



MINING

Underground Mining



Underground Mining

At Kennametal, our commitment to your most demanding underground mining applications is unparalleled. We have a long history of helping you achieve success and a tradition of exceeding your expectations.

We remain focused on redefining and advancing the earthworks industries through our world-class solutions — delivered by professionals who are committed to the health and profitability of your enterprise.

MISSION Kennametal delivers productivity to customers seeking peak performance in demanding environments by providing innovative custom and standard wear-resistant solutions, enabled through our advanced materials sciences, application knowledge, and commitment to a sustainable environment.





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The foundation for a successful underground mining operation is built on rock-steady reliability and progress. Kennametal, the world's leading tooling and services provider, proudly introduces SOLID, our solution-focused platform that yields new levels of performance and productivity. SOLID-engineered tools deliver in the most challenging conditions. For unmatched quality, value, innovation, and application expertise, make Kennametal your SOLID choice.

Safety and Environment

Kennametal's goal of 100% safe extends far beyond our global operations to reach customers at their work sites, encouraging a community that values the implementation of safety procedures.

Kennametal ensures safety compliance by thoroughly testing and inspecting products and confirming that vehicles are appropriately equipped with safety equipment. Safety training is readily available to employees and customers alike. Whether in the office or at a customer's site, our employees drive a culture of 100% safe.



THE CHALLENGE Reduce Hazardous Conditions

THE RESULT



A mine in Southern USA was experiencing heavy vibrations with its continuous miner using an AM511PFG conical tool while mining very hard coal 40-grind with a slow sump rate. Kennametal tested ProPoint30 A1480K, which increased the sump rate by 25% and reduced miner vibrations and dust. Very pleased with the results, the customer decided to change to this bit on both sections.



We protect our planet with a commitment to reduce the global impact Kennametal and our customers have on the environment — establishing effective sustainability practices and policies within the mining industry.

Helping customers meet their overall goals is clearly an objective of Kennametal's sustainability program. We focus on products that provide customers with lower fuel costs, reduced packaging requirements, lower transportation costs, and improved product performance. Kennametal continues to evaluate improved packaging materials — such as biodegradable options. By helping customers address their need to become more efficient, we make ourselves more sustainable.

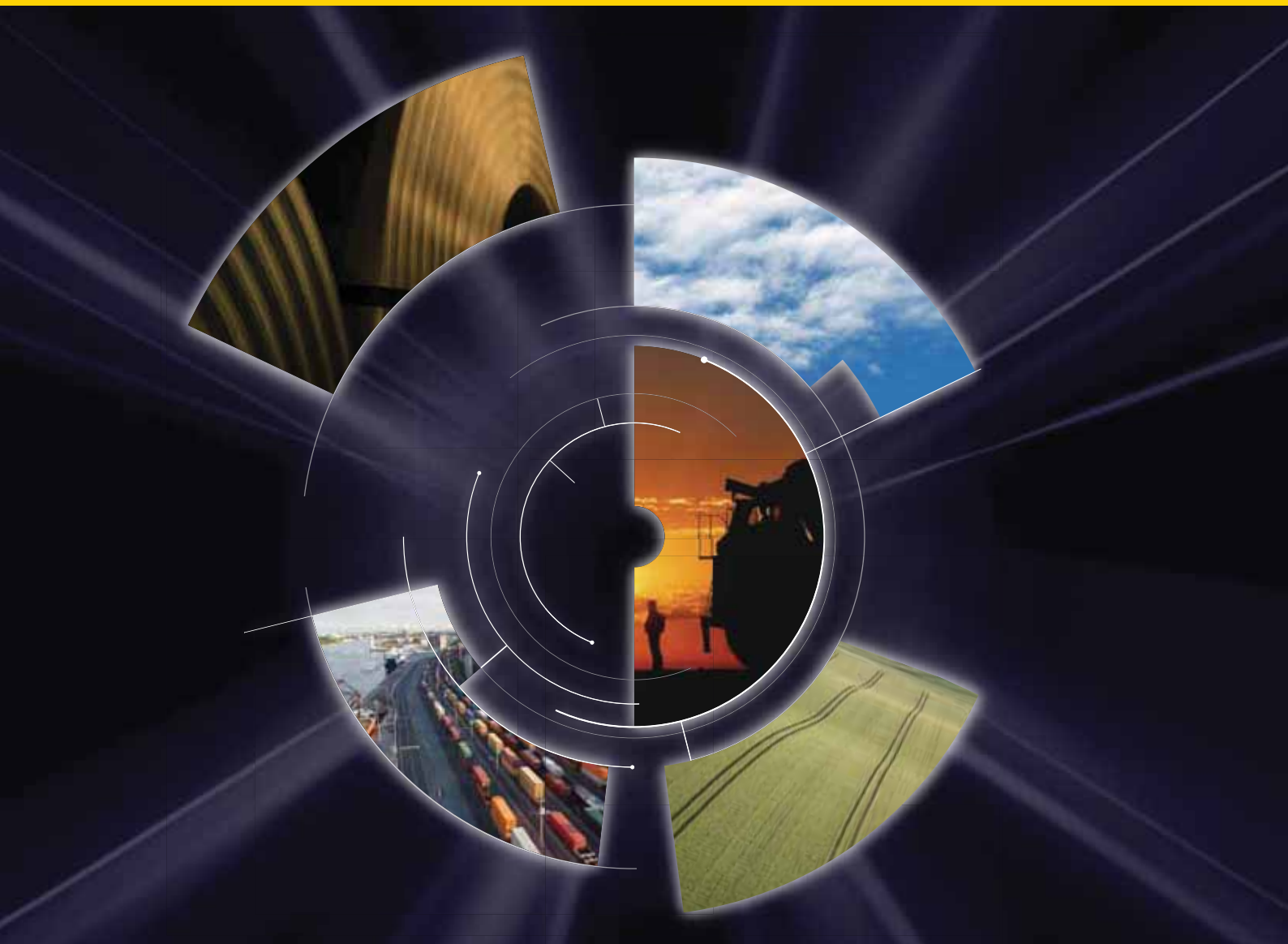
THE CHALLENGE

Decrease Prices Through Recycling

THE RESULT

In the spring of 2010, Kennametal reclaimed 50 barrels of tools from customer stockpiles in a single region through our bit recycling program. Kennametal compensated at a competitive market rate per 55 gallon drum. The program provided customers a significant cost savings of approximately \$0.23 per bit.





EARTHWORKS

Underground Mining
Surface Mining
Construction

TRANSPORTATION

Automotive
Shipbuilding
Railroad
Heavy Vehicles

AEROSPACE & DEFENSE

Aerostructure
Aeroengines
Defense Applications

GENERAL ENGINEERING

Consumer/Household Goods
Industrial Goods
Medical
Tool, Die & Mold

ENERGY

Oil & Gas
Power Generation
Chemical
Plastics



Formulating the future, then shaping it. That's **Different Thinking.**

METALCUTTING CAPABILITIES For more than 70 years, our operational excellence has made Kennametal a powerful global leader in the design and manufacture of engineered components, advanced materials, and cutting tools used in the most demanding environments on earth.

Turning | Threading | Grooving | Cut-Off | Indexable Milling

Solid End Milling | Holmaking | Hole Finishing | Tapping | Tooling Systems

Earth Cutting Tools — Product Highlights

With leading-edge products from cutter bits and holders to complete custom-fabricated cutter drums, we keep high-value equipment running longer and performing better in demanding environments. Products include underground longwall shearers, continuous miners, and surface miners.



ProBore™

- Stronger insert with no loss of penetration.
- Optimum performance in shortest drilling cycles.
- More holes drilled per bit.



ProPoint™

- Unique slim-line construction and special NB tip reduces cutting forces.
- Ultimate penetration.
- More uniform material size and shape.
- Minimum dust.
- Consumes less power.



Block Systems

To help you reduce part replacement and overall mining costs, our fully heat-treated toolholder assembly provides triple-attachment security:

- Blocks, bushings, and sleeves in a variety of sizes.
- Blocks are made of heat-treated, triple alloy steel for best performance.
- Available with inner hardened bores (IH) or external hard face weld (HF) for extra wear resistance.
- Assemblies of blocks and press-fit bushings available.

Crushers

- Superior impact strength for long-lasting tool life.
- Straight, tapered, and stepped shank tools.
- Large selection of carbide tip sizes and shapes.
- External retainer systems.



Wear Solutions

Our proprietary plating products reinforce the industry's workhorses — shovels, haul trucks, crushers, and mineral-processing equipment — that are critical for meeting deadlines and improving productivity.



Advanced Steel Wear Plate Solutions

Dura-Plus™ and Tri-Braze™

- High hardness for better wear resistance (444 BHN).
- Balanced alloy-steel chemistry for optimum hardness/toughness ratio.
- Long performance life and less downtime lower overall maintenance costs.

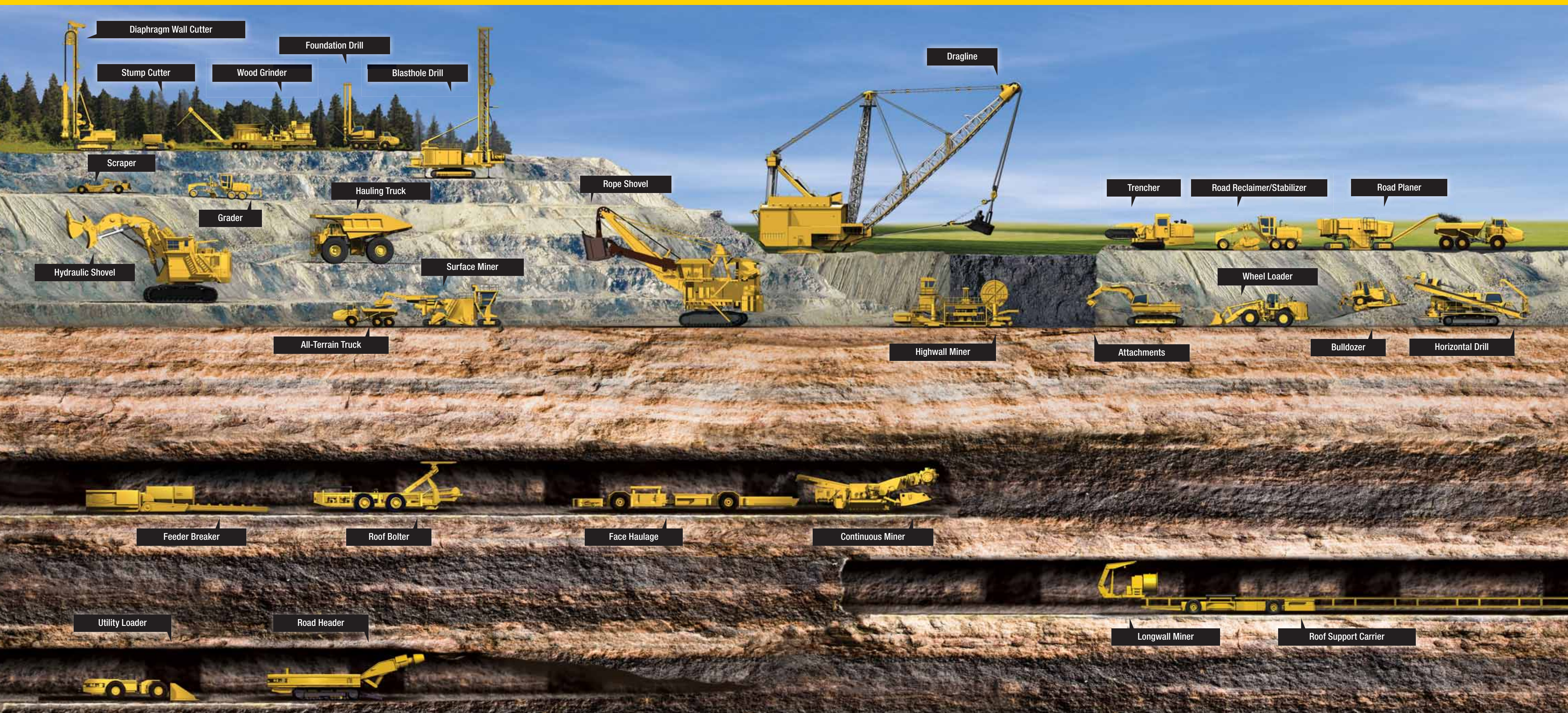
KenCast™

- Tungsten carbide particles are metallurgically bonded to air-hardening steel.
- Extremely wear resistant in highly abrasive and high impact conditions.
- Significantly extends uptime in high-wear applications.
- Easy to weld and available in many sizes.
- Outlasts overlay products by up to 4:1.

Chromium Carbide Overlay Solutions

Super-C™

- Mild steel base plate can be easily welded, bolted, or studded to existing structures.
- Can be applied to nickel-based, stainless, and other steel substrates.
- Ideal for severe-abrasion and moderate-impact applications.

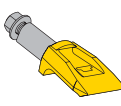


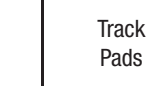
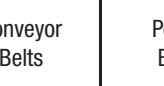
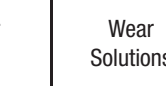
Underground Mining

					
Longwall Miner	•		•	•	•
Continuous Miner	•		•	•	•
Highwall Miner	•		•	•	•
Road Header	•			•	•
Roof Bolter					
Feeder Breaker		•			
Face Haulage					
Utility Loader					

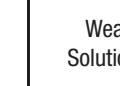
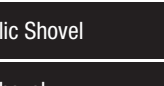
						
Longwall Miner					•	•
Continuous Miner	•	•			•	•
Highwall Miner	•	•			•	•
Road Header						
Roof Bolter			•	•		•
Feeder Breaker					•	
Face Haulage					•	
Utility Loader					•	

Road Rehabilitation

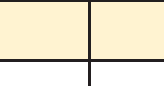
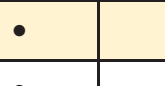
						
Road Planer	•		•	•	•	•
Road Reclaimer/Stabilizer	•	•		•	•	•
Attachments	•			•		•
Bulldozer						

						
Road Planer	•	•	•	•	•	•
Road Reclaimer/Stabilizer	•	•	•	•	•	•
Attachments	•					•
Bulldozer						•

Trenching

				
Trencher	•	•	•	•

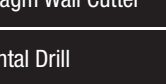
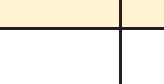
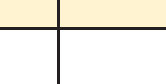
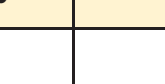
Forestry

					
Stump Cutter	•	•	•		•
Wood Grinder				•	•

Surface Mining

						
Surface Miner	•	•	•		•	•
Blasthole Drill				•		
Grader	•	•			•	
All-Terrain Truck					•	
Bulldozer					•	
Dragline					•	
Hauling Truck					•	
Hydraulic Shovel					•	
Rope Shovel					•	
Scraper					•	
Skid Steer Attachment	•	•	•		•	•
Wheel Loader					•	

Foundation Drilling

								
Foundation Drill	•	•	•	•	•	•	•	
Diaphragm Wall Cutter					•			
Horizontal Drill								•

Wear and Tooling Solutions for Your Earthworks Equipment

The Kennametal Earthworks segment serves top-tier companies across varied applications: underground mining, surface mining, quarrying, highway construction, utility construction, tunneling, recycling, forestry, agriculture, and snow removal. With our superior custom and standard cutting and wear-resistant solutions, we help our clients build and maintain best-in-class operations.

With leading-edge products from cutter bits and holders to complete custom fabricated cutter drums, we keep high-value equipment running longer and performing better in demanding environments.

- Underground Mining
- Surface Mining
- Construction
- Specialties

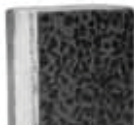


FOR THE MOST DEMANDING APPLICATIONS

To learn more about our wear and tooling solutions for the earthworks industry, contact your Kennametal Representative or Authorized Kennametal Distributor today.

Quick Reference Guide • Wear and Tooling Solutions for Your Earthworks Equipment

		 Conicals	 Crushers	 Radials	 Cutting Systems
	Page Number(s)	20–51	52–58	60–64	66–93
	Longwall Shearer	•		•	•
	Continuous Miner	•		•	•
	Highwall Miner	•		•	•
	Roof Bolter				
	Feeder Breaker		•		
	Face Haulage				
	Utility Loader				
	Road Header	•			•

 Drums	 CLAs	 Core Breakers	 Roof Bits	 Augers and Drilling Systems	 Wear Solutions	 Accessories
17	145	69, 93	94–117	118–136	138–159	160–167
•					•	•
•	•	•			•	•
•	•	•			•	•
			•	•		•
					•	
					•	
•						

Productivity Guide

Learn the most effective tips for tool selection, maintenance, and wear progression to increase productivity and ensure the highest return on investment.

Safety



Less Noise, Increased Productivity, and Quality of Life

Prolonged noise exposure is devastating to drilling operators. Extremely high noise levels result in loss of productivity. Kennametal is dedicated to improving operators' working conditions by finding innovative ways to reduce noise.

Beam Forming Techniques are used to identify the noisiest sections in roof drilling.



Less Dust, Improved Working Environment

High dust areas can increase downtime and pose a risk to operators' health. By designing slimmer tools, better vacuum drilling systems, and other solutions, Kennametal decreases dust exposure and improves operators' working conditions.



Spray systems reduce dust in continuous mining.

Reduce Risk of Ignition

- Maintain sprays.
- Monitor tool wear and ensure tips have carbide.
- Adequate air flow across cutting head.



Selecting the Right Tool

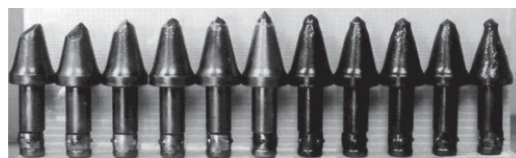
Consider the following when selecting a new solution for your application:

- Material to be cut.
- Sharper tools produce less dust, resulting in less fines, less machine wear, and lower maintenance cost.
- Carbide grade used.
- Effect of tooling wear on machine wear-and-tear.
- Refer to Selection Guides located throughout catalog: Conicals (pages 24–35); Crushers (pages 54–55); Cutting Systems (pages 70–73); Roof Bits (pages 96–101); and Wear Solutions (pages 140–143).



Understand Wear Progression

- Increase tool utilization.
- Avoid catastrophic failure.
- Maximize cutting performance.
- Discover effect of tooling wear on machine wear-and-tear.



Maintenance

What to Look for While Maintaining:

- **Retainers**

Conical tools perform best with a combination of ridge support and freedom of rotation. Loose bushings and sleeves decrease tool efficiency.

- **Blocks**

Blocks are more stationary than retainers and are not easily replaced. If equipped with sprays, ensure the systems are clean and working properly.

- **Spray Systems**

Properly maintained spray systems can increase performance and tool life, and reduce the risk of ignition. Check for blockage or any interference under spray housing.

Excessive Wear in other Areas:

- **Vanes**

Check for unusual or excessive wear on the vane system. Wear protection can be added if needed.

- **Blocks**

Identify unusual wear on the sides and bore of the block.

- **Spray Housings**

Check for unusual or excessive wear on the spray housing. Reposition spray housing if needed.

Wear Protection

Use Wear Protection Solutions to Increase the Life of Your Equipment



Super-C™



Prime Arc™



KenCast™

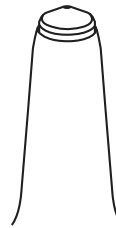


Tri-Braze™

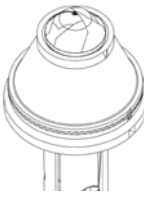
Troubleshooting

For Ideal Wear Pattern and Good Rotation...

- Continue to maintain bushings, sleeves, and water sprays.
- Make sure to properly replace bits as needed.



NOTE: The following chart shows typical end-of-life conditions and possible solutions.

Problem	Possible Cause	Solution
 Excessive Wear	Incorrect drum clearance.	Contact your sales representative for a full evaluation.
		Kennametal can redesign the optimum cutting system to prevent tool failure.
 Thermal Cracking	Excessive heat due to lack of effective water sprays.	Improve water sprays.
	Excessive heat due to: • Hard cutting conditions. • Lack of penetration. • Grinding of material not being conveyed.	Routine maintenance. Select a more heat-resistant grade.
 Carbide Breakage	Severe conditions, extreme impact, non-rotation, lack of effective water sprays.	Improve water sprays and bushings.
	Improper installation (hard hammers).	Do not impact carbide with hard material.
 Loss of Rotation	Lack of regular maintenance, worn holders, misaligned holders.	Replace overly worn or loose bushings and sleeves.
	Lack of effective water sprays.	Keep sprays clear and clean of any debris.
 Steel Wash	Highly abrasive material.	Use an NB or heavier-bodied tool with hardfacing or "X" treatment.
	Product re-circulation.	Shut off cutter motor when conveyor is not running.



Engineered Solutions

Coordinated global resources with world-class manufacturing process development and implementation capabilities.

Whether it's a single-tailored tool required to address a specific part feature, or the development of a comprehensive manufacturing process for use on existing or newly acquired production equipment, Kennametal's team can manage the development, personnel training, and successful implementation of the complete solution.

Global implies just that. Globally coordinated manufacturing process development, implementation, and optimization support at machine tool builders, end user engineering or corporate offices, and end user production facilities, regardless of their respective geographies. Well-organized, highly linked staff reside in the Americas, Europe, and Asia/Pacific regions. Globally standardized design and manufacturing systems enable highly coordinated project management and implementation results.

Key alliances with machine builders and other leading manufacturing technology enablers ensure a complete solution, optimizing the entire process — not just portions of it. This results in the most effective and efficient manufacturing process possible, leading to low implementation time and cost and rapid return on investment.

Drums

Kennametal provides a variety of cutting drum services. We take the time to custom design, build, tool, and service longwall shearers, continuous miners, road headers and crusher/breaker drums — improving productivity.

Cutting Drum Service

- Assessment of cutting and hauling conditions and equipment.
- Determine where the greatest efficiencies can be gained in cutting and loading.
- Customize drum to exact specifications.
- Design with top-quality Kennametal tools for superb performance.

Additional Benefits

- Discharge vane wear areas are covered with KenCast™ strips for exceptional abrasion resistance.
- Backed by customized maintenance program.
- Familiarity with your cutting conditions enable us to provide you with best re-manufactured replacement drum.
- Periodic inspections to ensure continuous productivity.



Continuous Miner Drum

Kennametal also offers heavy-duty shearer drum cutting systems for today's increasingly higher-horsepower machines.

Prime Arc™ joining electrodes and wires are formulated for field welding under the most difficult conditions. We have a full line of electrodes and wires designed to join high-strength, abrasion-resistant steel, manganese steel, and dissimilar metals.

System Features

- Heavier drums, vanes, and face rings.
- Stronger cutting tools with longer gage lengths.
- Increased productivity and drum life.

Point, Kennametal Conicals

Bore, Kennametal Roof Bits

PRIME — Kennametal's line of superhard tooling

- Increased safety by reducing respiratory hazards.
- Superhard tip stays sharp, reducing dust and fines for the life of the tool.
- Decrease vibrations and increase tool life.



PrimePoint™
Designed to deliver tonnage in the safest, most cost-effective way.

PLUS — Ultra-high-performance, long-lasting tooling

- Economical with less downtime.
- Sharp teeth and slim tool design for more consistent cutting.
- Dramatically increased tool life give, greater efficiency at the face.

PRO — Beyond ordinary performance tooling

- Unique carbide-tip grades and designs with exceptional retention methods.
- Slimmer body for dust and fines reduction.
- Latest tip designs for ultimate penetration.



ProBore™
Stronger insert with no loss of penetration.

Underground Mining Icons

	Water Spray		Pressed Contact		Double Rotating
	Dry Drilling		Vacuum Drilling		Wet Drilling
	Cutting Conditions: Light		Cutting Conditions: Medium		Cutting Conditions: Heavy
	Cutting Conditions: Severe		Noise Reduction		Dust Reduction
	X Treatment		Induction Hardened (IH) Treatment		Hard Faced (HF) Treatment
	Recyclable		Insert Type: Plug		Insert Type: Cap
	Insert Type: Narrow Bottom (NB)		Insert Type: Bullet Nose		



Conicals

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25mm Series	48–49
20mm Series	50
19mm Series	51
16mm Series	51

The best choice is the right conical when mining underground.

