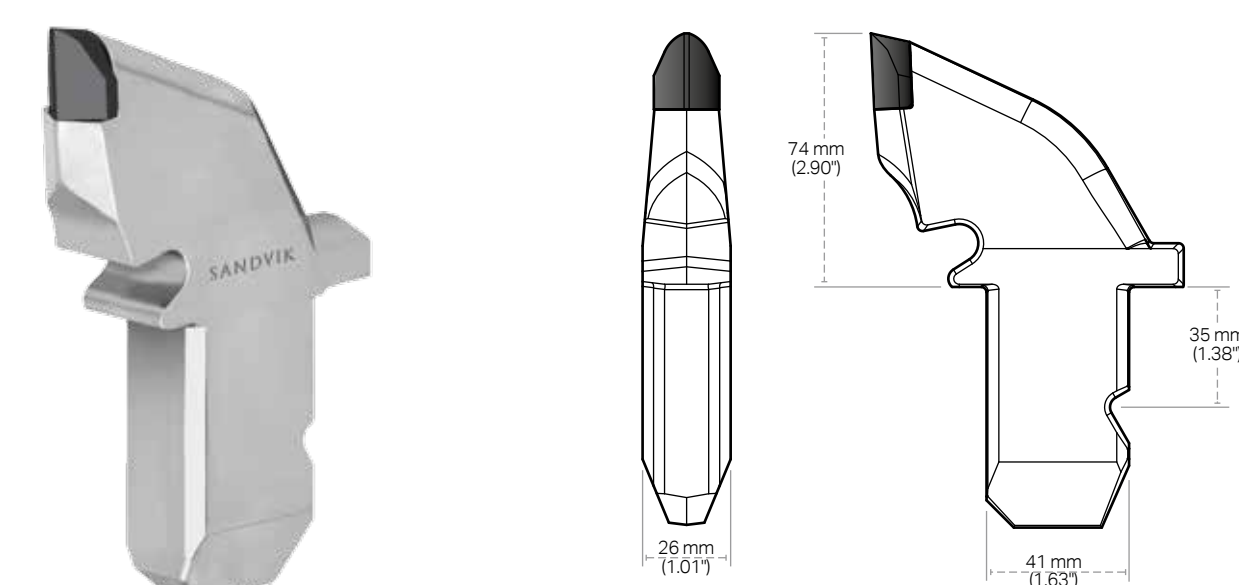


Application: Radial used in trona, potash and coal.

Product Code	Pieces Per Box		Boxes Per Pallet	Pieces Per Pallet
R1BA-2558-4743	EU:	15	63	945
	STD:	15	45	675

EU: European pallet. STD: Standard pallet.

RADIAL TOOLS



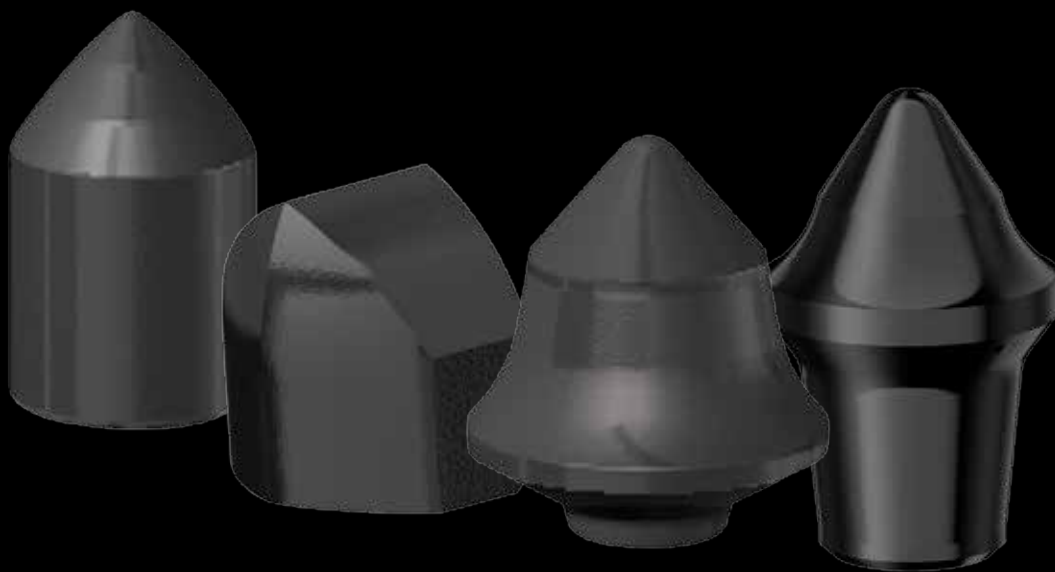
Application: Radial used in trona, potash and coal.