The right conical does the job faster with more penetration and less dust, larger pieces, less fine particles, better wear resistance, and less breakage.

When you need the right tool, Kennametal's wide range of cutting conicals, crushers, and flats and radials are a solid choice.

ProPoint™

Kennametal's ProPoint conicals, with a slim narrow-bottom design, cut with better penetration and lower forces, reducing overall power consumption, and produce up to 25% less fines in highly abrasive cutting conditions.

Features and Benefits:

- Less dust means a safer work environment and reduced fines for disposal.
- Lower forces reduce power consumption as well as wear-and-tear on machinery.
- Lower vertical forces mean better penetration with less bouncing of the bit.
- Tools are available with internal and external retainer groove.

NB tips wear evenly with the steel body, so you get longer lasting conicals and tips that stay sharp.



PlusPoint™

Kennametal's PlusPoint conicals are slim, narrow-bottom (NB) carbide-tipped, and designed to cut coal with better penetration, lower forces, and far less dust than comparable conicals.



Features and Benefits:

- For optimum performance in even the hardest operating conditions — especially rock.
- Safeguarded by genuine Kennametal hardfacing material.
- Extended NB carbide tip gets the carbide further away from steel preventing rapid steel wash.

NB tips wear evenly with the steel body, so you get longer lasting conicals and tips that stay sharp.



U170 Series

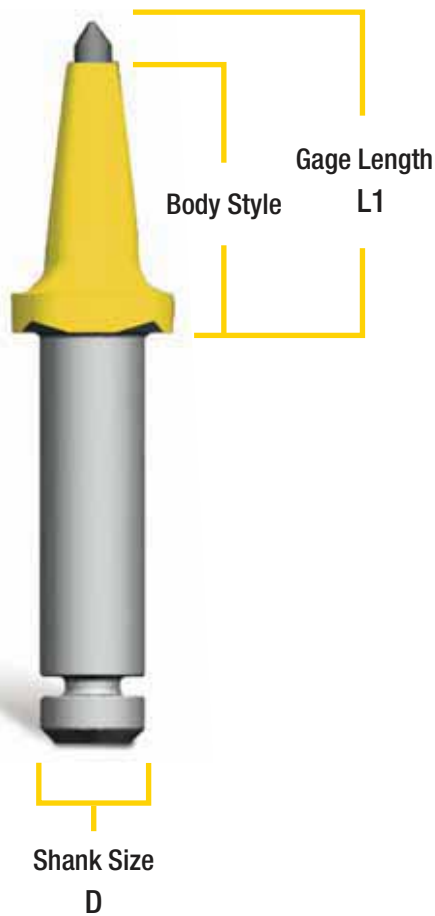
The U170 Tooling Series — a good choice for General Purpose mining applications.

Features and Benefits:

- Slim nose profile for improved penetration.
- Larger collar for better block protection.
- Puller grooves for easier tool extraction.

Product Selector

How to Use the Product Selector



Step 1 Determine shank size.

Step 2 Determine gage length.

Step 3 Identify cutting condition.



Step 4 Determine body style based on life or penetrability. Choose heavy or standard body style for extended life. Use slim or finned tools for better penetration.

■ Conicals • Product Selector

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
1010355	U80	16	0.62	25	0.99	51		●		
1010294	U43KHL	19	0.75	44	1.72	51	●			
1010704	MOD U43KH			44	1.74	51	●			
1010489	U43KL 50			44	1.74	51	●			
1010718	U43KLB			46	1.80	51	●			
1010292	U43KL/C22			46	1.81	51	●			
1010316	U50KH 75	20	0.80	44	1.72	50	●			
1010324	U50KL 50			47	1.84	50	●			
1010394	U51KHL 75			49	1.94	50	●			
1010318	U51KL 68			50	1.95	50	●			
1107736	U50W 50			56	2.20	50	●			
1010498	U50KL 60			47	1.84	50	●			
2503806	U765CB 1.9 .32	25	1.00	47	1.85	49	●			
1960633	UCKC1465PKHD			58	2.27	48			●	
1010298	U40KF			62	2.44	48	●			
2433376	U765K 2.5 .63			64	2.50	48			●	
2419418	U73 2.5 .36			64	2.50	49	●			
5176856	U73 2.5 .36 MOD			64	2.50	49	●			
1960546	U765PHD			64	2.50	48		●		
1960550	U765PKHD			64	2.50	48		●		
1327056	AM476			64	2.50	49		●		
2622732	U73 2.5 16NB			64	2.50	49		●		
1327060	AM471			64	2.50	49		●		
1960547	U765PXHD			64	2.51	48			●	
5166746	U765PXHD MOD			64	2.50	48			●	
3121837	U765PXHDHF			64	2.51	48			●	
2384561	U73K 2.65 .32			67	2.65	49	●			
2432315	U73 2.6 .36-60			67	2.66	49	●			
2433394	U765 2.7 .48			68	2.66	48		●		
5210615	PROPOINT25 A12.570			68	2.69	39		●		
3554706	U765L 2.7 .62			68	2.69	48			●	
1960551	U765PH			69	2.71	48			●	
1960634	U765PH43			69	2.71	48			●	
1960639	U765PKH43			69	2.71	48		●		
2432301	U765S 2.75 .36 60			70	2.74	48	●			
1960638	U765PKH38			70	2.75	48	●			

NOTE: For a complete icon description, see the Icon Guide on page 19.

(continued)

■ Conicals • Product Selector (continued)

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
1327077	AM430FB	25	1.00	70	2.75	49	●			
2271391	AM470 2.75 62			70	2.75	49		●		
1753656	AM470			70	2.75	49		●		
4161379	PROPOINT25 A1470			70	2.75	39	●			
5147219	PROPOINT25 A1470K			70	2.75	39	●			
2446719	U73 2.8 15.87A			70	2.76	49	●			
2432314	U73 2.8 12.5NB			71	2.80	49		●		
3480145	U73K 2.8 12.5NB			71	2.80	49		●		
1887766	AM472			72	2.84	49		●		
3382280	UC765KSAL			72	2.85	48			●	
1010414	U40HD			74	2.92	48		●		
1717663	UC765K 2.7 .62 WITH MOD GROOVE			69	2.73	48			●	
2220813	K1 NB	30	1.18	64	2.50	46		●		
3343638	120 19NB			68	2.66	45			●	
2034016	K1 K NB			69	2.71	46		●		
1950491	K1 K			69	2.71	46		●		
1010566	UCKC84HFLR			70	2.74	45			●	
3343652	120 22NB			70	2.75	45			●	
3791328	U84HDLR CH 19NB HF			70	2.76	45			●	
1010379	U84KHD			70	2.76	45			●	
1010529	U84HD			70	2.76	45		●		
1747951	UCKC84KHF			70	2.77	45			●	
3343650	U84HDLR CH 19NB			70	2.77	45			●	
1870106	U119K 75 19.5			75	2.95	45			●	
1891401	AM510PFG			76	3.00	47			●	
2907496	U85K 3.0 14NB			77	3.01	45		●		
4101464	U85K 3.1 19NB			78	3.08	45		●		
3880831	PROPOINT30 A1480K			78	3.08	39	●			
2442351	U83K 3.1 .48			79	3.09	47		●		
2506006	U85K 3.1 .48			79	3.09	46		●		
3761567	PROPOINT30 A1480			78	3.09	39	●			
1891425	AM500PFG			79	3.09	47		●		
2454684	U83K 3.1 14			79	3.09	47		●		
2243255	AM500K 3.1 11NB			79	3.10	47	●			
1819048	U119K8016BN SL			79	3.12	46			●	
4132928	U119KSL 8018.6BN			79	3.13	45			●	

NOTE: For a complete icon description, see the Icon Guide on page 19.

(continued)

■ Conicals • Product Selector (continued)

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
1924851	U119K 80 17.5BN	30	1.18	80	3.13	45			●	
1010562	U119K 80 16			80	3.16	46				
3029709	U82HDLR-12.5NB			80	3.13	46		●		
2992574	U119K 80 16BN			79	3.13	45		●		
1924847	U119K 80 16BN			79	3.13	46		●		
1107477	U119 80 16			80	3.15	46			●	
3029710	U84HDLR CH 16NB			80	3.16	46		●		
5328289	U84KHD-CH-19NB-HF			71	2.78	45		●		
3113108	U119K8016 BN/SL			81	3.18	46		●		
3550051	U119KSL 8018.6BN			81	3.18	46			●	
1835670	AM521 75HF			83	3.25	45			●	
1891427	AM514P 62			83	3.25	47	●			
1880620	AM514KP 62			83	3.25	47	●			
2527413	U85K 3.2 16NB			83	3.25	46		●		
3950236	AM521K 75HF			83	3.25	45			●	
4067822	AM521 75 X			83	3.25	45				
1724595	AM521C 24.43			83	3.26	45			●	
1010424	U85HLR 75			84	3.32	45	●			
1075595	U85AUS 16NB			85	3.33	46		●		
1891423	AM511PFG			85	3.33	47		●		
5042831	AM511PFG W/NESTED COLLAR			85	3.33	47		●		
1952532	AM511K 12.5NB 65			85	3.34	47		●		
1891398	AM506PFB			85	3.34	47	●			
1857842	AM511 12.5NB 65			85	3.34	47	●			
2622272	U119S 3.3 .38 70BN			85	3.36	46	●			
1010407	U85HD			86	3.37	46		●		
2234432	U85HDHF			86	3.37	46		●		
4058676	U85HD X			86	3.37	46				
1992213	K1 46 1K			88	3.46	46		●		
2222840	K1-1-65-H			89	3.49	46		●		
5147316	PROPOINT30 A1489			89	3.50	39		●		
3489250	U83KPG3.5 .48			89	3.50	47		●		
5001192	PROPOINT30 A1489K			89	3.50	39	●			
2503798	K1 22NB K			89	3.50	45			●	
1104924	UR118 3.5 12.5NB			89	3.50	47		●		
1196746	UR118 3.5 50			89	3.50	47		●		

NOTE: For a complete icon description, see the Icon Guide on page 19.

(continued)

■ Conicals • Product Selector *(continued)*

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
2222842	K1-1-SM-65-H	30	1.18	89	3.50	46		●		
2222931	K1 1K NB			89	3.50	46		●		
1178183	UR118K 3.5 12.5NB			89	3.50	47				
3004869	U85ABM 91 16NB			91	3.59	46		●		
1010409	UC85KSA			91	3.59	46		●		
3343635	S100 19NB	35	1.38	77	3.01	43			●	
2222969	U138-L82			82	3.22	43		●		
3383451	U94KHDSA 85			82	3.24	44			●	
1010443	U94KHD			88	3.48	43			●	
1010469	U94HDLR			89	3.49	43			●	
2276047	U94HDL			89	3.49	43		●		
2527112	U92 3.5 16NB			89	3.50	43		●		
2645800	U92K 3.5 25NB			89	3.50	43		●		
4086152	PROPOINT35 A1489			89	3.50	39		●		
2508189	U93 3.5 14NB			89	3.50	44	●			
3041840	U93 3.5 .48			89	3.51	44	●			
2434939	U93LRD 3.5 14NB			89	3.50	44		●		
3343629	U94HDLR 19NB			89	3.51	43		●		
3617097	U94KHDSA92 18.6BN			91	3.58	43		●		
1103931	U94KHDSA 95			95	3.73	43		●		
2216793	U92LRHF 5			99	3.90	43			●	
1715471	U92HDL 5			100	3.92	43	●			
3753098	PLUSPOINT35 HA2598			100	3.93	38			●	
2272937	U92K 4.0 22NB			100	3.95	43			●	
2414148	U92 4.0 22NB			100	3.95	43			●	
2250379	U92LR 4.0 22NB			100	3.95	43			●	
3555073	U92KHDSA102 18.6BN			101	3.97	43		●		
4086143	PROPOINT35 A14102			101	3.98	39		●		
2449972	U92LR 4.0 19.65NB			101	3.98	43	●			
3029708	U92HDLR 16NB			101	3.99	43		●		
2635236	U92 4.0 16NB			102	4.00	43		●		
3107240	U93LRD 4.0 12.5NB			102	4.00	44	●			
1715472	U92HDL			102	4.00	43		●		
2394830	U92K 4.0 19NB			102	4.00	43		●		
1010431	U92KHD/AM592FBY			102	4.00	43		●		
3634610	U93 4.0 14 NB			102	4.00	44	●			

NOTE: For a complete icon description, see the Icon Guide on page 19.

insert type					retention type							
					internal				external			
plug	cap	narrow bottom	bullet nose		round lock ring	friction	positive lock	friction positive lock	flat hair pin	snap ring	round hair pin	roll pin
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(continued)

■ Conicals • Product Selector *(continued)*

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
3772924	U93HP 4.0 19.65NB	35	1.38	103	4.04	44		●		
1010742	C7/U47	38	1.50	61	2.39	41			●	
1992171	U47WL			63	2.47	41		●		
2222090	U47SM-65-H			64	2.51	41			●	
2222093	U47SM-65			64	2.52	41			●	
2222095	U47SM-H			64	2.52	41			●	
4060200	U47HD/65YD			64	2.52	41			●	
2222962	MR38 HD ZIX			70	2.75	42			●	
3344896	MR3825/ZIXY			70	2.75	42			●	
3375243	U47 52B 19.5			70	2.75	41		●		
3343671	U47 19NB			70	2.76	41		●		
1620315	MR38.25 OZR			70	2.77	42			●	
1874952	VA46K1			77	3.02	41		●		
3343658	U47 22NB			78	3.07	41			●	
3613270	U135-25NB-SY			80	3.14	42			●	
3870578	U135-25NB-SY-HF			80	3.14	—			●	
3343654	U135 25NB			80	3.15	42			●	
1875388	K1 KO 38/30 22K			80	3.15	41			●	
3343653	U135-22NB			81	3.18	41			●	
3613269	U135 22NB SY			81	3.18	42		●		
3901023	MR38.25.68L160			84	3.31	42			●	
2222086	U47 1SM			89	3.50	41		●		
1889209	MR38.90 17,5			90	3.54	42		●		
3345401	U47-1HD/65/HY			90	3.54	42			●	
2222975	U95 SM			93	3.66	42		●		
2222976	U95HD			95	3.74	42			●	
1992215	MR37.5 12KA			95	3.75	42		●		
2400758	MR38.110 17,5 HF			110	4.34	42		●		
2888406	U170LRDHF 3.5 25	43	1.70	89	3.50	40			●	
4003371	U170LRDHF 3.5 25			89	3.50	40			●	
2940714	U170LR 3.5 25HDHF			89	3.50	40				●
3119516	U170HF 4.0 25NB			102	4.00	40			●	
3367616	U170LRD B 4.0 22HF			102	4.00	40			●	
4003367	U170LRD 4.0 22			102	4.00	40			●	
1793328	U170LR 4.0 22			102	4.00	40			●	
3766945	U170LRD 4.0 22			102	4.00	40			●	

NOTE: For a complete icon description, see the Icon Guide on page 19.

(continued)

■ Conicals • Product Selector *(continued)*

							cutting conditions			
order number	catalog number	shank size D		gage L1		page number(s)				
		mm	in	mm	in		light	medium	heavy	severe
3381824	U170LR 4.0 19 65NB	43	1.70	102	4.00	40		●		
2450591	U170 4.0 22NB			102	4.00	40		●		
4103385	U170HDLR 4.0 25NB HF			102	4.00	40				●
5288770	U170LRD HP 4.5 30			114	4.50	40		●		
4169173	U170LRD 4.5 30			114	4.50	40		●		
4025558	U170LRHF 4.5 25NB			114	4.50	40			●	
2210329	U170LR 4.5 25NB			114	4.50	40			●	
2425696	U170LRD 4.5 25NB			114	4.50	40			●	
2604841	U170LRD 4.5 19NB			114	4.50	40			●	
2431280	U170 4.5 22NB			114	4.50	40		●		
2273708	U170LR 4.5 22NB			114	4.50	40		●		
2398568	U170LRD 4.5 22NB			114	4.50	40		●		
5037965	U170LR 5.5 30			140	5.50	40			●	
4058154	PLUSPOINT43 SHA22140			140	5.50	38			●	

NOTE: For a complete icon description, see the Icon Guide on page 19.

insert type					retention type							
					internal				external			
	plug	cap	narrow bottom	bullet nose	round lock ring	friction	positive lock	friction positive lock	flat hair pin	snap ring	round hair pin	roll pin
			•			•					•	
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		•	•			•						

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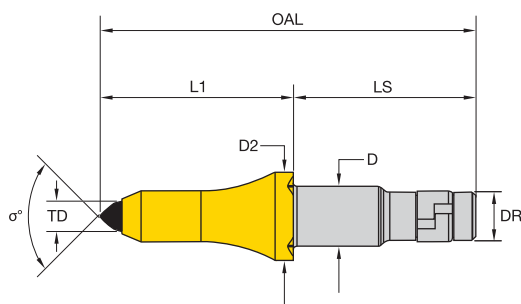


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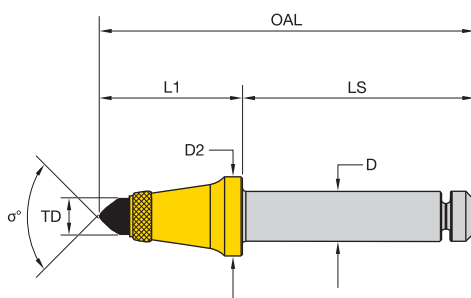




PLUSPOINT™

■ 43mm (1.70") Step Shank

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
4058154	PLUSPOINT43 SHA22140	43	1.70	35	1.37	22	.86	90.0	140	5.50	64	2.50	132	5.20	272	10.70



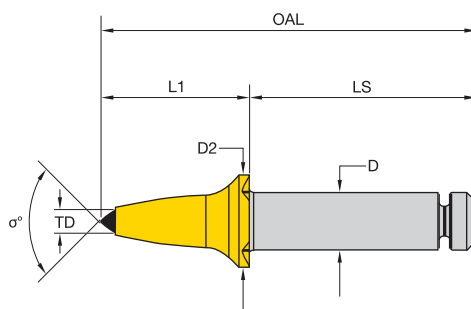
PLUSPOINT™

■ 35mm (1.38") Shank

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3753098	PLUSPOINT35 HA2598	35	1.37	25	.98	100.0	100	3.93	55	2.17	161	6.36	261	10.29



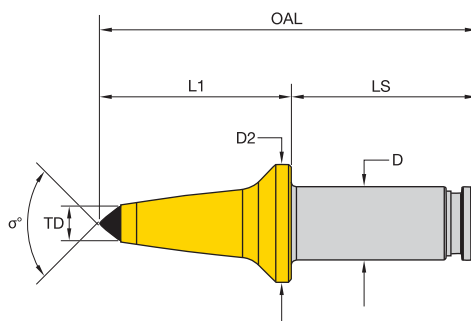
Conicals



PROPOINT™

■ 35mm (1.38") Shank

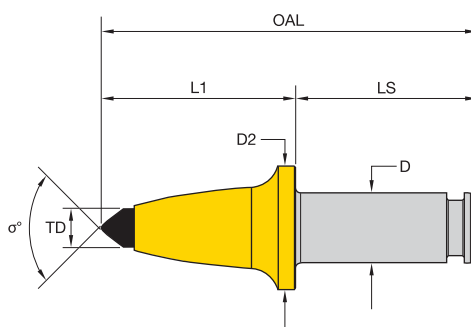
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
4086152	PROPOINT35 A1489	35	1.37	14	.54	75.0	89	3.50	55	2.17	136	5.36	225	8.86
4086143	PROPOINT35 A14102	35	1.37	14	.54	75.0	101	3.98	55	2.17	136	5.36	237	9.34



PROPOINT™

■ 30mm (1.18") Shank

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3761567	PROPOINT30 A1480	30	1.18	14	.54	75.0	78	3.08	51	2.03	76	3.00	154	6.08
3880831	PROPOINT30 A1480K	30	1.18	14	.54	75.0	78	3.08	48	1.90	72	2.84	151	5.92
5147316	PROPOINT30 A1489	30	1.18	14	.54	75.0	89	3.50	51	2.02	76	3.00	165	6.50
5001192	PROPOINT30 A1489K	30	1.18	14	.54	75.0	89	3.50	56	2.20	72	2.83	161	6.33

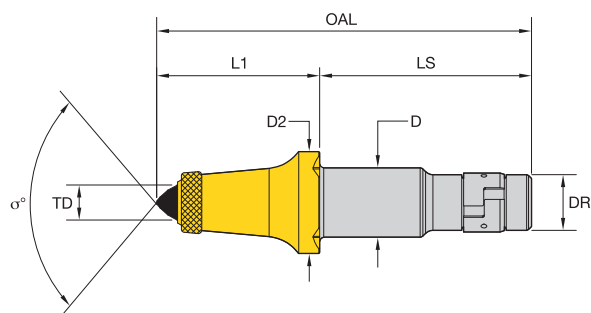


PROPOINT™

■ 25mm (1") Shank

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
5210615	PROPOINT25 A12.570	25	.99	12	.48	75.0	68	2.69	48	1.90	65	2.57	134	5.26
5147219	PROPOINT25 A1470K	25	.99	14	.54	75.0	70	2.75	44	1.75	71	2.79	141	5.54
4161379	PROPOINT25 A1470	25	.99	14	.54	75.0	70	2.75	48	1.90	65	2.58	135	5.33

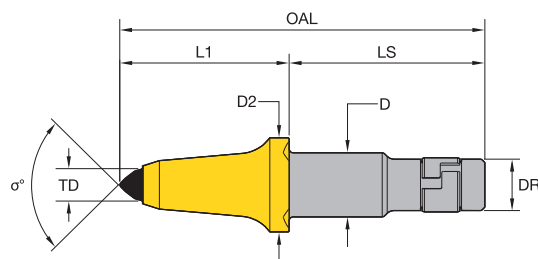
- Catalog numbers containing “HF” indicate Hard Faced Treatment.
- For specific insert type, see the Product Selector on pages 23–35.



■ 43mm (1.70") Step Shank • Heavy

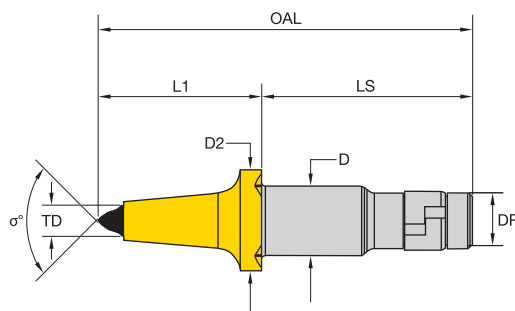
order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
4003371	U170LRDHF 3.5 25	43	1.70	35	1.37	25	.97	100.0	89	3.50	64	2.50	132	5.20	221	8.70
2940714	U170LR 3.5 25HDF	43	1.70	35	1.37	25	.97	100.0	89	3.50	61	2.40	121	4.76	210	8.26
2888406	U170LRDHF 3.5 25	43	1.70	35	1.37	25	.97	100.0	89	3.50	64	2.50	132	5.20	221	8.70
3367616	U170LRD B 4.0 22HF	43	1.71	35	1.37	22	.87	100.0	102	4.00	64	2.50	132	5.20	234	9.20
4103385	U170HDLR 4.0 25NB HF	43	1.70	35	1.37	25	.98	100.0	102	4.00	61	2.40	121	4.76	223	8.76
3119516	U170HF 4.0 25NB	43	1.70	35	1.37	25	.98	100.0	102	4.00	64	2.50	132	5.20	234	9.20
4025558	U170LRHF 4.5 25NB	43	1.70	35	1.37	25	.98	100.0	114	4.50	64	2.50	132	5.20	246	9.70
5037965	U170LR 5.5 30	43	1.70	35	1.37	28	1.09	20.0	140	5.50	64	2.50	132	5.20	272	10.70

- For specific insert type, see the Product Selector on pages 23–35.



■ 43mm (1.70") Step Shank • Standard

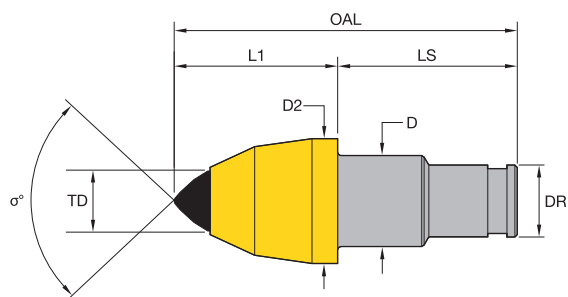
order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2450591	U170 4.0 22NB	43	1.70	35	1.37	22	.86	90.0	102	4.00	64	2.50	132	5.20	234	9.20
1793328	U170LR 4.0 22	43	1.70	35	1.37	22	.86	100.0	102	4.00	64	2.50	132	5.20	234	9.20
3766945	U170LRD 4.0 22	43	1.70	35	1.37	22	.86	100.0	102	4.00	64	2.50	132	5.20	234	9.20
4003367	U170LRD 4.0 22	43	1.70	35	1.37	22	.86	100.0	102	4.00	64	2.50	132	5.20	234	9.20
2604841	U170LRD 4.5 19NB	43	1.70	35	1.37	19	.74	100.0	114	4.50	64	2.50	132	5.20	246	9.70
2398568	U170LRD 4.5 22NB	43	1.70	35	1.37	22	.86	90.0	114	4.50	64	2.50	132	5.20	246	9.70
2431280	U170 4.5 22NB	43	1.70	35	1.37	22	.86	90.0	114	4.50	64	2.50	132	5.20	246	9.70
2273708	U170LR 4.5 22NB	43	1.70	35	1.37	22	.86	90.0	114	4.50	64	2.50	132	5.20	246	9.70
2210329	U170LR 4.5 25NB	43	1.70	35	1.37	25	.98	100.0	114	4.50	64	2.50	132	5.20	246	9.70
2425696	U170LRD 4.5 25NB	43	1.70	35	1.37	25	.98	100.0	114	4.50	64	2.50	132	5.20	246	9.70
5288770	U170LRD HP 4.5 30	43	1.70	35	1.37	29	1.14	—	114	4.50	69	2.75	132	5.20	246	9.70
4169173	U170LRD 4.5 30	43	1.70	35	1.37	29	1.14	—	114	4.50	64	2.50	132	5.20	246	9.70



■ 43mm (1.70") Step Shank • Slim

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3381824	U170LR 4.0 19 65NB	43	1.70	35	1.37	19	.74	65.0	102	4.00	64	2.50	132	5.20	234	9.20

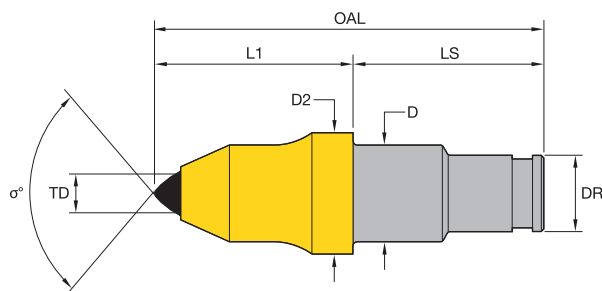
- For specific insert type, see the Product Selector on pages 23–35.



Conicals

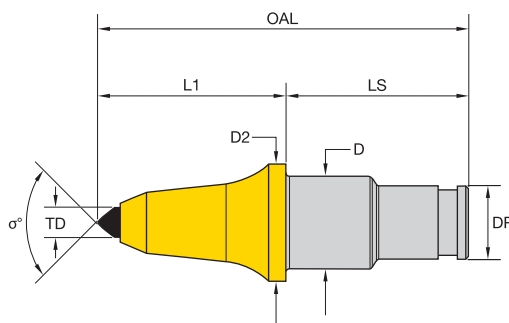
■ 38mm (1.50") Step Shank • Heavy

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010742	C7/U47	38	1.49	30	1.17	19	.74	75.0	61	2.39	48	1.88	75	2.94	135	5.33
1992171	U47WL	38	1.48	30	1.18	18	.69	93.0	63	2.47	48	1.89	63	2.25	126	4.95
2222095	U47SM-H	38	1.50	30	1.18	20	.77	90.0	64	2.52	52	2.05	77	3.02	141	5.54
2222093	U47SM-65	38	1.50	30	1.18	20	.77	90.0	64	2.52	65	2.56	75	2.95	139	5.47
4060200	U47HD/65YD	38	1.50	30	1.18	22	.87	—	64	2.52	65	2.56	75	2.95	139	5.47
3375243	U47 52B 19.5	38	1.49	30	1.18	20	.77	—	70	2.75	50	1.98	60	2.38	130	5.13
3343671	U47 19NB	38	1.50	30	1.18	19	.74	100.0	70	2.76	49	1.93	75	2.95	145	5.71
3343658	U47 22NB	38	1.50	30	1.18	22	.88	90.0	78	3.07	64	2.52	75	2.95	153	6.02
1875388	K1 KO 38/30 22K	38	1.50	30	1.18	22	.87	100.0	80	3.15	60	2.36	82	3.23	162	6.38



■ 38mm (1.50") Step Shank • Standard

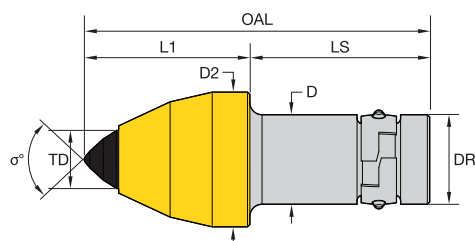
order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2222090	U47SM-65-H	38	1.50	30	1.18	20	.77	90.0	64	2.51	65	2.56	76	2.98	139	5.49
2222086	U47 1SM	38	1.50	30	1.18	20	.77	—	89	3.50	52	2.05	75	2.95	164	6.46



■ 38mm (1.50") Step Shank • Slim

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1874952	VA46K1	38	1.50	30	1.18	12	.48	75.0	77	3.02	48	1.88	75	2.97	152	5.99

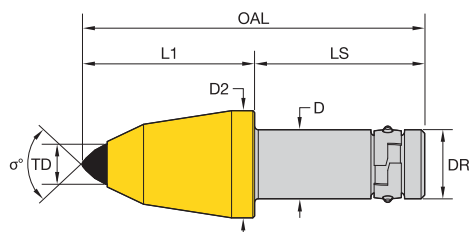
- For specific insert type, see the Product Selector on pages 23–35.



■ 38mm (1.50") Shank • Heavy

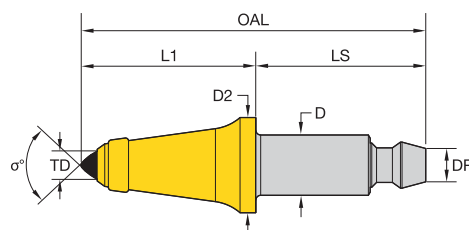
order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1620315	MR38.25 OZR	38	1.50	—	—	25	.97	64.0	70	2.77	57	2.25	76	3.00	147	5.77
3613270	U135-25NB-SY	38	1.49	—	—	25	.98	100.0	80	3.14	64	2.50	74	2.92	154	6.06
3343654	U135 25NB	38	1.50	—	—	25	.99	100.0	80	3.15	64	2.52	76	2.99	156	6.14
3343653	U135-22NB	38	1.49	—	—	22	.86	90.0	81	3.18	64	2.50	76	2.99	157	6.17
3613269	U135 22NB SY	38	1.50	—	—	22	.86	90.0	81	3.18	64	2.52	74	2.91	155	6.10
3901023	MR38.25.68L160	38	1.50	—	—	25	.98	100.0	84	3.31	68	2.68	76	2.99	160	6.30
1889209	MR38.90 17,5	38	1.50	29	1.14	18	.69	93.0	90	3.54	60	2.36	107	4.21	197	7.75

- For specific insert type, see the Product Selector on pages 23–35.



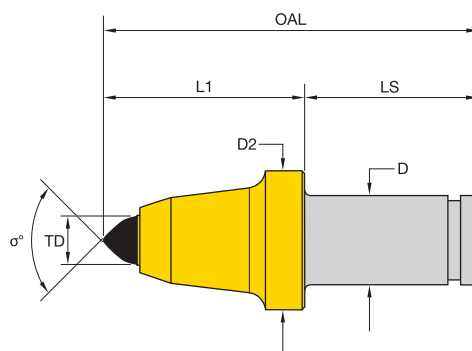
■ 38mm (1.50") Shank • Standard

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2222962	MR38 HD ZIX	38	1.50	—	—	22	.87	100.0	70	2.75	58	2.28	77	3.04	147	5.79
3344896	MR3825/ZIXY	38	1.50	—	—	25	.98	—	70	2.76	58	2.28	77	3.03	147	5.79
3345401	U47-1HD/65/HY	38	1.50	30	1.18	22	.86	100.0	90	3.54	65	2.56	75	2.95	165	6.50
2222975	U95 SM	38	1.50	—	—	20	.77	—	93	3.66	59	2.32	94	3.68	187	7.34
2222976	U95HD	38	1.50	—	—	22	.87	100.0	95	3.74	59	2.32	94	3.69	189	7.42
1992215	MR37.5 12KA	38	1.48	—	—	12	.49	75.0	95	3.75	55	2.17	76	2.99	171	6.74



■ 38mm (1.50") Shank • Slim

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2400758	MR38.110 17,5 HF	38	1.50	—	—	18	.69	93.0	110	4.34	60	2.36	107	4.22	217	8.56



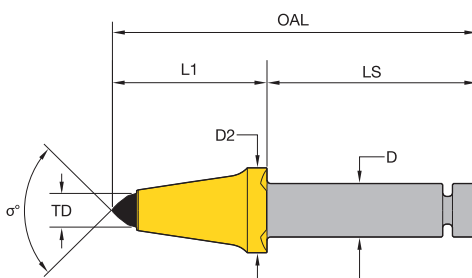
Conicals

■ 35mm (1.38") Shank • Heavy

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3343635	S100 19NB	34	1.34	19	.74	100.0	77	3.01	51	2.09	66	2.60	143	5.61

- Catalog numbers containing “HF” indicate Hard Faced Treatment.

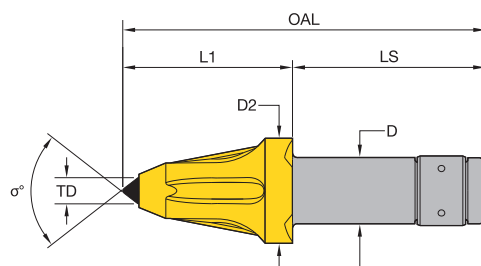
- For specific insert type, see the Product Selector on pages 23–35.



■ 35mm (1.38") Shank • Standard

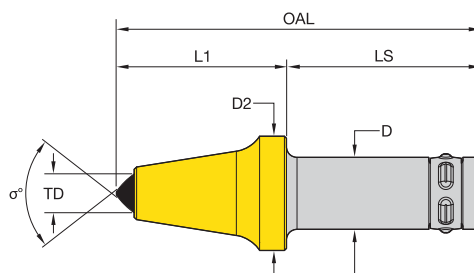
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2222969	U138-L82	35	1.38	18	.71	93.0	82	3.23	55	2.17	93	3.66	175	6.89
1010443	U94KHD	35	1.37	19	.74	75.0	88	3.48	55	2.17	94	3.69	182	7.17
2276047	U94HDL	35	1.37	19	.74	75.0	89	3.49	55	2.17	136	5.36	225	8.85
1010469	U94HDLR	35	1.37	19	.74	75.0	89	3.49	55	2.17	94	3.69	183	7.18
2527112	U92 3.5 16NB	35	1.37	16	.64	75.0	89	3.50	55	2.17	136	5.36	225	8.86
2645800	U92K 3.5 25NB	35	1.37	25	.98	100.0	89	3.50	55	2.17	94	3.69	183	7.19
3343629	U94HDLR 19NB	35	1.37	19	.74	100.0	89	3.51	55	2.18	94	3.69	183	7.20
3617097	U94KHDSA92 18.6BN	35	1.38	19	.73	—	91	3.58	55	2.17	94	3.69	185	7.27
1103931	U94KHDSA 95	35	1.37	17	.69	93.0	95	3.73	55	2.17	94	3.69	189	7.42
2216793	U92LRHF 5	35	1.37	24	.96	—	99	3.90	55	2.17	94	3.69	193	7.59
1715471	U92HDL 5	35	1.37	12	.48	75.0	100	3.92	55	2.17	136	5.36	236	9.28
2250379	U92LR 4.0 22NB	35	1.37	22	.86	90.0	100	3.95	55	2.17	94	3.69	194	7.64
2414148	U92 4.0 22NB	35	1.37	22	.86	90.0	100	3.95	55	2.17	136	5.36	237	9.31
2272937	U92K 4.0 22NB	35	1.37	22	.86	90.0	100	3.95	55	2.17	94	3.69	194	7.64
3555073	U92KHDSA102 18.6BN	35	1.37	19	.73	—	101	3.97	55	2.17	94	3.69	195	7.66
2449972	U92LR 4.0 19.65NB	35	1.37	19	.74	65.0	101	3.98	55	2.17	94	3.69	195	7.67
3029708	U92HDLR 16NB	35	1.37	16	.64	75.0	101	3.99	55	2.17	94	3.69	195	7.68
1010431	U92KHD/AM592FBY	35	1.37	16	.63	75.0	102	4.00	55	2.17	94	3.69	195	7.69
2635236	U92 4.0 16NB	35	1.37	16	.64	75.0	102	4.00	55	2.17	136	5.36	238	9.36
1715472	U92HDL	35	1.37	16	.63	75.0	102	4.00	55	2.17	136	5.36	238	9.36
2394830	U92K 4.0 19NB	35	1.37	19	.74	100.0	102	4.00	55	2.17	94	3.69	195	7.69

- For specific insert type, see the Product Selector on pages 23–35.



■ 35mm (1.38") Shank • Fin

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3041840	U93 3.5 .48	35	1.37	12	.48	75.0	89	3.51	55	2.17	136	5.36	225	8.87
2508189	U93 3.5 14NB	35	1.37	14	.54	75.0	89	3.50	55	2.17	136	5.36	225	8.86
2434939	U93LRD 3.5 14NB	35	1.37	14	.54	75.0	89	3.50	55	2.17	101	3.99	190	7.49
3107240	U93LRD 4.0 12.5NB	35	1.37	12	.48	75.0	102	4.00	55	2.17	101	3.99	203	7.99
3634610	U93 4.0 14 NB	35	1.37	14	.54	75.0	102	4.00	55	2.17	136	5.36	238	9.36
3772924	U93HP 4.0 19.65NB	35	1.38	19	.74	65.0	103	4.04	56	2.19	136	5.36	239	9.40

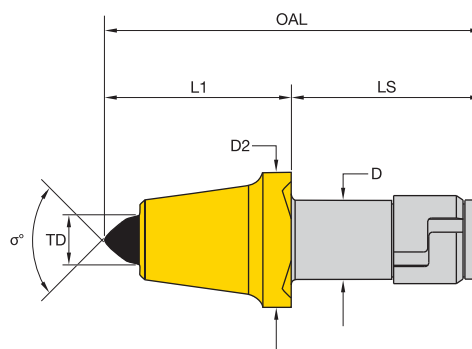


■ 35mm (1.37") Shank • Slim

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3383451	U94KHDSA 85	35	1.37	19	.74	—	82	3.24	55	2.17	94	3.69	176	6.93



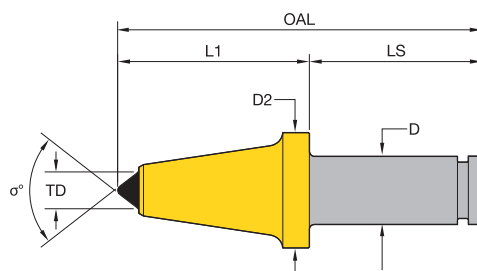
- Catalog numbers containing “HF” indicate Hard Faced Treatment.
- Catalog numbers containing “X” indicate X Treatment.
- For specific insert type, see the Product Selector on pages 23–35.



■ 30mm (1.18") Shank • Heavy

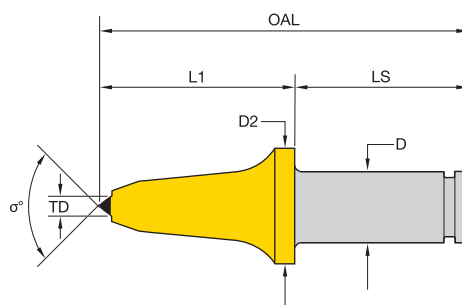
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
3343638	120 19NB	30	1.18	19	.74	100.0	68	2.66	54	2.13	74	2.90	142	5.57
1010566	UCKC84HFLR	30	1.18	25	1.00	80.0	70	2.74	51	2.00	76	3.00	146	5.74
3343652	120 22NB	30	1.18	22	.86	90.0	70	2.75	54	2.13	74	2.91	144	5.66
1010529	U84HD	30	1.18	16	.63	75.0	70	2.76	56	2.20	76	3.00	146	5.76
1010379	U84KHD	30	1.18	16	.63	75.0	70	2.76	51	2.00	72	2.84	142	5.60
3791328	U84HDLR CH 19NB HF	30	1.18	19	.74	100.0	70	2.76	51	2.00	72	2.83	142	5.59
1747951	UCKC84KHF	30	1.18	25	1.00	80.0	70	2.77	51	2.00	0	.00	142	5.60
3343650	U84HDLR CH 19NB	30	1.18	19	.74	100.0	70	2.77	51	2.00	72	2.83	142	5.59
5328289	U84KHD-CH-19NB-HF	30	1.18	19	.74	—	71	2.78	51	2.00	72	2.84	143	5.62
1870106	U119K 75 19.5	30	1.18	20	.77	—	75	2.95	51	2.00	77	3.03	152	5.98
2907496	U85K 3.0 14NB	30	1.18	14	.54	75.0	77	3.01	51	2.00	72	2.84	149	5.85
4101464	U85K 3.1 19NB	30	1.18	19	.74	100.0	78	3.08	51	2.00	72	2.84	150	5.92
2992574	U119K 80 16BN	30	1.18	16	.63	—	79	3.13	50	1.97	77	3.03	156	6.16
4132928	U119KSL 8018.6BN	30	1.18	19	.73	—	79	3.13	50	1.96	77	3.03	156	6.16
1924851	U119K 80 17.5BN	30	1.18	18	.69	—	80	3.13	50	1.97	77	3.03	156	6.16
3950236	AM521K 75HF	30	1.18	19	.74	75.0	83	3.25	51	2.00	76	3.00	159	6.25
4067822	AM521 75 X	30	1.18	19	.74	75.0	83	3.25	51	2.00	76	3.00	159	6.25
1835670	AM521 75HF	30	1.18	19	.74	90.0	83	3.25	57	2.25	76	3.00	159	6.25
1724595	AM521C 24.43	30	1.18	24	.96	—	83	3.26	51	2.00	76	3.00	159	6.26
1010424	U85HLR 75	30	1.18	11	.42	75.0	84	3.32	51	2.00	76	3.00	161	6.32
2503798	K1 22NB K	30	1.18	22	.86	90.0	89	3.50	59	2.34	82	3.22	171	6.72

- Catalog numbers containing “HF” indicate Hard Faced Treatment.
- Catalog numbers containing “X” indicate X Treatment.
- For specific insert type, see the Product Selector on pages 23–35.



■ 30mm (1.18") Shank • Standard

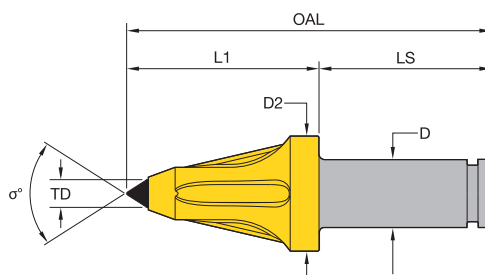
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
2220813	K1 NB	30	1.18	18	.69	93.0	64	2.50	48	1.89	75	2.95	139	5.45
1950491	K1 K	30	1.18	18	.69	93.0	69	2.71	48	1.89	80	3.17	149	5.88
2034016	K1 K NB	30	1.18	18	.69	93.0	69	2.71	48	1.89	80	3.17	149	5.88
2506006	U85K 3.1 .48	30	1.18	12	.48	75.0	79	3.09	51	2.00	72	2.84	151	5.93
1924847	U119K 80 16BN	30	1.18	16	.63	—	79	3.13	50	1.97	77	3.03	156	6.16
3029709	U82HDLR-12.5NB	30	1.18	12	.48	75.0	80	3.13	51	2.00	72	2.84	152	5.97
1107477	U119 80 16	30	1.18	16	.63	75.0	80	3.15	56	2.20	76	3.00	156	6.15
1010562	U119K 80 16	30	1.18	16	.63	75.0	80	3.16	50	1.97	77	3.03	157	6.19
3029710	U84HDLR CH 16NB	30	1.18	16	.64	75.0	80	3.16	51	2.00	72	2.84	152	6.00
3550051	U119KSL 8018.6BN	29	1.18	19	.73	—	81	3.18	50	1.96	76	3.00	157	6.18
2527413	U85K 3.2 16NB	30	1.18	16	.64	75.0	83	3.25	51	2.00	72	2.84	155	6.09
1075595	U85AUS 16NB	30	1.18	16	.64	75.0	85	3.33	56	2.20	76	3.00	161	6.33
2234432	U85HDHF	30	1.18	12	.48	75.0	86	3.37	56	2.20	76	3.00	162	6.37
1010407	U85HD	30	1.18	12	.48	75.0	86	3.37	56	2.20	76	3.00	162	6.37
4058676	U85HD X	30	1.18	12	.48	75.0	86	3.37	56	2.20	76	3.00	162	6.37
1992213	K1 46 1K	30	1.18	12	.49	75.0	88	3.46	48	1.89	81	3.18	169	6.64
2222931	K1 1K NB	30	1.18	18	.69	93.0	89	3.50	48	1.89	81	3.17	169	6.67
2222840	K1-1-65-H	30	1.18	18	.69	93.0	89	3.49	65	2.56	75	2.95	164	6.44
2222842	K1-1-SM-65-H	30	1.18	20	.77	90.0	89	3.50	65	2.56	75	2.96	164	6.46
3004869	U85ABM 91 16NB	30	1.18	16	.64	75.0	91	3.59	51	2.00	82	3.23	173	6.82
1010409	UC85KSA	30	1.18	16	.63	75.0	91	3.59	56	2.20	72	2.84	163	6.43



■ 30mm (1.18") Shank • Slim

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1819048	U119K8016BN SL	30	1.18	16	.63	90.0	79	3.12	50	1.97	77	3.03	156	6.16
3113108	U119K8016 BN/SL	30	1.18	16	.63	—	81	3.18	50	1.96	76	2.98	157	6.16
2622272	U119S 3.3 .38 70BN	30	1.18	10	.36	—	85	3.36	51	2.00	76	3.00	161	6.36

- For specific insert type, see the Product Selector on pages 23–35.