Product Code	Pieces Per Box		Boxes Per Pallet	Pieces Per Pallet
R1VA-2574-5762	EU:	15	63	945
	STD:	15	45	675

EU: European pallet. STD: Standard pallet.

CARBIDE TIPS

We offer a wide range of carbide tips to match the various challenges that you might face. All of our tips provide superb penetration and maximum productivity – regardless of whether you work in soft, medium-hard or really hard and demanding conditions.

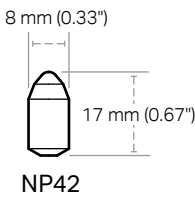
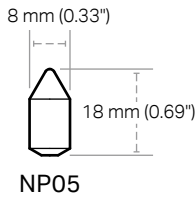
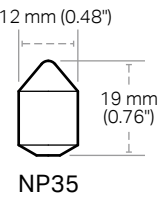
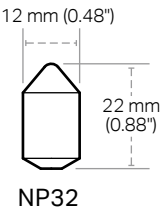
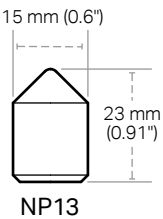
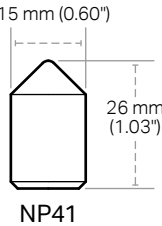
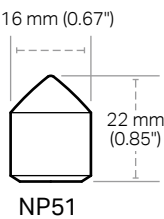
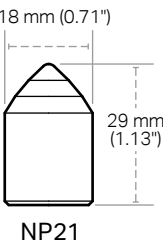
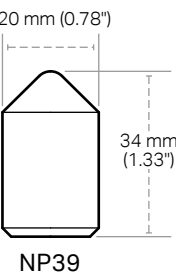
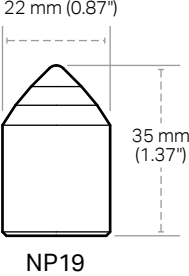
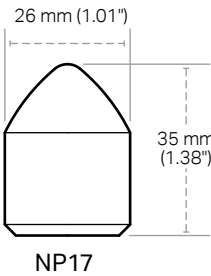


CARBIDE TIPS

INSERTS



INSERT CARBIDE TIPS FOR CONICAL TOOLS
These are best suited for penetration applications where steel wash is not an issue. The tips are ideal for use in hard, high-impact conditions.



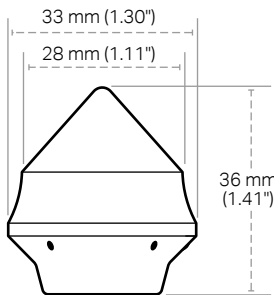
CARBIDE TIPS

CAPS

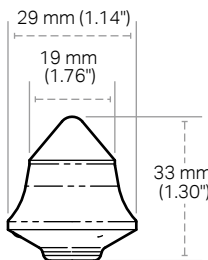


CAP CARBIDE TIPS FOR CONICAL TOOLS

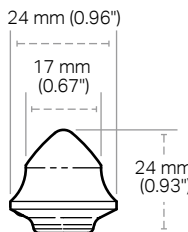
Tips that have a valve-seat braze joint for increased strength and shear resistance. The cap carbide tips provide excellent penetration, and the large carbide shoulder gives excellent protection against steel wash. These tips are best suited for use in soft to medium-hard materials or conditions.



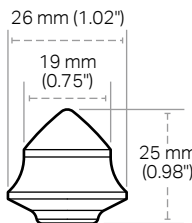
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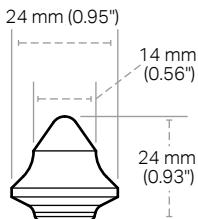
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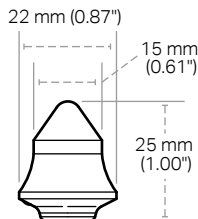
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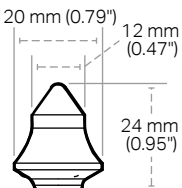
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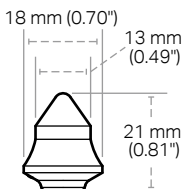
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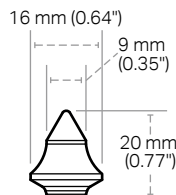
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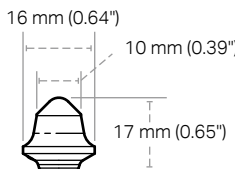
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NP57