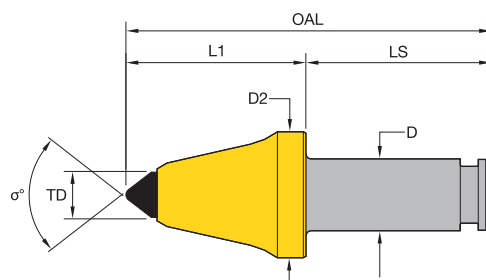


Conicals

■ 30mm (1.18") Shank • Fin

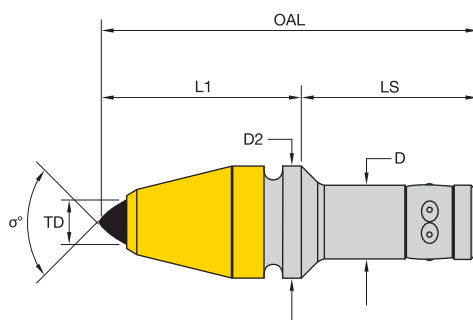
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1891401	AM510PFG	30	1.18	16	.63	75.0	76	3.00	51	2.00	76	3.00	152	6.00
2442351	U83K 3.1 .48	30	1.18	12	.48	75.0	79	3.09	57	2.25	72	2.84	151	5.93
1891425	AM500PFG	30	1.18	12	.48	75.0	79	3.09	51	2.00	72	2.84	151	5.93
2454684	U83K 3.1 14	30	1.18	14	.55	75.0	79	3.09	51	2.00	72	2.84	151	5.93
2243255	AM500K 3.1 11NB	30	1.18	11	.43	75.0	79	3.10	51	2.00	76	3.00	155	6.10
1891427	AM514P 62	30	1.18	16	.63	75.0	83	3.25	57	2.25	76	3.00	159	6.25
1880620	AM514KP 62	30	1.18	16	.63	75.0	83	3.25	57	2.25	72	2.84	155	6.09
5042831	AM511PFG W/NESTED COLLAR	30	1.18	12	.48	75.0	85	3.33	51	1.99	76	3.00	161	6.33
1891423	AM511PFG	30	1.18	12	.48	75.0	85	3.33	57	2.25	76	3.00	161	6.33
1952532	AM511K 12.5NB 65	30	1.18	12	.48	65.0	85	3.34	51	2.00	72	2.84	157	6.18
1857842	AM511 12.5NB 65	30	1.18	12	.48	65.0	85	3.34	51	2.00	76	3.00	161	6.34
1891398	AM506PFB	30	1.18	11	.43	60.0	85	3.34	51	2.00	72	2.84	157	6.18
3489250	U83KPG3.5 .48	30	1.18	12	.48	75.0	89	3.50	51	2.00	72	2.84	161	6.34
1104924	UR118 3.5 12.5NB	30	1.18	12	.48	75.0	89	3.50	51	2.00	76	3.00	165	6.50
1196746	UR118 3.5 50	30	1.18	12	.48	75.0	89	3.50	51	2.00	76	3.00	165	6.50
1178183	UR118K 3.5 12.5NB	30	1.18	12	.48	75.0	89	3.50	51	2.00	76	3.00	165	6.50

- Catalog numbers containing "HF" indicate Hard Faced Treatment.
- For specific insert type, see the Product Selector on pages 23–35.



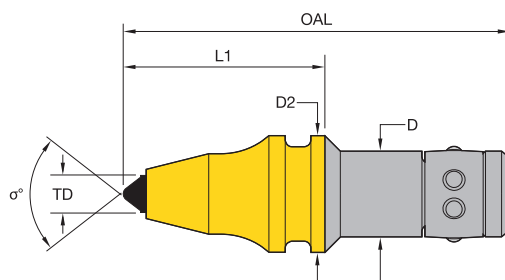
■ 25mm (1") Shank • Heavy

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1960633	UCKC1465PKHD	25	.99	25	1.00	80.0	58	2.27	44	1.75	57	2.25	115	4.52
1960546	U765PHD	25	.99	12	.48	75.0	64	2.50	44	1.75	66	2.58	129	5.08
1960550	U765PKHD	25	.99	12	.48	75.0	64	2.50	44	1.75	71	2.79	134	5.29
2433376	U765K 2.5 .63	25	.99	16	.63	75.0	64	2.50	44	1.75	71	2.79	134	5.29
5166746	U765PXHD MOD	25	.99	16	.63	75.0	64	2.50	44	1.74	56	2.20	119	4.70
3121837	U765PXHDHF	25	.99	16	.63	75.0	64	2.51	44	1.75	66	2.58	129	5.09
1960547	U765PXHD	25	.99	16	.63	60.0	64	2.51	44	1.75	66	2.58	129	5.09
2433394	U765 2.7 .48	25	.99	12	.48	75.0	68	2.66	44	1.75	65	2.58	133	5.24
3554706	U765L 2.7 .62	25	.99	16	.63	110.0	68	2.69	44	1.75	98	3.85	166	6.54
1960551	U765PH	25	.99	9	.37	70.0	69	2.71	48	1.90	66	2.58	134	5.29
1960634	U765PH43	25	.99	11	.43	60.0	69	2.71	44	1.75	66	2.58	134	5.29
1960639	U765PKH43	25	.99	11	.42	75.0	69	2.71	44	1.75	71	2.79	140	5.50
1717663	UC765K 2.7 .62 WITH MOD GROOVE	25	.99	16	.63	55.0	69	2.73	44	1.75	71	2.79	140	5.52
2432301	U765S 2.75 .36 60	25	.99	9	.36	60.0	70	2.74	44	1.75	65	2.58	135	5.32
1960638	U765PKH38	25	.99	9	.36	70.0	70	2.75	44	1.75	71	2.79	141	5.54
3382280	UC765KSAL	25	.99	16	.63	75.0	72	2.85	44	1.75	71	2.79	143	5.64



■ 25mm (1") Shank • Standard

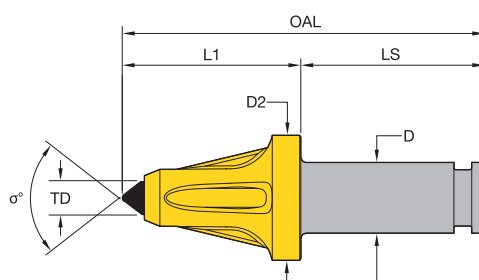
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010298	U40KF	25	.99	8	.32	75.0	62	2.44	33	1.31	53	2.09	115	4.53
1010414	U40HD	25	.99	15	.59	95.0	74	2.92	38	1.50	53	2.09	127	5.01



■ 25mm (1") Shank • Slim

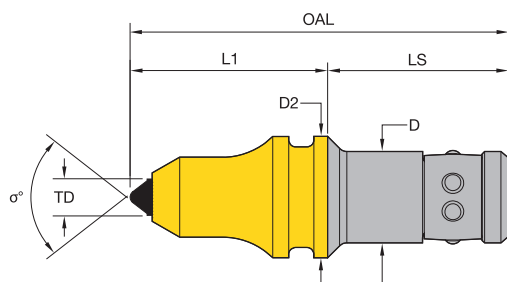
order number	catalog number	D		TD		σ°	L1		D2		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in
2503806	U765CB 1.9 .32	25	.99	8	.32	75.0	47	1.85	44	1.75	90	3.55

- For specific insert type, see the Product Selector on pages 23–35.



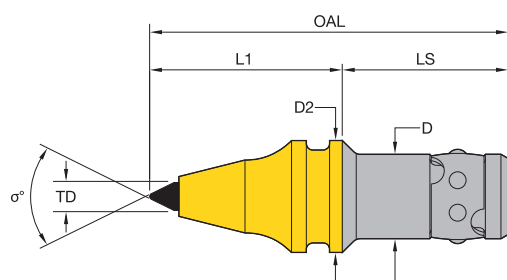
■ 25mm (1") Shank • Fin

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
5176856	U73 2.5 .36 MOD	25	.99	9	.37	70.0	64	2.50	44	1.74	66	2.58	129	5.08
2419418	U73 2.5 .36	25	.99	9	.37	70.0	64	2.50	44	1.75	66	2.58	129	5.08
1327056	AM476	25	.99	12	.48	75.0	64	2.50	44	1.75	66	2.58	129	5.08
2622732	U73 2.5 16NB	25	.99	16	.64	75.0	64	2.50	41	1.63	66	2.58	129	5.08
1327060	AM471	25	.99	16	.63	75.0	64	2.50	44	1.75	65	2.58	129	5.08
2384561	U73K 2.65 .32	25	.99	8	.32	60.0	67	2.65	44	1.75	70	2.77	138	5.42
2432315	U73 2.6 .36-60	25	.99	9	.36	60.0	67	2.66	44	1.75	66	2.57	133	5.23
1753656	AM470	25	.99	9	.36	75.0	70	2.75	44	1.75	66	2.57	135	5.32
1327077	AM430FB	25	.99	9	.36	75.0	70	2.75	44	1.75	70	2.77	140	5.52
2271391	AM470 2.75 62	25	.99	16	.63	75.0	70	2.75	44	1.75	66	2.58	135	5.33
2446719	U73 2.8 15.87A	25	.99	16	.63	60.0	70	2.76	44	1.75	65	2.54	136	5.33
2432314	U73 2.8 12.5NB	25	.99	12	.48	75.0	71	2.80	44	1.75	65	2.57	137	5.37
3480145	U73K 2.8 12.5NB	25	.99	12	.48	75.0	71	2.80	44	1.75	70	2.77	142	5.57
1887766	AM472	25	.99	12	.48	75.0	72	2.84	50	1.95	66	2.57	138	5.41



■ 20mm (.80") Shank • Standard

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010316	U50KH 75	20	.80	8	.32	75.0	44	1.72	27	1.06	40	1.59	84	3.31

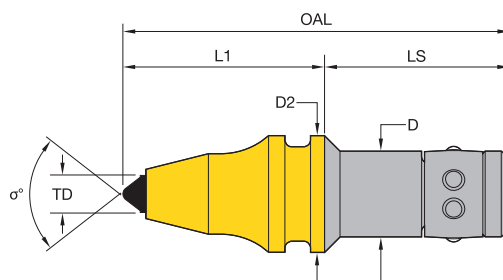


■ 20mm (.80") Shank • Slim

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010498	U50KL 60	20	.80	7	.27	50.0	47	1.84	27	1.06	40	1.59	87	3.43
1010324	U50KL 50	20	.80	7	.27	50.0	47	1.84	27	1.06	40	1.59	87	3.43
1010394	U51KHL 75	20	.80	8	.32	75.0	49	1.94	27	1.06	40	1.58	90	3.52
1010318	U51KL 68	20	.80	7	.27	68.0	50	1.95	27	1.06	40	1.59	90	3.54
1107736	U50W 50	20	.80	7	.27	68.0	56	2.20	27	1.06	40	1.59	96	3.79

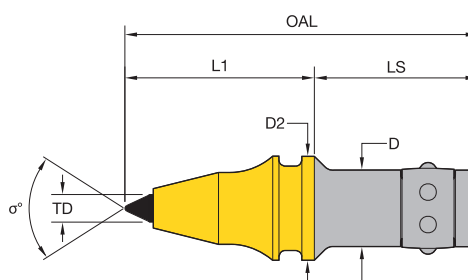


Conicals



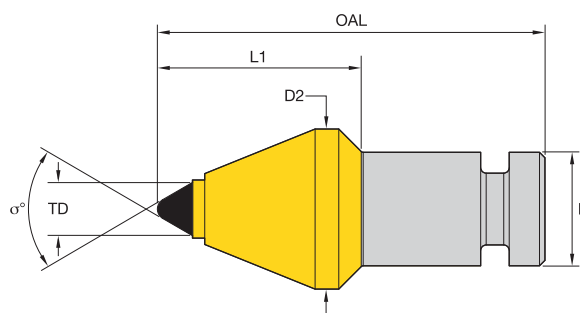
19mm (.75") Shank • Heavy

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010704	MOD U43KH	19	.74	8	.32	75.0	44	1.74	25	1.00	18	.70	62	2.44



19mm (.75") Shank • Slim

order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010294	U43KHL	19	.74	8	.32	75.0	44	1.72	25	1.00	40	1.59	84	3.31
1010489	U43KL 50	19	.74	7	.27	50.0	44	1.74	25	1.00	40	1.59	85	3.33
1010718	U43KLB	19	.74	7	.27	50.0	46	1.80	27	1.07	41	1.63	87	3.43
1010292	U43KL/C22	19	.74	7	.27	68.0	46	1.81	25	1.00	40	1.59	86	3.40



16mm (.62") Shank • Heavy

order number	catalog number	D		TD		σ°	L1		D2		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in
1010355	U80	16	.62	8	.32	60.0	25	.99	22	.88	54	2.12



Crushers

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51mm Series 57

38mm Series 58

Crushers

Tough crushing conditions call for a tougher tool. Kennametal answers with carbide-tipped crusher conicals in 38mm, 51mm, and 52mm sizes.

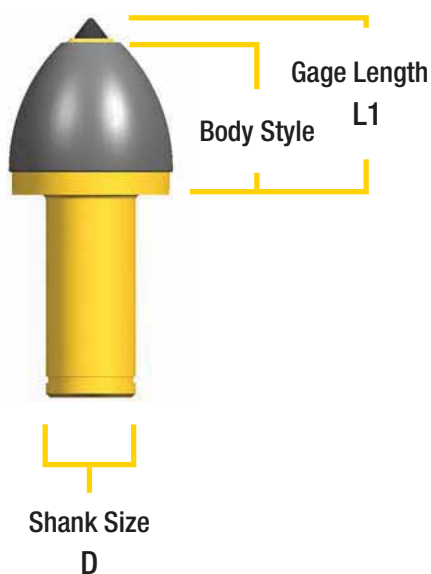


Features and Benefits:

- Designed with large collars for extra block face protection.
- Extreme wear and abrasion resistance are designed into the block with wide bodies that wear in line with the carbide tip.
- Plug and narrow-bottom (NB) style solid carbide tips are highly impact resistant in crushing conditions.

Product Selector

How to Use the Product Selector



Step 1 Determine shank size.

Step 2 Determine gage length.

Step 3 Identify cutting condition.



Step 4 Determine body style based on life or penetrability. Pick heavy or standard body style for extended life. Use slim or finned tools for better penetration.

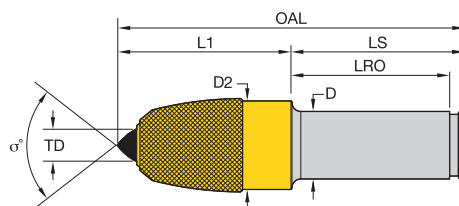
■ **Crushers • Product Selector**

order number	catalog number	shank size D		gage L1		page number(s)
		mm	in	mm	in	
2220765	KBB2HF	38	1.50	56	2.21	58
1010429	U47 52			68	2.68	58
1930255	KSM3			76	3.00	58
1730570	KSM1			76	3.00	58
1010611	U47GB			78	3.07	58
1176205	KBB2 1			82	3.21	58
1010327	U47 1			86	3.40	58
1238793	KBB2 1 3/4			101	3.96	58
2223173	U200 3.2 .75	51	2.00	80	3.15	57
3051697	U200HF 3.2 .75			80	3.15	57
3564343	U200LHF 3.2 .75			80	3.15	57
2428154	AM962HD HF			92	3.60	57
2240028	U200HF 4.0 .75			100	3.93	57
1616596	U200 4.1 62			105	4.14	57
1531305	U200 5.0 .75HF			127	4.98	57
1326986	AM942DB			206	8.10	57
3998179	AM942BD MOD	52	2.06	206	8.10	57
1326985	AM943DB			243	9.56	57
2248807	U200HF 2.2 17.5			57	2.25	56
1326980	AM956DB			83	3.27	56
2288279	U200 TSHF 3.2 .75			85	3.34	56
4095636	AM962HD HF 3.75R			92	3.60	56
1723538	U200TS 5.0 .75HF			119	4.68	56
3898246	U200 5.3 .97 HF			135	5.31	56
1727511	U200 5.3 .97			135	5.31	56

NOTE: For a complete icon description, see the Icon Guide on page 19.

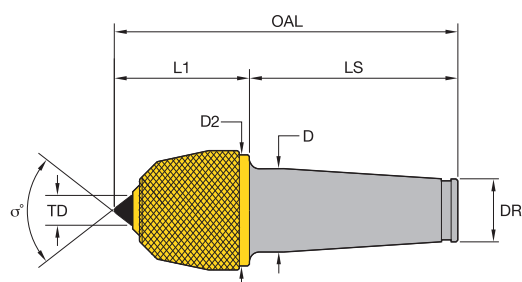
www.kennametal.com

- Catalog numbers containing "HF" indicate Hard Faced Treatment.



■ 52mm (2.06") Shank • Heavy

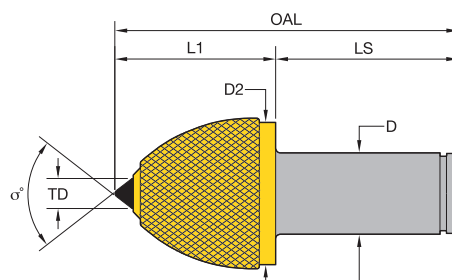
order number	catalog number	D		TD		σ°		L1		D2		LS		OAL		LRO	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1326980	AM956DB	52	2.06	19	.74	75.0	83	3.27	—	—	91	3.56	174	6.83	—	—	—
1727511	U200 5.3 .97	52	2.06	25	.97	100.0	135	5.31	69	2.70	134	5.26	269	10.57	122	4.80	—
3898246	U200 5.3 .97 HF	52	2.06	25	.97	100.0	135	5.31	69	2.70	134	5.26	269	10.57	122	4.80	—
2288279	U200 TSHF 3.2 .75	52	2.06	19	.74	75.0	85	3.34	70	2.75	131	5.16	216	8.50	121	4.75	—
4095636	AM962HD HF 3.75R	52	2.06	19	.76	—	92	3.60	70	2.75	133	5.26	225	8.86	124	4.88	—
2248807	U200HF 2.2 17.5	52	2.06	17	.69	93.0	57	2.25	83	3.25	67	2.63	124	4.88	42	1.65	—



■ 52mm (2.06") T-Shank • Heavy

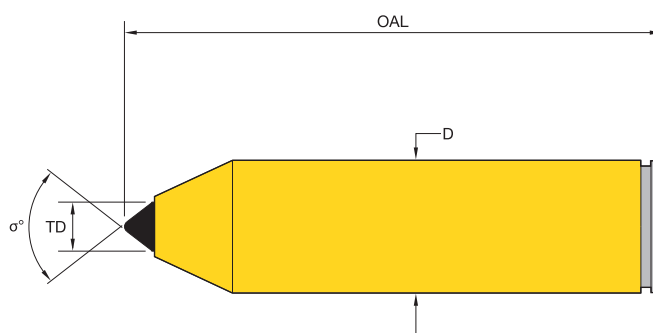
order number	catalog number	D		DR		TD		σ°		L1		D2		LS		OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1723538	U200TS 5.0 .75HF	52	2.06	40	1.57	19	.74	75.0	119	4.68	70	2.75	131	5.16	250	9.84	—

- Catalog numbers containing "HF" indicate Hard Faced Treatment.



■ 51 mm (2") Shank • Heavy

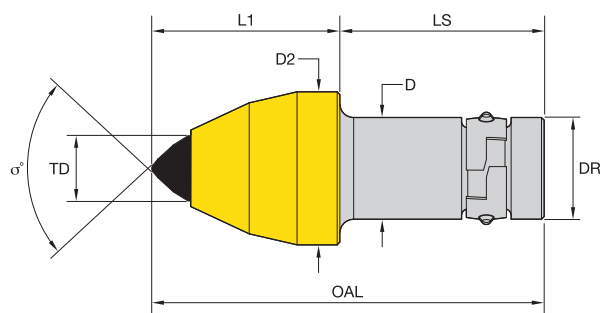
order number	catalog number	D		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1616596	U200 4.1 62	49	1.94	16	.63	75.0	105	4.14	76	3.00	88	3.46	193	7.60
1531305	U200 5.0 .75HF	50	2.00	19	.74	75.0	127	4.98	74	2.90	133	5.22	259	10.20
2223173	U200 3.2 .75	51	2.00	19	.74	75.0	80	3.15	70	2.75	124	4.87	204	8.02
3564343	U200LHF 3.2 75	51	2.00	19	.74	75.0	80	3.15	70	2.75	134	5.25	214	8.40
2428154	AM962HD HF	51	2.00	19	.76	—	92	3.60	74	2.90	133	5.26	225	8.86
3051697	U200HF 3.2 .75	51	2.00	19	.74	75.0	80	3.15	74	2.90	124	4.87	204	8.02
2240028	U200HF 4.0 .75	51	2.00	19	.74	75.0	100	3.93	93	3.65	115	4.52	215	8.45



■ 51 mm (2") Shank • Slim

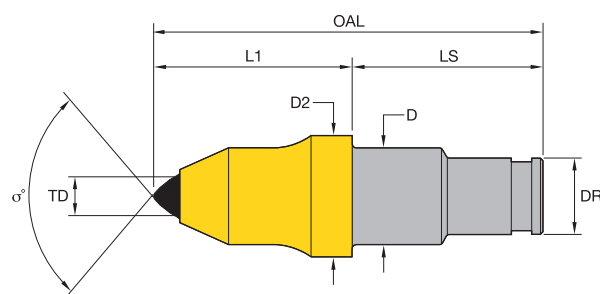
order number	catalog number	D		TD		σ°	OAL	
		mm	in	mm	in		mm	in
1326985	AM943DB	51	2.00	19	.74	75.0	243	9.56
1326986	AM942DB	51	2.00	19	.74	75.0	206	8.10
3998179	AM942BD MOD	51	2.00	19	.74	75.0	206	8.10

- Catalog numbers containing “HF” indicate Hard Faced Treatment.
- For specific insert type, see the Product Selector on pages 54–55.



■ 38mm (1.50") Shank • Heavy

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1010327	U47 1	38	1.48	30	1.17	19	.74	75.0	86	3.40	48	1.88	75	2.94	161	6.34
1930255	KSM3	38	1.48	30	1.17	17	.69	93.0	76	3.00	64	2.50	78	3.05	154	6.05
1010429	U47 52	38	1.50	30	1.18	25	.96	100.0	68	2.68	52	2.06	75	2.95	143	5.63
1176205	KBB2 1	38	1.50	—	—	19	.74	75.0	82	3.21	51	2.00	92	3.62	174	6.83
1238793	KBB2 1 3/4	38	1.50	—	—	19	.74	75.0	101	3.96	51	2.00	92	3.62	193	7.58
2220765	KBB2HF	38	1.50	—	—	19	.74	75.0	56	2.21	53	2.10	92	3.62	148	5.83



■ 38mm (1.50") Shank • Standard

order number	catalog number	D		DR		TD		σ°	L1		D2		LS		OAL	
		mm	in	mm	in	mm	in		mm	in	mm	in	mm	in	mm	in
1730570	KSM1	38	1.48	30	1.17	12	.48	75.0	76	3.00	64	2.50	78	3.05	154	6.05
1010611	U47GB	38	1.50	30	1.18	17	.69	93.0	78	3.07	48	1.88	75	2.95	153	6.02

PERFORMANCE

PROVEN RELIABILITY. UNPARALLELED PRODUCTIVITY.

Underground or on the surface, the foundation for a successful mining operation is built on rock-steady forward progress. Kennametal, the world's leading tooling and services provider, is proud to offer SOLID, our solution-focused program that delivers new levels of performance and productivity.

Kennametal's Lean and Six Sigma trained professionals are working to design the safest, most productive solutions for the mining community. With a brainpower consisting of 85 PhDs and over 500 master's degrees, we have produced over 65 patents and have grown to manufacture products in 11 different locations around the world.

In addition to providing our customers with technical support and inventory despite the challenges of recession and boom, Kennametal is constantly evaluating and upgrading our products so you can continue to succeed — resulting in over 2,500 grades and 15 different steel platforms that deliver solid productivity under the most demanding conditions.



Radials

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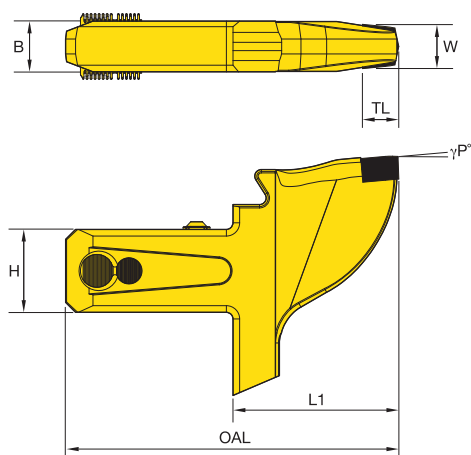
50mm Series	62
41 mm Series	62
30mm Series	63
28 mm Series	63
27mm Series	64
25 mm Series	64
Button Lock	64



Kennametal offers superior tooling solutions for all of your radial tooling applications.