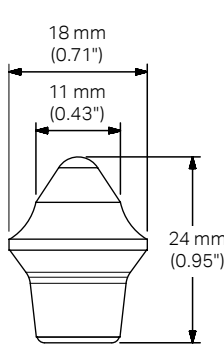
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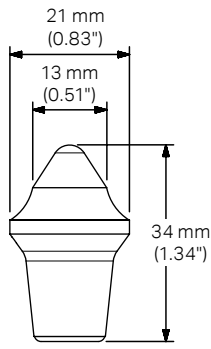
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CARBIDE TIPS

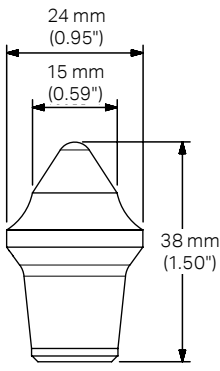
HYBRID



NP74



NP75



NP76

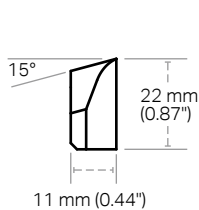
CARBIDE TIPS

FOR RADIAL TOOLS

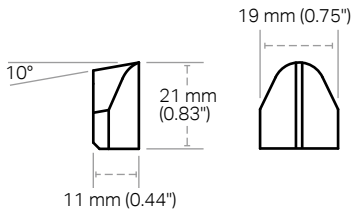


CARBIDE TIPS FOR RADIAL TOOLS

Tips designed for use in tools that do not rotate. They are strategically located at different attack angles for maximum efficiency. The face of each carbide tip is designed with a specific angle for high productivity.



NR57



NR47

ACCESSORIES FOR CONICAL TOOLS

We provide pullers and extractors to help you maintain your tools and machines.



PULLER
For removal of tools with 25 mm shank.

PART NUMBER	TOOL SERIES
M8T-0003-25AA	P9AA 25 mm Tool
M8T-0003-25QA	P9QA 25 mm Tool



LARGE PULLERS
For removal of conical tools from blocks.
Hardened tip provides long life.

PART NUMBER	TOOL SERIES
M8T-0014-30	30 mm Tool
M8T-0014-35	35 mm Tool
M8T-0014-110*	38 mm Tool
M8T-0014-4335	43 mm Tool



RATCHET SNAP-RING PLIERS
For easy installation/removal of external snap-ring. Features one-button quick release.

PART NUMBER	TOOL SERIES
M8T-0059	Snap-Ring style retainers
M8T-0060	Replaceable Tips



INSTALLATION / REMOVAL
For removal of external hairpin retainers for 25, 30, 35, and 43 mm tools.

PART NUMBER	TOOL SERIES
M8T-0063	35 mm, 43x35 mm external retainers
M8T-0064	25 – 30 mm external retainers

25 MM

30 MM

35 MM

38 MM

43 MM

BLOCKS & SLEEVES

RADIAL TOOLS

CARBIDE TIPS

ACCESSORIES

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IMPORTANT HEALTH AND SAFETY INFORMATION

MATERIAL COMPOSITION

Most hardmetal products contain tungsten carbide and cobalt.

ROUTES OF EXPOSURE

Grinding or heating hardmetal blanks or hardmetal products will produce dust or fumes containing dangerous substances that can be inhaled or swallowed, or could come in contact with the skin or eyes.

ACUTE TOXICITY

The dust is toxic by inhalation. Inhalation may cause irritation and inflammation in the airways. Skin contact can cause irritation and rashes. Sensitized persons may experience an allergic reaction.

CHRONIC TOXICITY

Repeated inhalation of aerosols containing cobalt may cause obstruction in the airways. Prolonged inhalation of increased concentrations may cause lung fibrosis or lung cancer. Cobalt is a potent skin sensitizer. Repeated or prolonged contact can cause sensitization.

CLASSIFICATION

- Following hazard classification according to GHS/CLP applies to the hardmetal powder ($3\% \leq \text{Co} < 10\%$):
- Acute Inhalation 3, H331: Toxic if inhaled.
- Carcinogenicity 1B, H350i, May cause cancer by inhalation.

- Repr. 2, H361f; Suspected of damaging fertility.
- STOT RE 1, H372: Causes damage to lungs through prolonged or repeated exposure by inhalation.
- Resp. Sens. 1B, H334 : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- Skin Sens.1, H317: May cause an allergic skin reaction.
- Aquatic Acute 1, H400: Very toxic to aquatic life.
- Aquatic Chronic 2, H411: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

- Do not breathe dust.
- Wear protective gloves/protective clothing/eye protection.
- In case of inadequate ventilation, wear respiratory protection.
- Avoid release to the environment.

IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: call a poison center or doctor/physician.

NOTES

[illegible]

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