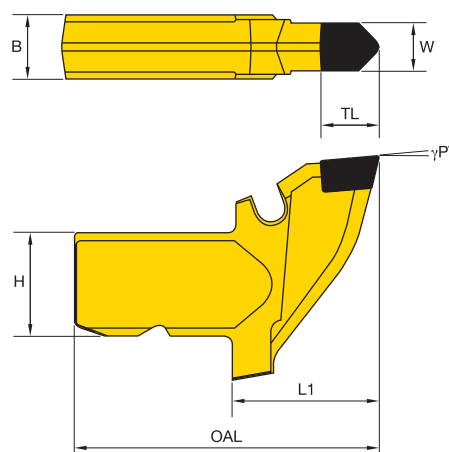
We also have the in-house expertise to help troubleshoot and solve difficult problems.





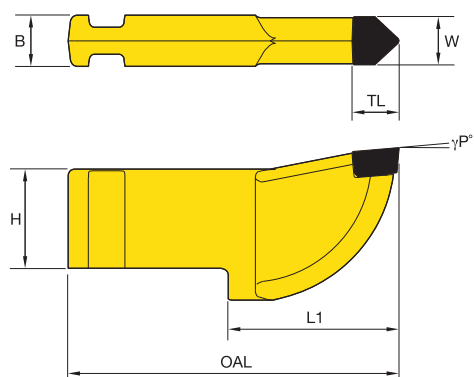
■ 50mm (1.20" x 1.97") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
4160003	KR200	31	1.20	50	1.97	99	3.90	22	.87	25	.98	5.0	200	7.87
4159892	KR230	31	1.20	50	1.97	129	5.08	22	.87	25	.98	.0	230	9.06



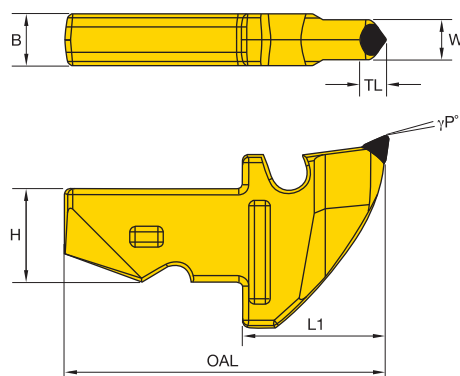
■ 41mm (1" x 1-5/8") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
1327098	AM239MB	26	1.01	41	1.63	80	3.15	22	.88	19	.75	5.0	143	5.64
1327083	AM276MB	26	1.01	41	1.63	58	2.30	22	.88	19	.75	5.0	129	5.08
1011201	KR225 75CLS	26	1.01	41	1.63	57	2.25	23	.92	19	.75	5.0	127	5.00



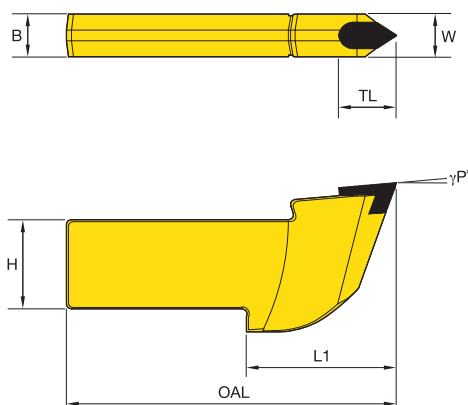
■ 30mm (.61" x 1.18") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
2492517	U9 2.0 .58	15	.61	30	1.18	52	2.04	14	.55	15	.58	5.0	100	3.95



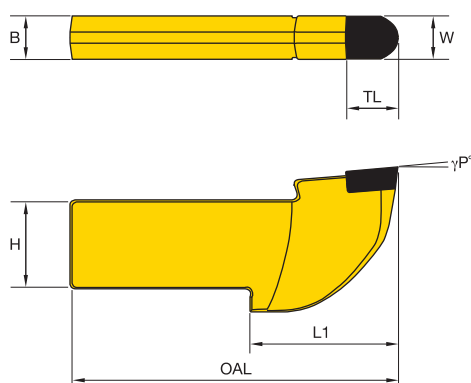
■ 28mm (5/8" x 1-1/8") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
3096226	U21CS	16	.63	28	1.12	44	1.77	18	.72	13	.50	7.0	99	3.91
1011195	U21L	16	.63	28	1.12	44	1.75	16	.62	13	.50	5.0	99	3.90
1011205	U21PL	16	.63	28	1.12	45	1.76	16	.62	13	.50	11.0	99	3.90



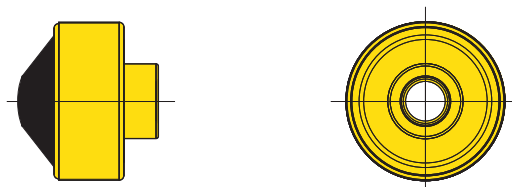
■ 27mm (.51" x 1.05") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
1011213	CU7/U7	13	.51	27	1.05	44	1.75	16	.63	13	.53	10.0	99	3.88
1011181	U7L/CU7L	13	.51	27	1.05	44	1.75	16	.62	13	.50	5.0	99	3.88
3744132	U7RLS	13	.50	27	1.05	45	1.78	17	.69	13	.50	5.0	99	3.91



■ 25mm (1/2" x 1") Shank

order number	catalog number	B		H		L1		TL		W		γP°	OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in		mm	in
1011207	CJ2	13	.50	25	1.00	44	1.75	19	.75	19	.75	5.0	99	3.89
1011191	U15PL	13	.50	25	1.00	48	1.87	16	.62	13	.50	5.0	102	4.00
1011189	U15PS	13	.50	25	1.00	48	1.88	16	.63	13	.53	10.0	98	3.88
1011187	U7LP	13	.51	26	1.00	44	1.75	16	.62	13	.51	5.0	99	3.88
4084222	U7LP2	13	.51	26	1.00	44	1.75	16	.62	13	.51	5.0	99	3.88

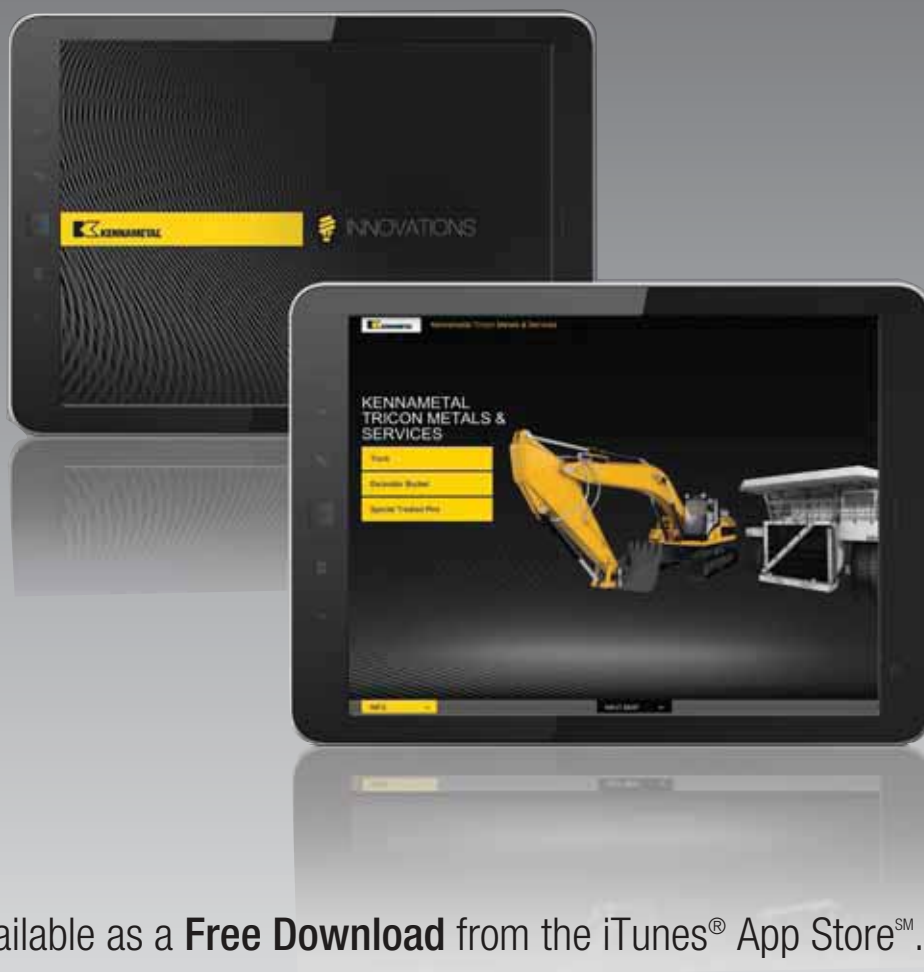


■ Button Lock

order number	catalog number
1547540	3LB1

INTRODUCING

The New Kennametal Innovations iPad® Application



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Now Available

The Kennametal Innovations iPad® app features interactive, cutting-edge animations and real-world demonstrations of Kennametal's productivity-enhancing technologies for machining and industrial processes. With selectable data, it is quick and convenient to compare complimenting and competitive products.

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Go to the iTunes® App StoreSM, and search for "Kennametal". Then follow the directions on downloading. It's simple, fast, and free.

Easy to Use

The simple navigation makes it easy to search via keywords to find specific tooling solutions and product groups. The user-driven navigation map offers drop-down menus with supplemental information, including expandable, and customizable, charts and graphs.



Cutting Systems

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Blocks	82–90
Sleeves.....	91–92
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Cutting Systems

Cutting underground materials is what you do best. But the job can take you into challenging conditions. Seams can be tough on cutting tools, so you need tools that are equally tough.

If your current drums, blocks, and core breakers aren't making the cut and aren't keeping up with your expectations, see what Kennametal offers. It's what we do best.



Block Systems

The K35S and K35W blocks feature longer barrels that are up to 13% larger than competitive blocks. That means plenty of room and a more secure fit for the cutting bit and sleeve.

The water spray feature on the K35W blocks significantly reduces dust and fine particles in the work area.

These blocks accept both straight shank and step shank tools and have a full-length pressed fit or rotating sleeve. The thick base and induction-hardened block bore mean less fatigue, cracking, and wear, resulting in increased bore life.



Blocks

The K225, K175, and K175-35 Slim blocks are workhorses in the line up. The slim front allows easier material flow and less fine particles. The longer block barrel and longer sleeve better dissipate the force of the cutting action, leading to less wear and longer life in a double rotation assembly. The K225 Slim line block has sleeves to accept straight shank and step shank tools. The K175-35 has a flat bottom and relocator pins for better accuracy with repairs.

Every Kennametal toolholder is made of heat-treated, triple alloy steel, providing the right balance of wear resistance and toughness for peak performance. Some toolholders have a special inner hardening (IH) treatment for extra wear resistance in the bore. This provides better tool retention and rotation. The large mounting base provides greater weld area to hold the block securely onto the drum. Additionally, the block is available with water spray.

All applications are different. For applications with material movement around the toolholder, Kennametal offers hardface (HF) toolholders. The HF pattern provides wear protection without compromising body strength or toughness.



Core Breakers

When you're in a hard seam and need extra power to break through it, use Kennametal core breakers.

We design and build them with heavy-duty construction for challenging mining conditions. They'll give you extra sump and shear rates, which mean faster shuttle car loading. They produce larger, more consistent coal chunks, which means less fines and dust.

Tool changes are faster and more economical. Change only the worn tool, not the entire unit, and get back to mining faster. Original load and penetration rates are maintained.

Our core breakers fit 965,2mm (38") and 1117,6mm (44") drums.

Kennametal offers superior core breakers, which fit many popular machine models and improve cutting efficiency. Replaceable tools provide like-new performance. Nested core breakers are an innovation that strengthens the assembly for harder cutting conditions.

Product Selector

How to Use the Product Selector

Step 1 Identify conical size being used.

Step 2 Identify retention type being used.

Step 3 Choose block system based on Step 1 and Step 2 selections.



Induction
Hardened (IH)
Treatment

■ Cutting Systems • Product Selector

order number	block systems (block and bushing) catalog number	system page number(s)	order number	replacement bushing catalog number	bushing page number(s)
2507404	K35 170 SYSTEM	74	2507379	U170K35P IH BUSHING	79
2507403	K35W 170 SYSTEM	74	2507379	U170K35P IH BUSHING	79
2271366	K225SP 170 SYSTEM	75	2271626	U170K225S P IH BUSHING	79
2507382	K35 90 SYSTEM	74	2507377	U90K35P IH BUSHING	80
2507380	K35W 90 SYSTEM	74	2507377	U90K35P IH BUSHING	80
4169933	K35W 90 BCA SYSTEM	75	2507377	U90K35P IH BUSHING	80
2271367	K225SP 90 SYSTEM	75	2271368	U90K225S P IH BUSHING	80
1011638	KB175S SA SYSTEM	76	1618668	KB175S SA BUSHING	79
1887731	K30S SYSTEM	76	1881717	U80K30S IH BUSHING	80
			3103268	U80K30S-05 BUSHING*	80
			3029562	U80K30S-10 BUSHING*	80
1131591	BBS30.65H SYSTEM	77	1131754	BBS30.65H BUSHING	80
1887730	K25S SYSTEM	77	1881716	U70K25S BUSHING	81
1011600	9081 45 SYSTEM	78	1012415	9081 BUSHING	81
3737342	K30S-TS SYSTEM	76	3737341	TS-K30S IH BUSHING	81
1131605	BBS38.65H SYSTEM	77	1713784	BBS38.65H BUSHING	81

* Oversized bushing for extra interference.

NOTE: For a complete icon description, see the Icon Guide on page 19.

The Difference between Bushings and Sleeves

The most important part of a conical toolholder is the tool seat and bore. Replaceable inserts provide a fresh tool seat and bore without positioning and welding new blocks.

Inserts are organized into two categories — bushings and sleeves:



- Pressed bushings are sold in “systems”, and are best for long block life.



- Slip-fit sleeves provide faster and easier replacement.
 - Rotating sleeves give the toolholder double rotation.
 - Non-rotating (NR) sleeves decrease bore wear — match with NR blocks.

conical information						spray information	
size		shank style	internal	external	conical page number(s)	attachment	spray page number(s)
mm	inch						
43	1.70	step	●	●	38, 40	—	—
43	1.70	step	●	●	38, 40	staple	167
43	1.70	step	●		38, 40	—	—
35	1.38	straight	●	●	38–39, 43–44	—	—
35	1.38	straight	●	●	38–39, 43–44	staple	167
35	1.38	straight	●	●	38–39, 43–44	staple	167
35	1.38	straight	●		43–44	—	—
system requires sleeve; sold separately						—	—
30	1.18	straight		●	39, 45–47	—	—
30	1.18	straight		●	39, 45–47	—	—
30	1.18	straight		●	39, 45–47	—	—
30	1.18	straight		●	39, 45–47	—	—
25	1.00	straight		●	39, 48–49	—	—
25	1.00	straight		●	39, 48–49	—	—
38	1.50	step		●	41, 58	—	—
38	1.50	straight		●	42, 58	—	—

(continued)

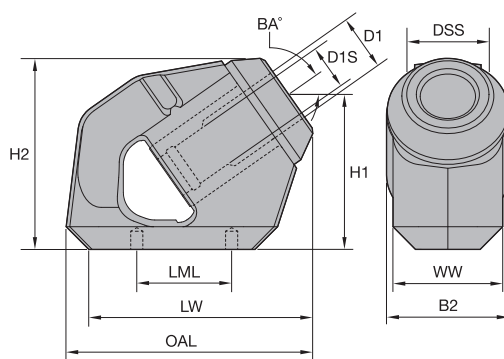
■ Cutting Systems • Product Selector (continued)

order number	block (sleeve sold separately) catalog number	block page number(s)	order number	sleeve catalog number	sleeve page number(s)
3877870	K225S SLIMLINE BLOCK	82	5307388	U90K225SLIM P SG SLEEVE	91
2609406	K225SP BLOCK	82	2539406	U170K225R IH SLEEVE	91
			2539407	U90K225R IH SLEEVE	91
1765700	K225SNR BLOCK	83	1730582	U170K225S NR SLEEVE	91
			1730583	U90K225S NR SLEEVE	91
1918610	K225S NR PFF BLOCK	83	1730582	U170K225S NR SLEEVE	91
			1730583	U90K225S NR SLEEVE	91
1011629	K200SL BLOCK	84	1012403	U90K200S SLEEVE	91
1520221	K200SL NR BLOCK	84	1518964	U90K200S NR SLEEVE	91
3062518	K175S SLIMLINE IH BLOCK	85	3102818	U80K175SLIM R SLEEVE	91
			3898121	U80K175SLIMFL SLEEVE	91
5354621	K175-35 SLIM BLOCK	85	3102818	U80K175SLIM R SLEEVE	91
			3898121	U80K175SLIMFL SLEEVE	91
1011638	KB175S SA SYSTEM	76	1618609	U80KB175S SA SLEEVE	91
			1618593	U76KB175S SA SLEEVE	92
1875596	K175S IH BLOCK	85	1817268	U80K175S SLEEVE	91
			3402913	U80K175S-FL SLEEVE	91
1792955	K175S NR BLOCK	86	1786269	U90K175S NR SLEEVE	91
			1838192	U80K175SNR SLEEVE	91
1174967	K177SE BLOCK	86	3771272	U80K177SE SLEEVE	91
			2228481	K1 K177SE SLEEVE	91
1011602	K177S BLOCK	86	3771272	U80K177SE SLEEVE	91
			2228481	K1 K177SE SLEEVE	91
3849888	U200HF BLOCK	87	—	—	—
2974455	U200TB HF BLOCK	87	—	—	—
1753659	U200 BLOCK	87	—	—	—
1012371	KBB4 BLOCK	87	—	—	—
1547387	U43XHD BLOCK	88	—	—	—
1807656	U43XHD-P BLOCK	88	—	—	—
2545624	U43H IH BLOCK	88	—	—	—
			1012392	U50 SLEEVE	92
1012370	KBB8 BLOCK	89	—	—	—
1792958	U43XHD 30 BLOCK	89	—	—	—
1011569	BS30.65 BLOCK	89	—	—	—
1012399	2356IH BLOCK	90	—	—	—
1011640	U50 10 BLOCK	90	—	—	—
1012276	C20HD BLOCK	90	—	—	—
1012273	C20/U43NS	90	—	—	—

** 51mm (2") conical tools can be used for extra clearance.

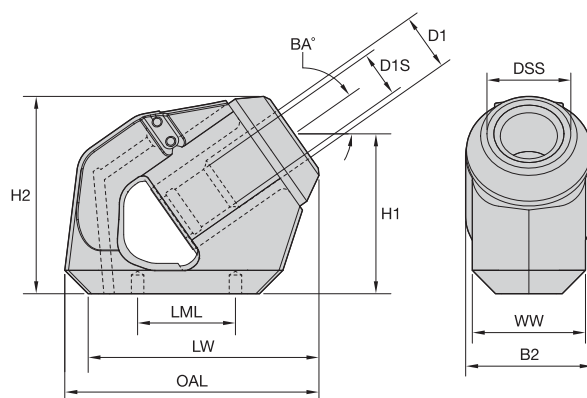
NOTE: For a complete icon description, see the Icon Guide on page 19.

	conical information						spray information	
	size		shank style	internal	external	conical page number(s)	attachment	spray page number(s)
	mm	inch						
	35	1.38	straight	●		43-44	—	—
	43	1.70	step	●		38, 40	—	—
	35	1.38	straight	●		43-44	—	—
	43	1.70	step	●		38, 40	—	—
	35	1.38	straight	●		43-44	—	—
	43	1.70	step	●		38, 40	thread	167
	35	1.38	straight	●		43-44	—	—
	35	1.38	straight	●		43-44	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	25	1.00	straight	●		39, 48-49	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	35	1.38	straight	●		43-44	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		45-46	—	—
	30	1.18	straight	●		39, 45-47	—	—
	30	1.18	straight	●		45-46	—	—
	52**	2.06**	straight		●	56-57	—	—
	52	2.06	taper		●	56	—	—
	52**	2.06**	straight		●	56-57	—	—
	51	2.00	straight		●	57	—	—
	38	1.50	step		●	41, 58	—	—
	38	1.50	step		●	41, 58	—	—
	38	1.50	step		●	41, 58	—	—
	20	0.80	straight	●		49	—	—
	35	1.38	straight		●	43	—	—
	30	1.18	straight		●	45-47	—	—
	30	1.18	straight		●	45-47	—	—
	25	1.00	straight		●	39, 48-49	—	—
	20	0.80	straight	●		50	—	—
	19	0.75	straight	●		51	—	—
	19	0.75	straight	●		51	—	—



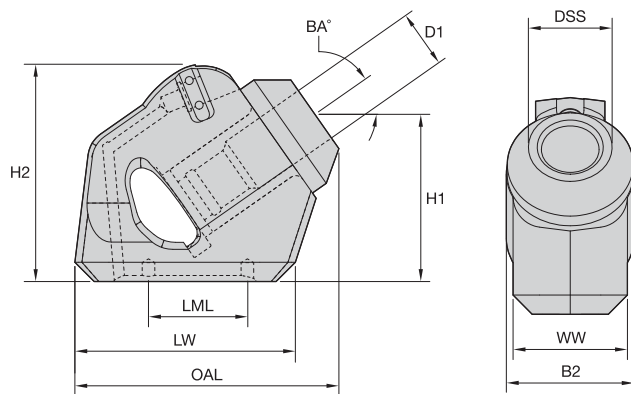
K35 Series

order number	catalog number	DSS		D1		D1S		LML		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
2507382	K35 90 SYSTEM	64	2.52	35	1.38	—	—	75	2.94	148	5.80	194	7.60	97	3.80	122	4.80	166	6.56	86	3.40	35.0
2507404	K35 170 SYSTEM	64	2.52	44	1.72	35	1.38	75	2.94	148	5.80	194	7.60	97	3.80	122	4.80	166	6.56	86	3.40	35.0



K35W Series

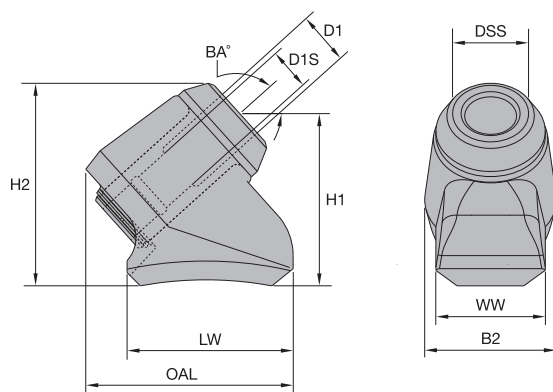
order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		LML		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
2507380	K35W 90 SYSTEM	64	2.52	35	1.38	—	—	148	5.80	194	7.60	97	3.80	122	4.80	166	6.56	75	2.94	86	3.40	35.0
2507403	K35W 170 SYSTEM	64	2.52	44	1.72	35	1.38	148	5.80	194	7.60	97	3.80	122	4.80	166	6.56	75	2.94	86	3.40	35.0



■ **K35W BCA**

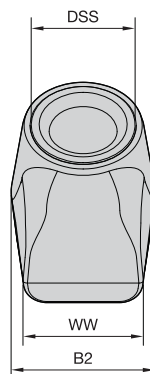
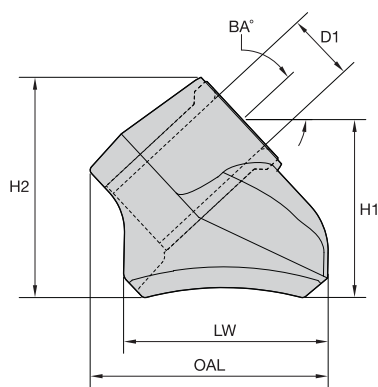
order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		LML		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
4169933	K35W 90 BCA SYSTEM	64	2.52	35	1.38	167	6.56	194	7.60	97	3.80	122	4.80	166	6.56	75	2.95	86	3.40	35

Cutting Systems



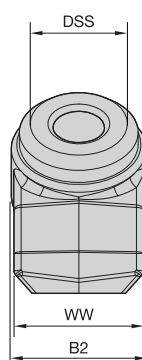
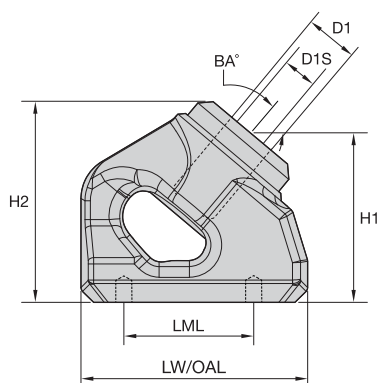
■ **K225 Series**

order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
2271367	K225SP 90 SYSTEM	64	2.52	35	1.38	—	—	170	6.70	174	6.87	111	4.36	145	5.70	140	5.50	92	3.61	42.0
2271366	K225SP 170 SYSTEM	64	2.52	44	1.72	35	1.38	170	6.70	174	6.87	111	4.36	145	5.70	140	5.50	92	3.61	42.0



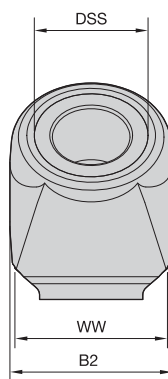
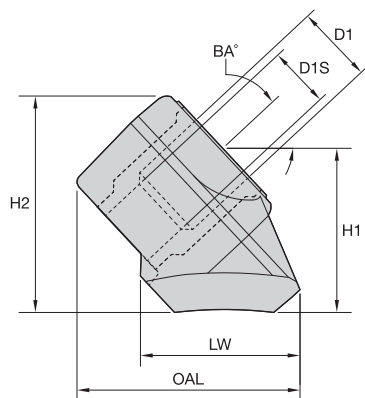
KB175 Series

order number	catalog number	DSS		H2		OAL		B2		H1		LW		WW		OAL		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011638	KB175S SA SYSTEM	68	2.69	145	5.70	156	6.16	95	3.73	117	4.60	134	5.28	79	3.12	156	6.16	42.9



K30 Series

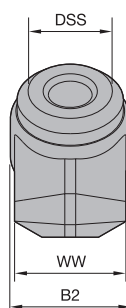
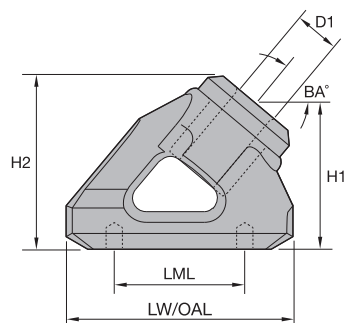
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		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1887731	K30S SYSTEM	57	2.25	30	1.19	—	—	76	3.00	118	4.65	133	5.25	80	3.13	100	3.92	133	5.25	76	3.00	50.0
3737342	K30S-TS SYSTEM	64	2.50	38	1.51	30	1.19	76	3.00	120	4.73	133	5.25	80	3.13	100	3.92	133	5.25	76	3.00	50.0



■ **BBS Series**

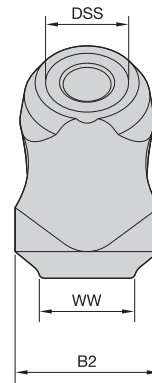
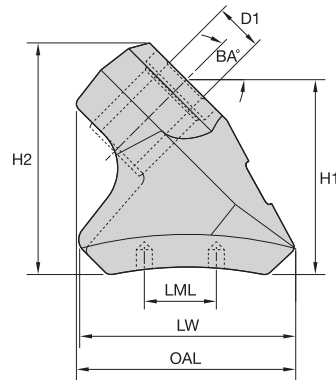
order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1131605	BBS38.65H SYSTEM	56	2.20	38	1.51	—	—	106	4.17	110	4.33	80	3.15	81	3.19	79	3.09	75	2.95	43.0
1131591	BBS30.65H SYSTEM	56	2.20	30	1.19	—	—	106	4.17	110	4.33	80	3.15	81	3.19	79	3.09	75	2.95	43.0

Cutting Systems



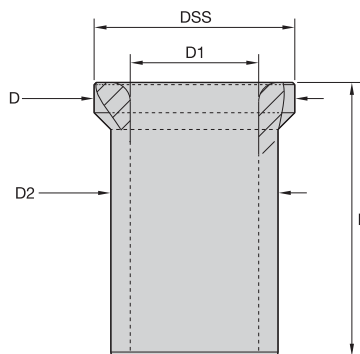
■ **K25 Series**

order number	catalog number	DSS		D1		LML		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1887730	K25S SYSTEM	49	1.94	26	1.01	76	3.00	101	4.00	132	5.21	70	2.75	85	3.36	132	5.21	65	2.56	50.0



■ 9081 Series

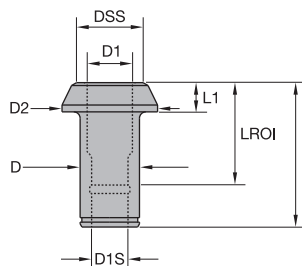
order number	catalog number	DSS		D1		LML		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011600	9081 45 SYSTEM	44	1.73	26	1.01	38	1.50	122	4.80	114	4.50	76	3.00	103	4.06	114	4.50	76	3.00	45.0



■ 44mm Series

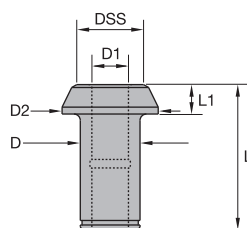
order number	catalog number	DSS		D1		D		D2		L	
		mm	in	mm	in	mm	in	mm	in	mm	in
1012407	KB175SA BUSHING	70	2.75	45	1.76	58	2.29	70	2.75	95	3.75

Cutting Systems



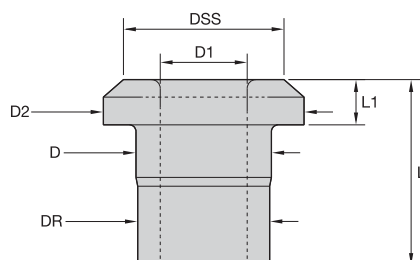
■ 43mm Series

order number	catalog number	DSS		D1		D2		D		D1S		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
2507379	U170K35P IH BUSHING	64	2.52	44	1.72	95	3.75	57	2.25	35	1.38	28	1.11	99	3.89	114	4.49
2271626	U170K225S P IH BUSHING	64	2.52	44	1.72	92	3.62	57	2.25	35	1.38	28	1.11	99	3.89	67	2.63



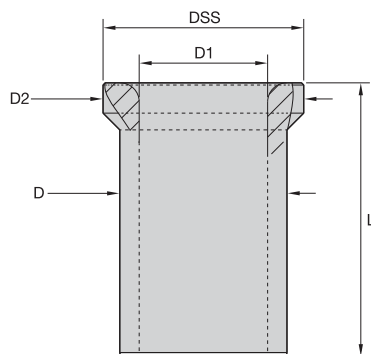
35mm Series

order number	catalog number	DSS		D1		D2		D		L1		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
2507377	U90K35P IH BUSHING	64	2.52	35	1.38	95	3.75	57	2.25	28	1.11	114	4.49
2271368	U90K225S P IH BUSHING	74	2.90	35	1.38	92	3.62	57	2.25	28	1.11	139	5.48



30mm Series

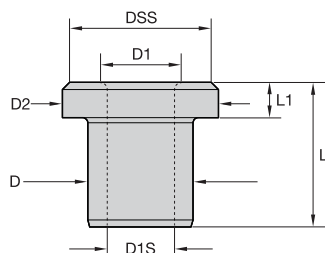
order number	catalog number	DSS		D1		D2		D		DR		L1		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
5296132	U80JWT BUSHING	56	2.20	30	1.19	70	2.75	47	1.86	46	1.81	16	.62	65	2.55
1131754	BBS30.65H BUSHING	56	2.20	30	1.19	70	2.75	50	1.97	42	1.65	16	.62	65	2.56
1881717	U80K30S IH BUSHING	57	2.25	30	1.19	70	2.75	47	1.86	—	—	16	.62	65	2.55
3029562	U80K30S-10 BUSHING	57	2.25	30	1.19	70	2.75	47	1.87	—	—	16	.62	65	2.55
3103268	U80K30S-05 BUSHING	57	2.25	30	1.19	70	2.75	47	1.86	—	—	16	.62	65	2.55



25mm Series

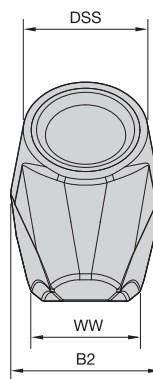
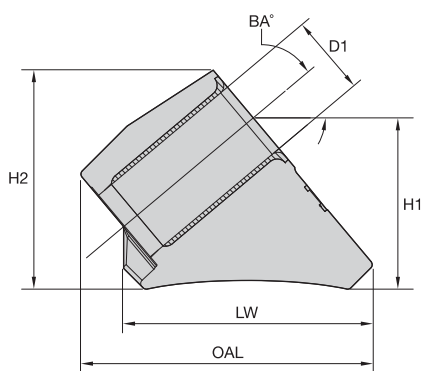
order number	catalog number	DSS		D1		D2		D		L	
		mm	in	mm	in	mm	in	mm	in	mm	in
1012415	9081 BUSHING	44	1.73	26	1.01	44	1.73	37	1.45	54	2.12
1881716	U70K25S BUSHING	49	1.94	26	1.01	87	3.44	42	1.66	54	2.12

Cutting Systems



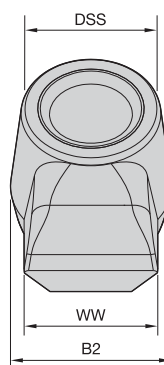
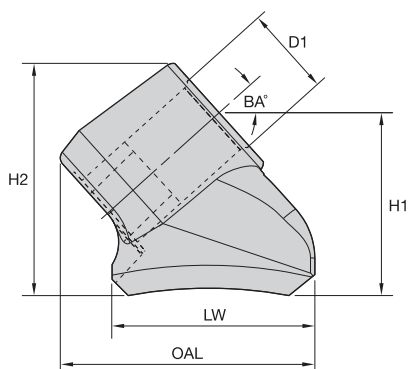
38mm Series

order number	catalog number	DSS		D1		D2		D		D1S		L1		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1713784	BBS38.65H BUSHING	56	2.20	38	1.50	56	2.20	50	1.97	—	—	—	—	65	2.56
3737341	TS-K30S IH BUSHING	64	2.50	38	1.51	70	2.75	47	1.86	30	1.19	16	.62	65	2.55



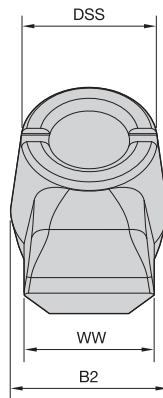
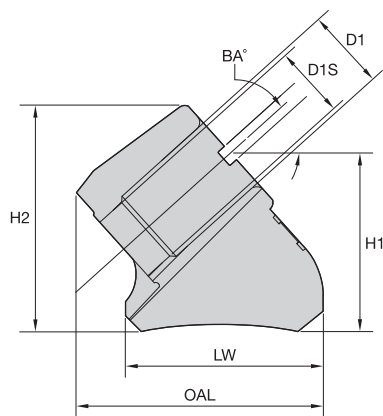
K225 Series Slim

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
3877870	K225S SLIMLINE BLOCK	88	3.45	57	2.25	159	6.25	210	8.25	107	4.20	122	4.81	178	7.02	83	3.28	40



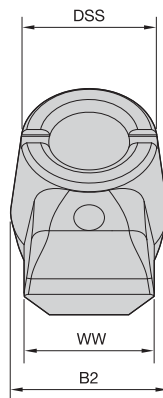
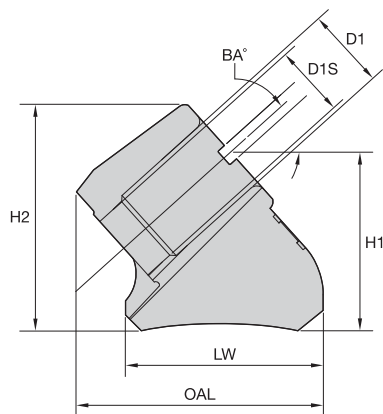
K225 Series

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
2609406	K225SP BLOCK	89	3.51	57	2.25	160	6.30	174	6.87	111	4.36	126	4.97	140	5.50	92	3.61	42



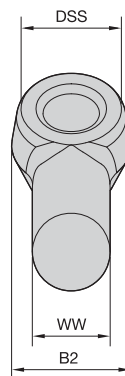
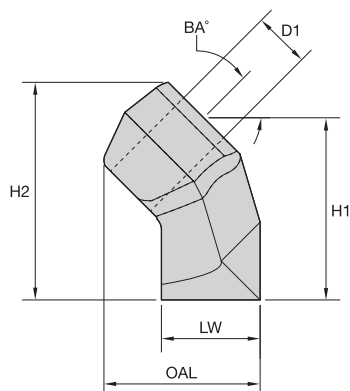
■ K225 Series NR

order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1765700	K225SNR BLOCK	89	3.51	57	2.25	51	2.00	160	6.30	174	6.87	111	4.36	126	4.97	140	5.50	92	3.61	42.0



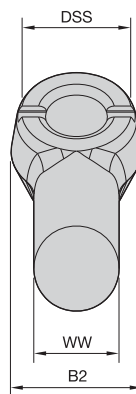
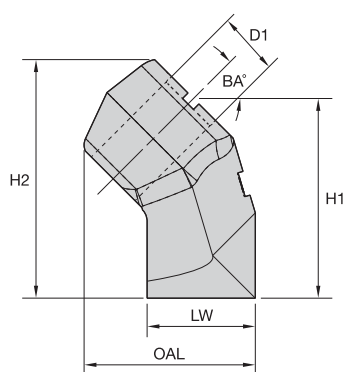
■ K225W Series NR

order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1918610	K225S NR PFF BLOCK	89	3.51	57	2.25	51	2.00	160	6.30	174	6.87	111	4.36	126	4.97	140	5.50	92	3.61	42.0



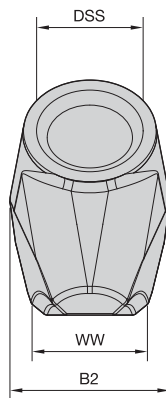
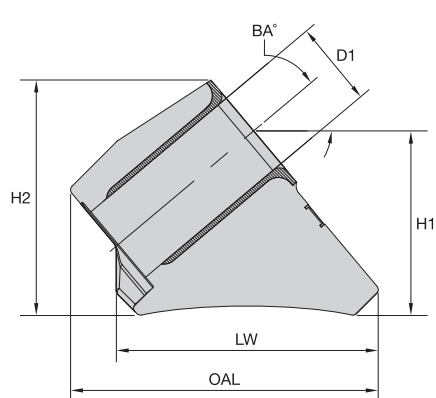
K200 Series

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011629	K200SL BLOCK	89	3.50	51	2.00	196	7.70	140	5.50	107	4.23	164	6.46	89	3.50	70	2.75	45.0



K200 Series NR

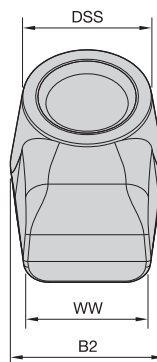
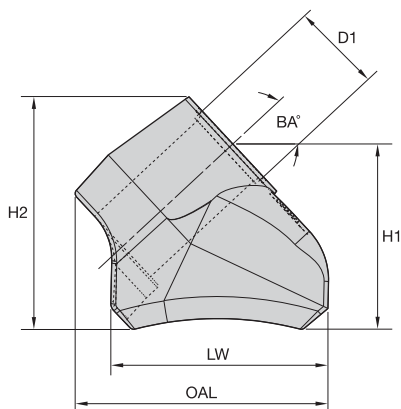
order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1520221	K200SL NR BLOCK	89	3.50	51	2.00	196	7.70	140	5.50	107	4.23	110	6.46	89	3.50	70	2.75	45.0



■ K175 Series • Slim

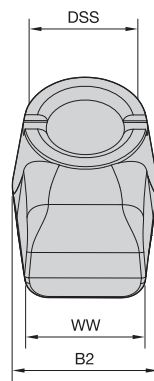
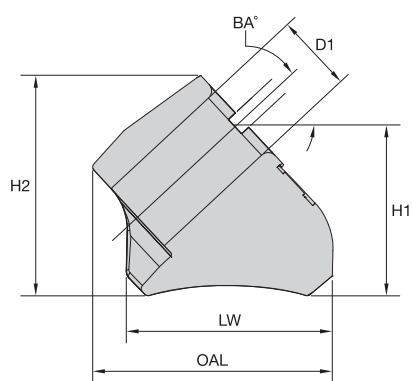
order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
3062518	K175S SLIMLINE IH BLOCK	78	3.08	51	2.00	146	5.75	184	7.25	95	3.75	110	4.33	156	6.15	74	2.92	40
5354621	K175-35 SLIM BLOCK	78	3.08	51	2.00	135	5.32	166	6.64	95	3.75	103	4.05	147	5.78	72	2.85	35

Cutting Systems



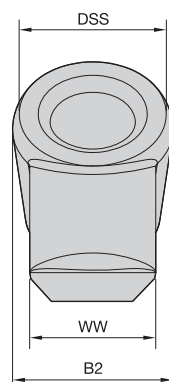
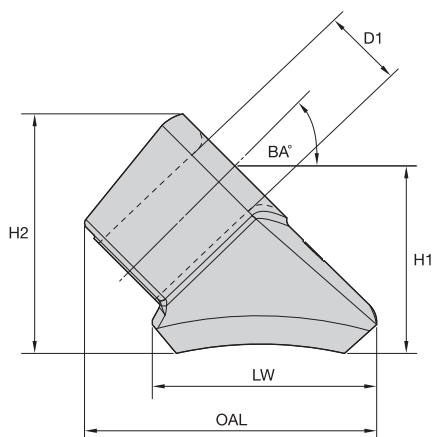
■ K175 Series

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1875596	K175S IH BLOCK	79	3.13	51	2.00	144	5.65	156	6.16	95	3.73	114	4.50	134	5.28	79	3.12	42.9



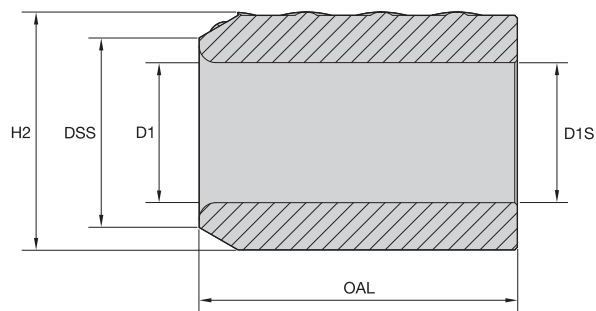
K175 NR Series

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1792955	K175S NR BLOCK	79	3.13	51	2.00	144	5.65	156	6.16	95	3.73	114	4.50	134	5.28	79	3.12	42.9



K177 Series

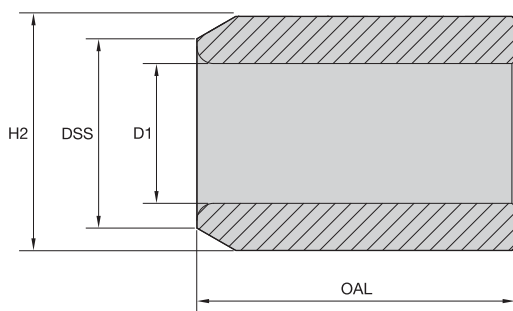
order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011602	K177S BLOCK	76	3.00	45	1.77	118	4.65	80	3.15	9	3.34	99	3.90	68	2.68	60	2.38	45
1174967	K177SE BLOCK	76	3.00	45	1.78	127	5.00	400	5.50	85	3.34	99	3.91	89	3.50	67	2.62	45



■ 51mm HF Series

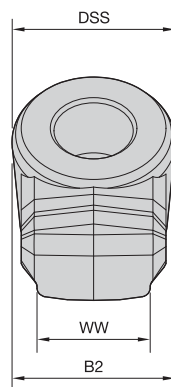
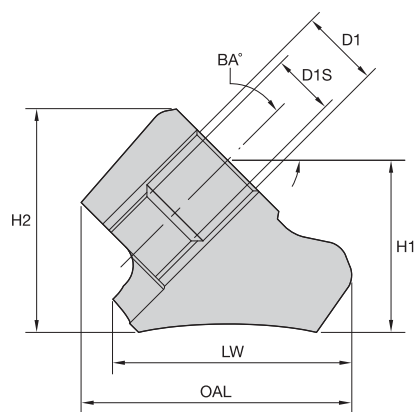
order number	catalog number	DSS		D1		D1S		H2		OAL	
		mm	in	mm	in	mm	in	mm	in	mm	in
2974455	U200TB HF BLOCK	72	2.83	53	2.09	41	1.60	89	3.50	121	4.75
3849888	U200HF BLOCK	72	2.83	53	2.09	—	—	89	3.50	121	4.75

Cutting Systems



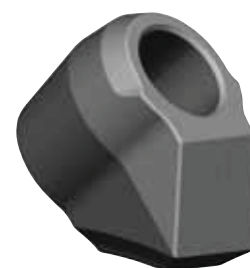
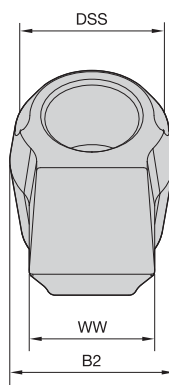
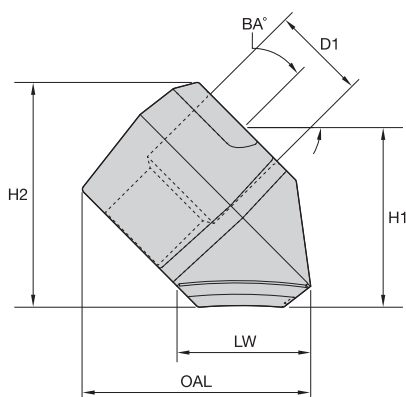
■ 51mm Series

order number	catalog number	DSS		D1		H2		OAL	
		mm	in	mm	in	mm	in	mm	in
1753659	U200 BLOCK	72	2.83	53	2.09	89	3.50	121	4.75
1012371	KBB4 BLOCK	76	3.00	51	2.03	89	3.50	102	4.00



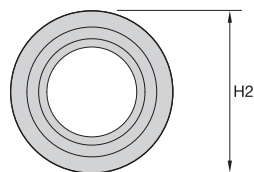
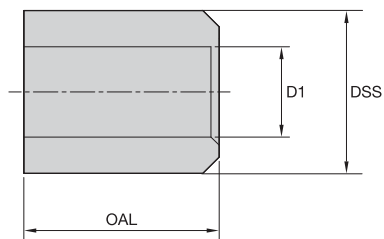
■ 38mm Series Step • Heavy

order number	catalog number	DSS		D1		D1S		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1547387	U43XHD BLOCK	70	2.75	38	1.51	30	1.19	108	4.24	130	5.14	79	3.10	83	3.27	115	4.54	70	2.75	45.0
1807656	U43XHD-P BLOCK	70	2.75	38	1.51	30	1.19	101	3.97	130	5.14	79	3.10	76	3.00	115	4.54	70	2.75	45.0



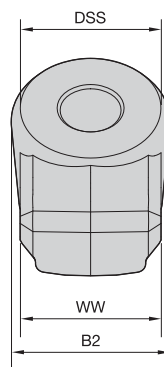
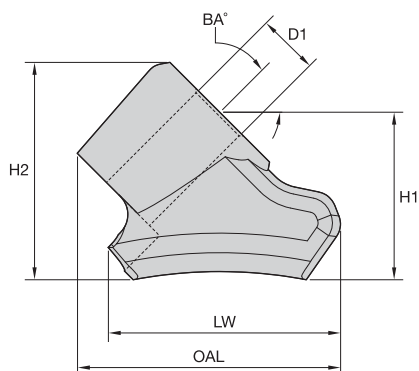
■ 38mm Series Step

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
2545624	U43H IH BLOCK	57	2.25	38	1.51	91	3.58	92	3.64	67	2.62	73	2.86	54	2.14	51	2.00	45.0



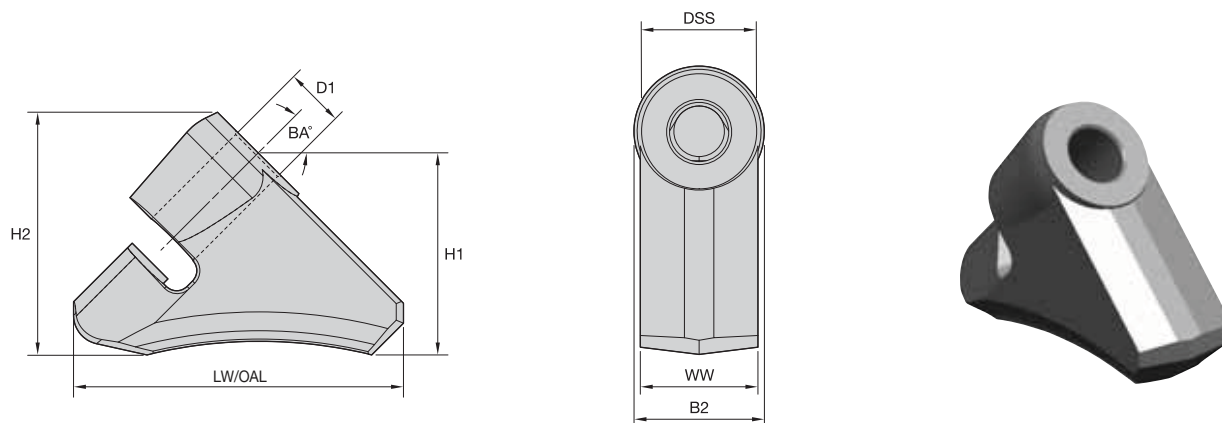
35mm Series

order number	catalog number	DSS		D1		H2		OAL	
		mm	in	mm	in	mm	in	mm	in
1012370	KBB8 BLOCK	51	2.00	35	1.39	64	2.50	76	3.00



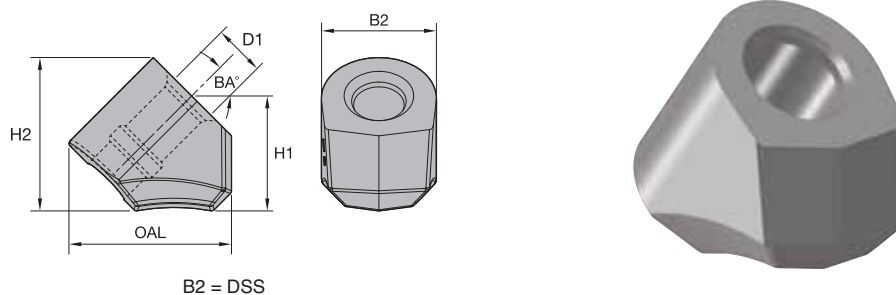
30mm Series • Heavy

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011569	BS30.65 BLOCK	63	2.48	30	1.19	106	4.17	110	4.33	80	3.15	81	3.19	79	3.09	75	2.95	43.0
1792958	U43XHD 30 BLOCK	70	2.75	30	1.19	108	4.24	130	5.14	79	3.10	83	3.27	115	4.54	70	2.75	45.0



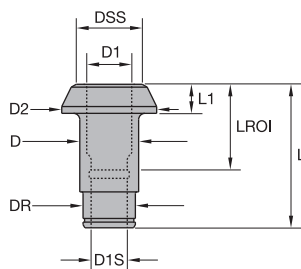
■ 25mm Series

order number	catalog number	DSS		D1		H2		OAL		B2		H1		LW		WW		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1012399	2356IH BLOCK	50	1.97	26	1.01	105	4.13	142	5.61	56	2.21	87	3.42	142	5.61	51	2.00	45.0



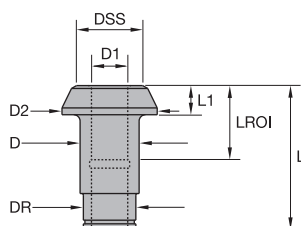
■ Small Series

order number	catalog number	DSS		D1		H2		OAL		H1		B2		BA°
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	
1011640	U50 10 BLOCK	43	1.71	21	0.82	55	2.16	61	2.42	43	1.71	43	1.71	45.0
1012273	C20/U43NS	35	1.37	19	0.75	56	2.21	60	2.34	40	1.59	35	1.37	45.0
1012276	C20HD BLOCK	32	1.25	19	0.75	58	2.28	51	2.00	44	1.72	32	1.25	45.0



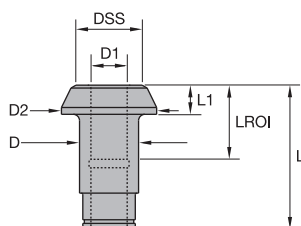
43mm Series

order number	catalog number	DSS		D1		D2		D		DR		D1S		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
2539406	U170K225R IH SLEEVE	64	2.52	44	1.72	92	3.62	57	2.25	—	—	35	1.38	28	1.11	99	3.89	139	5.48
1796981	U170K225S SLEEVE	64	2.52	44	1.72	92	3.62	57	2.25	51	2.00	35	1.38	28	1.11	—	—	139	5.48
1730582	U170K225S NR SLEEVE	64	2.52	44	1.72	92	3.62	57	2.25	51	1.99	35	1.38	28	1.09	99	3.89	139	5.46
2507376	U170K35R IH SLEEVE	64	2.52	44	1.72	95	3.75	57	2.25	—	—	35	1.38	28	1.11	99	3.89	124	4.87



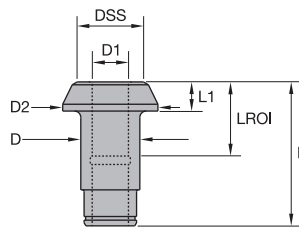
35mm Series

order number	catalog number	DSS		D1		D2		D		DR		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
5307388	U90K225SLIM P SG SLEEVE	50	1.97	30	1.19	88	3.46	57	2.25	57	2.25	40	1.57	—	—	172	6.77
1518964	U90K200S NR SLEEVE	56	2.22	35	1.38	89	3.50	51	2.00	—	—	28	1.11	72	2.82	—	—
1786269	U90K175S NR SLEEVE	57	2.24	35	1.38	78	3.07	51	2.00	—	—	28	1.11	72	2.82	134	5.26
1012403	U90K200S SLEEVE	57	2.25	35	1.38	89	3.50	51	2.00	—	—	28	1.11	72	2.82	134	5.26
2507378	U90K35R IH SLEEVE	64	2.52	35	1.38	95	3.75	57	2.25	—	—	28	1.11	72	2.82	124	4.87
1890173	U90K225S SLEEVE	64	2.52	35	1.38	92	3.62	57	2.25	51	2.00	28	1.11	72	2.82	139	5.48
1730583	U90K225S NR SLEEVE	64	2.52	35	1.38	92	3.62	57	2.25	51	1.99	28	1.09	72	2.82	139	5.47
3968780	U90K35R SLEEVE	64	2.52	35	1.38	95	3.75	57	2.25	—	—	28	1.11	72	2.82	124	4.87
2539407	U90K225R IH SLEEVE	64	2.52	35	1.38	92	3.63	57	2.25	—	—	28	1.11	72	2.82	139	5.48



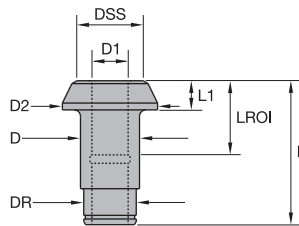
30mm Series

order number	catalog number	DSS		D1		D2		D		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1618609	U80KB175S SA SLEEVE	50	1.96	30	1.19	80	3.14	44	1.77	40	1.57	—	—	146	5.75
3771272	U80K177SE SLEEVE	51	2.00	30	1.19	76	3.00	45	1.77	28	1.11	53	2.09	117	4.61
3402913	U80K175S-FL SLEEVE	51	2.00	30	1.19	76	3.00	51	1.99	28	1.11	53	2.09	134	5.26
1012396	U80K177S SLEEVE	51	2.00	30	1.19	76	3.00	45	1.77	28	1.11	53	2.09	117	4.61
2228481	K1 K177SE SLEEVE	51	2.00	30	1.19	76	3.00	45	1.77	28	1.11	63	2.49	117	4.61
1326666	U119K193J140 SLEEVE	51	2.00	30	1.19	83	3.25	49	1.93	36	1.40	52	2.09	123	4.86
1838192	U80K175SNR SLEEVE	54	2.12	30	1.19	78	3.07	51	2.00	28	1.09	53	2.09	133	5.25
3898121	U80K175SLIMFL SLEEVE	57	2.24	30	1.19	76	3.00	51	2.00	28	1.10	53	2.09	145	5.72
1817268	U80K175S SLEEVE	57	2.24	30	1.19	76	3.00	51	2.00	28	1.11	53	2.09	134	5.26
3102818	U80K175SLIM R SLEEVE	57	2.24	30	1.19	76	3.00	51	2.00	28	1.10	53	2.09	145	5.72



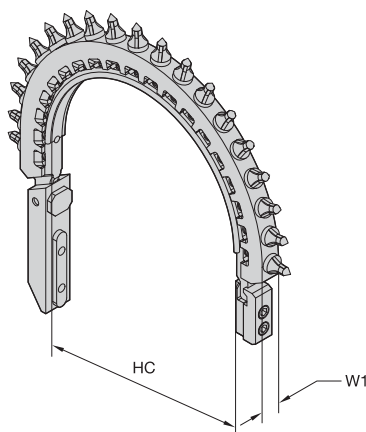
25mm Series

order number	catalog number	DSS		D1		D2		D		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1618593	U76KB175S SA SLEEVE	46	1.81	25	1.00	80	3.14	44	1.77	47	1.85	50	1.95	153	6.02



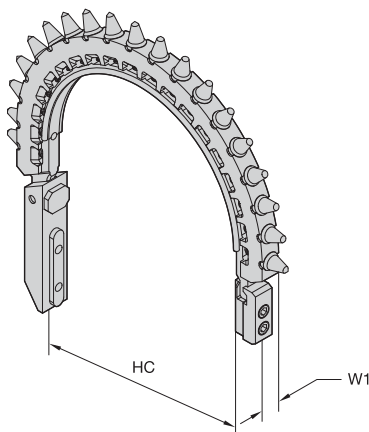
21mm Series

order number	catalog number	DSS		D1		D2		D		DR		L1		LROI		L	
		mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
1012392	U50 SLEEVE	36	1.41	21	.82	48	1.88	38	1.50	30	1.18	18	.71	26	1.01	93	3.66



■ Core Breakers

order number	catalog number	continuous miner make and model	reference miner cut diameter		HC		W1		miner connection top	miner connection bottom	number of tools	replaceable tool order number
			mm	in	mm	in	mm	in				
5096358	KMTCB J9 44	JOY 14CM9	1118	44	666,4	26.24	50,8	2.0	CLAMP	CLAMP	20	2419418
3960508	KMTCB J15 44-PHB	JOY 14CM15	1118	44	644,5	25.37	50,8	2.0	CLAMP	PIN	20	2419418
3960512	KMTCB J15 38-PHB	JOY 14CM15	965	38	576,2	22.69	50,8	2.0	CLAMP	PIN	19	2419418
4078384	KMTCBR C230 44 RIGHT SIDE	CAT CM230 & CM240	1118	44	481,7	18.96	63,5	2.5	WELD	WELD	28	1891423
4075128	KMTCBL C230 44 LEFT SIDE	CAT CM230 & CM240	1118	44	481,7	18.96	63,5	2.5	WELD	WELD	28	1891423



■ Core Breakers • Nested

order number	catalog number	continuous miner make and model	reference miner cut diameter		HC		W1		miner connection top	miner connection bottom	number of tools	replaceable tool order number
			mm	in	mm	in	mm	in				
4165197	KMTCB J27 44 NESTED	JOY 14CM27	1118	44	549,3	21.63	76,2	3.0	WELD	WELD	21	5042831
5125875	KMTCB J15 44-PHB NESTED	JOY 14CM15	1118	44	644,5	25.37	50,8	2.0	CLAMP	PIN	20	2419418
5129761	KMTCB J15 38-PHB NESTED	JOY 14CM15	965	38	576,2	22.69	50,8	2.0	CLAMP	PIN	19	5166746
5129810	KMTCB J27 54-PHB NESTED	JOY 12CM27	1372	54	796,3	31.35	63,5	2.5	CLAMP	PIN	25	5042831
5402815	KMTCB C235 38 NESTED	CAT CM235	965	38	503,3	19.81	63,5	2.5	WELD	WELD	19	5042831



Roof Bits

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ProBore™ Roof Bits

Putting a Twist on Underground Roof Drilling

Our ProBore bit features a proprietary body design that puts a new twist on roof drilling.

The helix-fluted design pulls cut rock and dust through the center chamber, away from the drilling action. The twisted body design acts like a fluted drill to draw dust away from the cut.



That means:

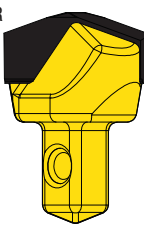
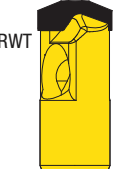
- Increased drilling speeds.
- Safer for machine operator.
- Less tip wear and heat build up.
- Better dust extraction and less clogging of drill steel for fewer slowdowns.
- Lower cutting forces brings far less drill steel bowing and easier removal from the hole.

Product Selector

How to Use the Product Selector

- Step 1** Determine drilling diameter.
- Step 2** Determine the drive or thread size machine side.
- Step 3** Cutting condition. 
- Step 4** Drill type (dry, vacuum, or wet).
- Step 5** Based on above steps, identify best tool for your application.

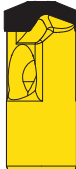
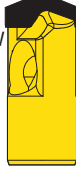
■ Roof Bits • Spade Bit Product Selector

	order number	catalog number	key benefit		drill diameter		page number(s)
tip geometry			speed	life/ toughness	mm	inch	
	1187664	KV21		●	26,0	1.02	108
	1084689	KW8 1 RR		●	26,0	1.02	108
	1011343	KW8 1 1/32		●	26,2	1.03	106
	1326871	HV138AE/FVM138		●	35,0	1.38	105
	1326860	HVW138AE/FVWM138		●	35,0	1.38	105
	1326872	HV112AE/FVM112		●	38,0	1.50	104
	1326869	HV158AE/FVM1 5/8		●	41,3	1.63	103
	1326858	HVW158AE/FVWM158		●	41,3	1.63	103
	5410777	PROBORE1 WEB	●	●	25,0	1.02	102
	5108801	RKCV4 1 WEB E		●	25,0	1.02	107
	5149002	RKCV4 1 3/8 WEB		●	35,0	1.38	104
	5411259	PROBORE1 RRWT	●		25,0	1.02	102
	1011328	KCV41132/SV145AE	●		26,0	1.02	106
	2384660	RKCV4 1NS	●		26,0	1.02	107
	1011322	KCV4 1	●		26,0	1.02	107
	1080984	KCV4 1 RRWT	●		26,0	1.02	107
	3327085	KCV4 1 RRWT	●		26,0	1.02	107
	1011333	KCV4 1RR	●		26,0	1.02	107
	2049079	KCV41/SV105A	●		26,0	1.02	107
	3737929	KWH 1A RRWT	●		26,0	1.02	107
	1839340	KWH1 400	●		26,0	1.02	107
	1011812	RKCV4 1 RR	●		26,0	1.02	107
	1084693	RKCV4 1 RRWT	●		26,0	1.02	107
	3327086	RKCV4 1 RRWT	●		26,0	1.02	107
	1254544	RKCV4 400 1 RR	●		26,0	1.02	107
	3107819	RKCV41/SV105	●		26,0	1.02	107
	1011780	RKCV41/SVT105AE	●		26,0	1.02	107
	1326655	SV105VE	●		26,0	1.02	107
	1254541	RKCV4 400 1 1/32 RR	●		26,0	1.02	107
	1326610	SVT145AECB	●		26,0	1.02	107
	4025534	PROBORE 1.03 HRVT	●		26,2	1.03	102
	3888032	KCV4 1 1/32 RRWT	●		27,0	1.06	106
	1011334	KCV4 1 1/32RR	●		27,0	1.06	106

NOTE: For a complete icon description, see the Icon Guide on page 19.

(continued)

■ **Roof Bits • Spade Bit Product Selector** (continued)

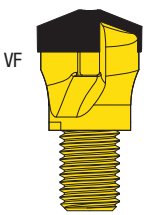
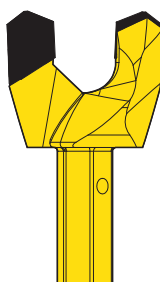
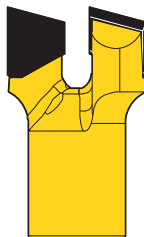
	order number	catalog number	key benefit		drill diameter		page number(s)
tip geometry			speed	life/ toughness	mm	inch	
RRWT 	1149472	KCV4 1 1/32RRWT	●		27,0	1.06	106
	3888033	KCV41 132/SV145AE	●		27,0	1.06	106
	1011814	RKCV4 1 1/32RR	●		27,0	1.06	106
	1149514	RKCV4 1 1/32RRWT	●		27,0	1.06	106
	1326645	SV145VE	●		27,0	1.06	106
	3609045	KCV28RR	●		28,0	1.10	105
	2244841	KCV4 1 1/8	●		29,0	1.15	105
	1087205	KCV4 1 3/8RRWT	●		35,0	1.40	104
	2390401	KCV4138/SV139	●		35,0	1.40	104
	1011305	KCV4138/SV139AE	●		35,0	1.40	104
	3785194	RKCV4 1 3/8 RRWT	●		35,0	1.40	104
	1547896	RKCV1 3/8 RRWT	●		35,0	1.40	104
	1011816	RKCV4138/SVT139AE	●		35,0	1.40	104
	1011315	KCV3 1 1/2	●		38,0	1.50	103
	1011796	RKCV31 1/2/SVCT112AE	●		38,0	1.50	103
	1326640	KCV3158/SVC158AE	●		41,3	1.63	103
notch SV 	5410779	PROBORE1 SV119AE		●	26,0	1.02	102
	2243294	SV119AE		●	26,0	1.02	107
	1326654	SV119AE		●	26,0	1.02	107
	1326623	SVT119AE		●	26,0	1.02	107
	2265657	SVT119AE		●	26,0	1.02	107
	5048309	SVT119 138		●	35,0	1.40	104
dual relief notch RSV 	2461136	KCV4 1RRWN	●		25,0	1.02	107

NOTE: For a complete icon description, see the Icon Guide on page 19.

drive size machine side											cutting conditions			
	1/2" square	1/2" Whitworth	13/16" hex	3/4" hex	3/8" square	5/8" hex	5/8" square	7/8" hex	DIN 405	Figure 8				
											light	medium	heavy	severe
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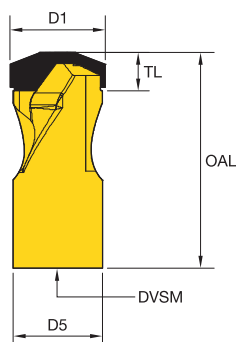
■ Roof Bits • Two Prong Product Selector (continued)

	order number	catalog number	key benefit		drill diameter		page number(s)
tip geometry			speed	life/ toughness	mm	inch	
variable relief 	3872437	RB271902	●		27,0	1.06	116
	3609043	RB272029399RR	●		27,0	1.06	116
	3609044	RB282029399RR	●		28,0	1.10	116
	3865401	RB28N1736HD	●		28,0	1.10	116
	1836122	RB38M16	●		38,0	1.40	114
tracking 	3040900	RB34F	●		34,0	1.34	115
	1011229	RD1 3/8	●		35,0	1.38	115
	1011260	RDP1 3/8	●		35,0	1.38	115
	3041308	RB35G	●		35,0	1.38	114
	2212980	RB40G	●		40,0	1.57	113
	1011262	DN1 3/4	●		44,0	1.75	113
	1011233	RD1 3/4	●		45,0	1.75	113
	2401991	AD178DC	●		48,0	1.87	112
	1327111	AD178FE	●		48,0	1.87	112
	1327108	AD179RD	●		48,0	1.87	112
	1011239	D1 7/8	●		48,0	1.87	112
	1011241	DL 1 7/8	●		48,0	1.87	112
	1548553	RDP1 7/8	●		48,0	1.87	112
	1011247	DD 2	●		51,0	2.00	112
	1011253	DB2 1/4	●		57,0	2.25	110
	3632210	RDT2 1/4	●		57,0	2.25	111
	1011257	DB2 1/2	●		64,0	2.50	110
	3385042	CD316RB	●		78,0	3.06	109
non-tracking 	3872319	RB22	●		22,0	0.87	117
	3872320	RB23.5	●		24,0	0.93	109
	4040320	RB24MM	●		24,0	0.93	117
	2402451	RB25.6	●		25,6	1.01	109
	1075594	RB27NSF	●		26,0	1.04	117
	3382400	RB28 M14	●		28,0	1.10	115
	2461919	RB38-3	●		39,0	1.52	114
	3547970	RB42-M16	●		42,0	1.63	113
	1011243	RDNT 2	●		51,0	2.00	111
	1821773	DBNT2 1/4	●		57,0	2.25	110
	1011251	RDNT2 1/4	●		57,0	2.25	111

NOTE: For a complete icon description, see the Icon Guide on page 19.

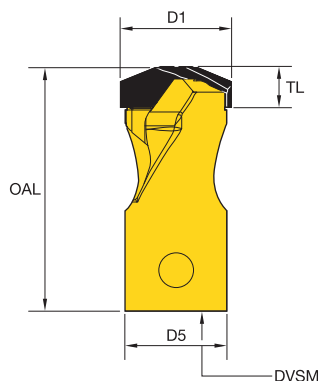
100

- For specific cutting conditions, see the Product Selector on pages 96–101.



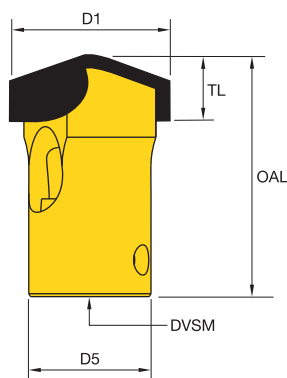
■ 25mm (1") ProBore Drilling Diameter • Hex .625" Drive

order number	catalog number	D1			D5		TL		OAL	
		mm	in	DVSM	mm	in	mm	in	mm	in
5411259	PROBORE1 RRWT	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
5410779	PROBORE1 SV119AE	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
5410777	PROBORE1 WEB	26	1.02	5/8 Hex	24	.94	10	.38	57	2.24



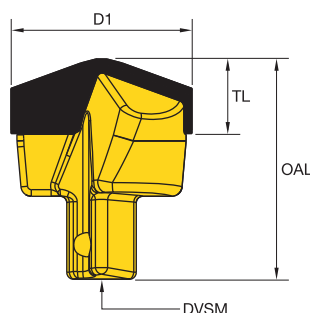
■ 26,2mm (1-1/32") ProBore Drilling Diameter • Hex .625" Drive

order number	catalog number	D1			D5		TL		OAL	
		mm	in	DVSM	mm	in	mm	in	mm	in
4025534	PROBORE 1.03 HRVT	27	1.05	5/8 Hex	24	.94	10	.39	57	2.25



■ 41,3mm (1-5/8") Drilling Diameter • Hex .875" Drive

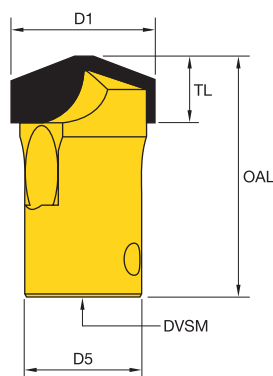
order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
1326640	KCV3158/SVC158AE	42	1.64	7/8 Hex	32	1.25	17	.66	62	2.44



Roof Bits

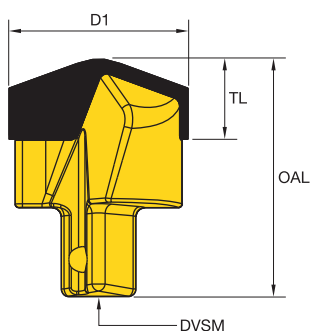
■ 41,3mm (1-5/8") Drilling Diameter • Square .5" Drive

order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1326869	HV158AE/FVM1 5/8	41	1.63	1/2 Square	18	.73	53	2.09
1326858	HVW158AE/FVWM158	41	1.63	1/2 Square	18	.73	53	2.09



■ 38mm (1-1/2") Drilling Diameter • Hex .875" Drive

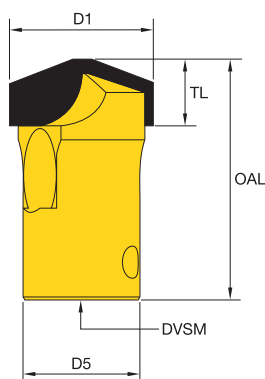
order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
1011315	KCV3 1 1/2	39	1.52	7/8 Hex	32	1.25	17	.66	62	2.45
1011796	RKCV31 1/2/SVCT112AE	39	1.52	7/8 Hex	32	1.25	17	.67	62	2.45



■ 38mm (1-1/2\") Drilling Diameter • Square .5\" Drive

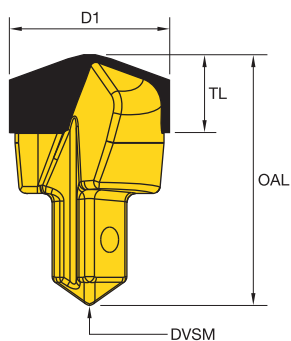
order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1326872	HV112AE/FVM112	38	1.50	1/2 Square	21	.81	51	2.00

- For specific cutting conditions, see the Product Selector on pages 96–101.



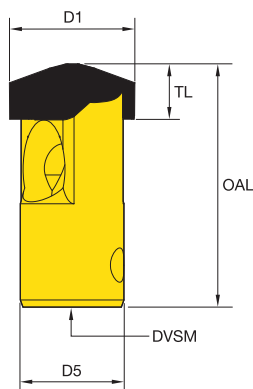
■ 35mm (1-3/8\") Drilling Diameter • Hex .875\" Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
5149002	RKCV4 1 3/8 WEB	35	1.40	7/8 Hex	32	1.25	16	.62	65	2.56
1087205	KCV4 1 3/8RRWT	35	1.40	7/8 Hex	32	1.25	16	.62	66	2.61
2390401	KCV4138/SV139	35	1.40	7/8 Hex	32	1.25	17	.67	67	2.65
1011305	KCV4138/SV139AE	35	1.40	7/8 Hex	32	1.25	17	.67	67	2.65
1547896	RKCV4 1 3/8 RRWT	35	1.40	7/8 Hex	32	1.25	16	.62	66	2.61
3785194	RKCV4 1 3/8 RRWT	35	1.40	7/8 Hex	32	1.25	16	.62	66	2.61
1011816	RKCV4138/SVT139AE	35	1.40	7/8 Hex	32	1.25	17	.67	67	2.65
5048309	SVT119 138	35	1.40	7/8 Hex	32	1.25	16	.63	65	2.57



■ 35mm (1-3/8") Drilling Diameter • Square .5" Drive

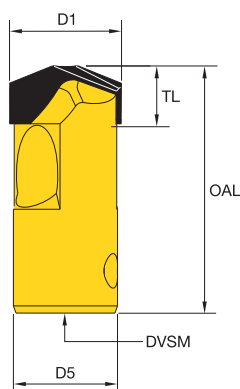
order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1326871	HV138AE/FVM138	35	1.38	1/2 Square	17	.67	55	2.17
1326860	HVW138AE/FVWM138	35	1.38	1/2 Square	17	.67	55	2.17



Roof Bits

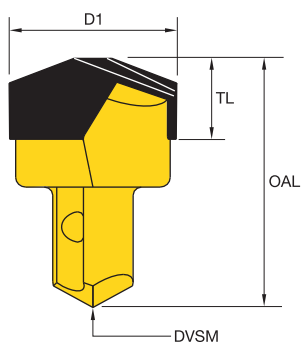
■ 28,5mm (1-1/8") Drilling Diameter • Hex .625" Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
2244841	KCV4 1 1/8	29	1.15	5/8 Hex	24	.94	13	.50	56	2.20



■ 28mm (1-3/32") Drilling Diameter • Hex .625" Drive

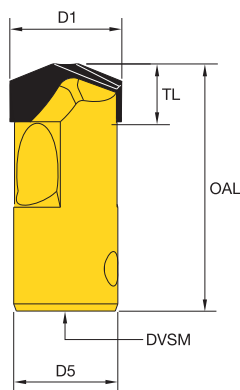
order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
3609045	KCV28RR	28	1.10	5/8 Hex	24	.94	11	.44	55	2.15



■ 26,2mm (1-1/32") Drilling Diameter • Figure 8 Drive

order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1011343	KW8 1 1/32	27	1.06	Figure 8	13	.50	39	1.53

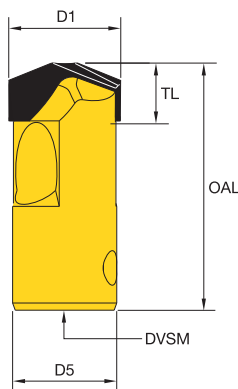
Roof Bits



■ 26,2mm (1-1/32") Drilling Diameter • Hex .625" Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
1011328	KCV41132/SV145AE	26	1.02	5/8 Hex	24	.94	17	.67	56	2.21
3888032	KCV4 1 1/32 RRWT	27	1.06	5/8 Hex	24	.94	10	.39	57	2.26
1011334	KCV4 1 1/32RR	27	1.06	5/8 Hex	24	.94	13	.52	58	2.28
1149472	KCV4 1 1/32RRWT	27	1.06	5/8 Hex	24	.94	10	.39	57	2.23
3888033	KCV41 132/SV145AE	27	1.06	5/8 Hex	24	.94	13	.50	56	2.20
1011814	RKCV4 1 1/32RR	27	1.06	5/8 Hex	24	.94	13	.67	58	2.28
1149514	RKCV4 1 1/32RRWT	27	1.06	5/8 Hex	24	.94	10	.39	57	2.23
1326645	SV145VE	27	1.06	5/8 Hex	24	.94	13	.50	56	2.20

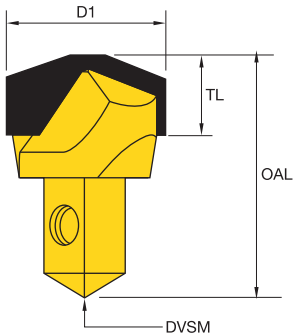
- For specific cutting conditions, see the Product Selector on pages 96–101.



■ 25mm (1") Drilling Diameter • Hex .625" Drive

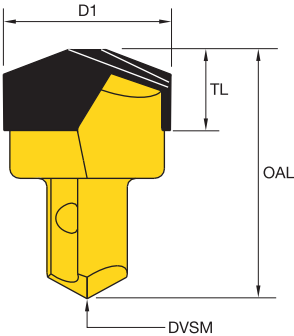
order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
5108801	RKCV4 1 WEB E	26	1.02	5/8 Hex	24	.94	10	.38	57	2.25
2384660	RKCV4 1NS	26	1.02	5/8 Hex	24	.94	12	.47	55	2.17
2243294	SV119AE	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
1326654	SV119AE	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
1326623	SVT119AE	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
2265657	SVT119AE	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
1011322	KCV4 1	26	1.02	5/8 Hex	24	.94	13	.50	56	2.20
3327085	KCV4 1 RRWT	26	1.02	5/8 Hex	24	.94	10	.39	58	2.27
1080984	KCV4 1 RRWT	26	1.02	5/8 Hex	24	.94	10	.39	58	2.27
1011333	KCV4 1RR	26	1.02	5/8 Hex	24	.94	13	.53	58	2.28
2461136	KCV4 1RRWN	26	1.02	5/8 Hex	24	.94	10	.39	58	2.27
2049079	KCV41/SV105A	26	1.02	5/8 Hex	24	.94	13	.50	56	2.20
3737929	KWH 1A RRWT	26	1.02	5/8 Hex	24	.94	10	.39	57	2.26
1839340	KWH1 400	26	1.02	5/8 Hex	24	.94	10	.41	57	2.23
1011812	RKCV4 1 RR	26	1.02	5/8 Hex	24	.94	13	.53	58	2.28
1084693	RKCV4 1 RRWT	26	1.02	5/8 Hex	24	.94	10	.39	58	2.27
3327086	RKCV4 1 RRWT	26	1.02	5/8 Hex	24	.94	10	.39	58	2.27
1254544	RKCV4 400 1 RR	26	1.02	5/8 Hex	24	.94	11	.43	56	2.21
3107819	RKCV41/SV105	26	1.02	5/8 Hex	24	.94	13	.50	56	2.20
1011780	RKCV41/SVT105AE	26	1.02	5/8 Hex	24	.94	13	.50	56	2.20
1326655	SV105VE	26	1.02	5/8 Hex	24	.94	13	.50	56	2.20
1254541	RKCV4 400 1 1/32 RR	27	1.06	5/8 Hex	24	.94	11	.43	56	2.22
1326610	SVT145AECB	27	1.06	5/8 Hex	24	.94	13	.50	56	2.20

Roof Bits



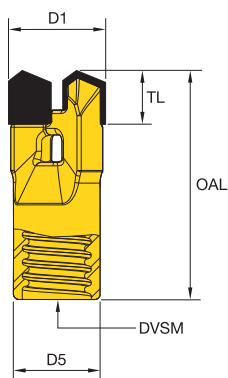
■ 25mm (1") Drilling Diameter • Square .375" Drive

order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1187664	KV21	26	1.02	3/8 Square	13	.50	39	1.54



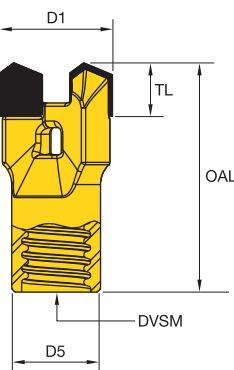
■ 25mm (1") Drilling Diameter • Figure 8 Drive

order number	catalog number	D1		DVSM	TL		OAL	
		mm	in		mm	in	mm	in
1084689	KW8 1 RR	26	1.02	Figure 8	13	.53	39	1.53



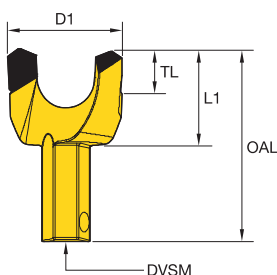
■ 23,5mm (15/16") Drilling Diameter • Two Prong • DIN 405 Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
3872320	RB23.5	24	.93	DIN 405	21	.81	12	.48	53	2.07



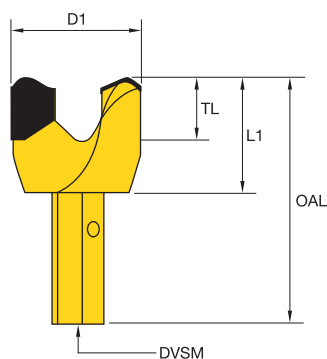
■ 25,6mm (1-1/64") Drilling Diameter • Two Prong • DIN 405 Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
2402451	RB25.6	26	1.01	DIN 405	21	.81	12	.48	53	2.08



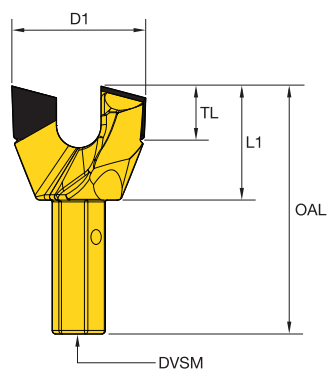
■ 78mm (3-1/16") Drilling Diameter • Two Prong • Figure 8 Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3385042	CD316RB	78	3.06	Figure 8	28	1.09	65	2.55	129	5.07



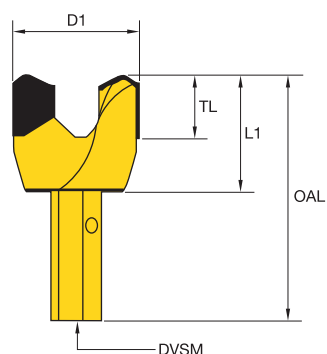
■ 64mm (2-1/2") Drilling Diameter • Two Prong • Hex .8" Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011257	DB2 1/2	64	2.50	13/16 Hex	28	1.09	54	2.12	111	4.38



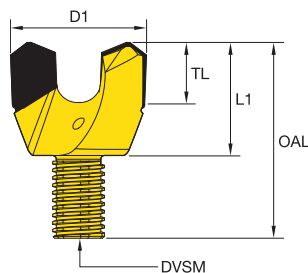
■ 57mm (2-1/4") Drilling Diameter • Two Prong • Hex .75" Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1821773	DBNT2 1/4	57	2.25	3/4 Hex	23	.91	49	1.92	106	4.17



■ 57mm (2-1/4") Drilling Diameter • Two Prong • Hex .8" Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011253	DB2 1/4	57	2.25	13/16 Hex	28	1.09	51	2.00	108	4.25

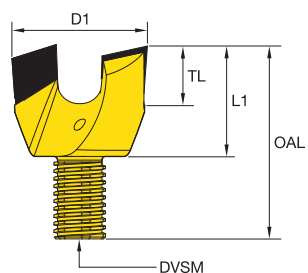


■ 57mm (2-1/4") Drilling Diameter • Two Prong

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3632210	RDNT2 1/4	57	2.25	7/8 - 8 ACME	28	1.09	49	1.94	84	3.32

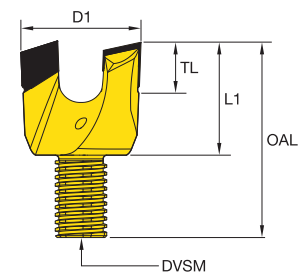


Roof Bits



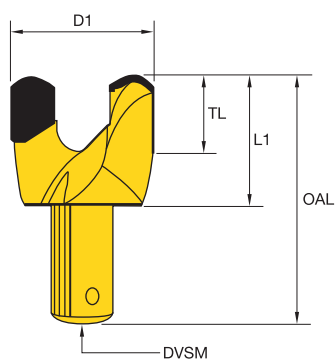
■ 57mm (2-1/4") Drilling Diameter • Two Prong • A 7/8-8 Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011251	RDNT2 1/4	57	2.25	7/8 - 8 ACME	23	.91	49	1.92	84	3.30



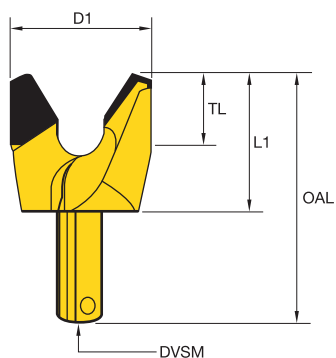
■ 51mm (2") Drilling Diameter • Two Prong • A 7/8-8 Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011243	RDNT 2	51	2.00	7/8 - 8 ACME	20	.78	48	1.90	83	3.26



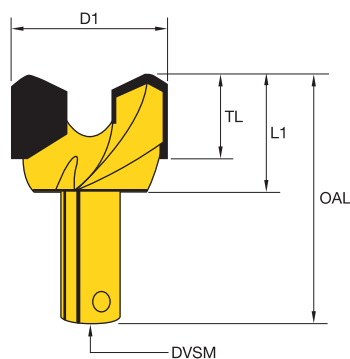
■ 51mm (2") Drilling Diameter • Two Prong • Square .625" Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011247	DD 2	51	2.00	5/8 Square	24	.94	46	1.81	87	3.44



■ 48mm (1-7/8") Drilling Diameter • Two Prong • Square .5" Drive

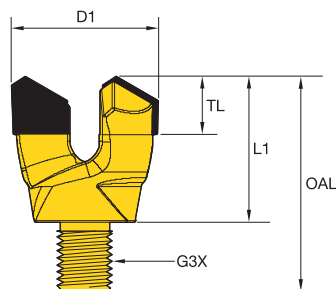
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
2401991	AD178DC	48	1.88	1/2 Square	20	.78	35	1.38	80	3.13
1327111	AD178FE	48	1.88	1/2 Square	21	.82	37	1.47	81	3.22
1327108	AD179RD	48	1.88	1/2 Square	23	.92	50	1.98	94	3.73
1011239	D1 7/8	48	1.88	1/2 Square	24	.94	46	1.82	85	3.33
1011241	DL 1 7/8	48	1.88	1/2 Square	24	.94	48	1.89	86	3.39
1548553	RDP1 7/8	48	1.88	1/2 Square	21	.82	40	1.57	79	3.07



■ 45mm (1-3/4") Drilling Diameter • Two Prong • Square .5" Drive

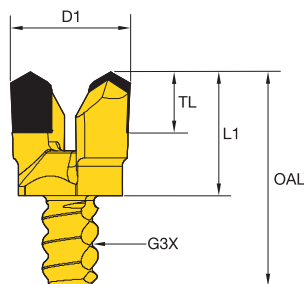
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011262	DN1 3/4	44	1.75	1/2 Square	20	.78	30	1.17	68	2.67
1011233	RD1 3/4	44	1.75	1/2 Square	24	.94	34	1.34	72	2.85

Roof Bits



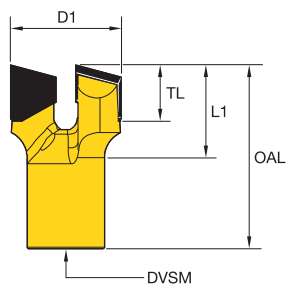
■ 42mm (1-5/8") Drilling Diameter • Two Prong • M16 Drive

order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3547970	RB42-M16	42	1.67	M16	17	.66	42	1.65	65	2.43



■ 40mm (1-9/16") Drilling Diameter • Two Prong • KW20 Drive

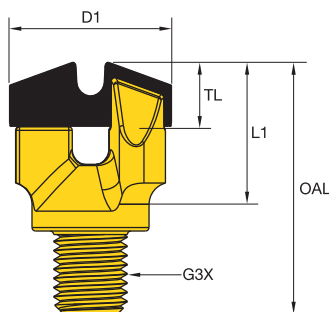
order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
2212980	RB40G	40	1.57	KW20	20	.79	41	1.62	71	2.80



■ 38mm (1-1/2") Drilling Diameter • Two Prong • DIN 405 Drive

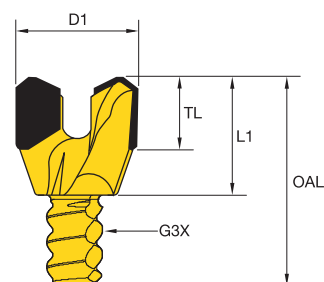
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
2461919	RB38-3	39	1.52	DIN 405	20	.78	24	.93	64	2.56

Roof Bits



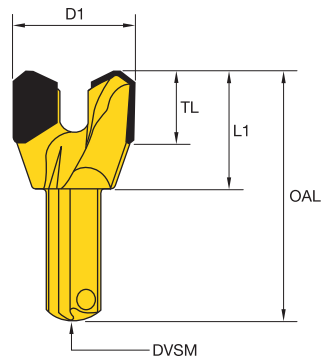
■ 38mm (1-1/2") Drilling Diameter • Two Prong • M16 Drive

order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1836122	RB38M16	35	1.40	M16	14	.55	37	1.44	54	2.14



■ 35mm (1-3/8") Drilling Diameter • Two Prong • KW20 Drive

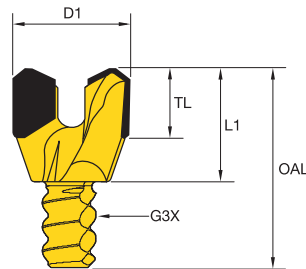
order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3041308	RB35G	35	1.38	KW20	20	.79	41	1.61	71	2.79



■ 35mm (1-3/8") Drilling Diameter • Two Prong • Square .5" Drive

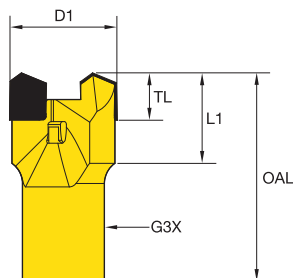
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1011229	RD1 3/8	35	1.38	1/2 Square	20	.80	35	1.37	72	2.84
1011260	RDP1 3/8	35	1.38	1/2 Square	14	.54	34	1.35	73	2.85

Roof Bits



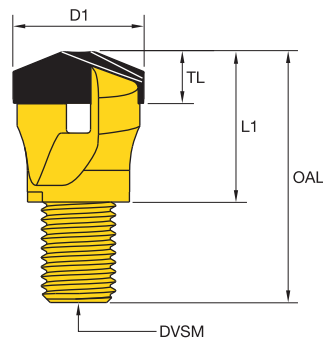
■ 34mm (1-5/16") Drilling Diameter • Two Prong • KW20 Drive

order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3040900	RB34F	34	1.34	KW20	16	.63	37	1.46	67	2.64



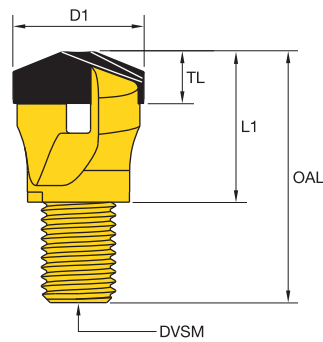
■ 28mm (1-1/8") Drilling Diameter • Two Prong • M14 Drive

order number	catalog number	D1		G3X	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3382400	RB28 M14	28	1.10	M14	12	.48	23	.92	54	5.12



■ 28mm (1-1/8") Drilling Diameter • Two Prong • M16 Drive

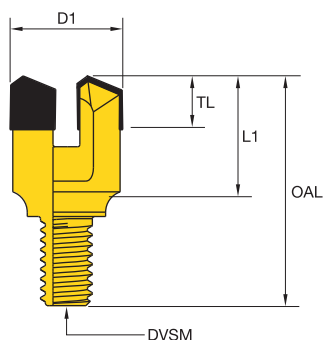
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3609044	RB282029399RR	28	1.10	M16	11	.44	32	1.25	53	2.08
3865401	RB28N1736HD	28	1.10	M16	12	.48	33	1.29	54	2.13



■ 27mm (1-1/16") Drilling Diameter • Two Prong • M16 Drive

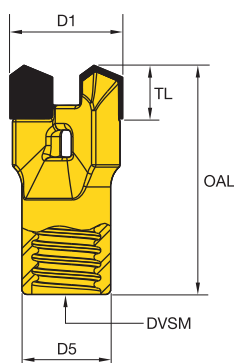
order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
3872437	RB271902	27	1.06	M16	12	.48	33	1.29	54	2.13
3609043	RB272029399RR	27	1.06	M16	11	.44	32	1.25	53	2.08





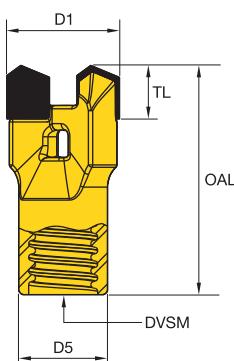
■ 27mm (1-1/16") Drilling Diameter • Two Prong • Whitworth .5" Drive

order number	catalog number	D1		DVSM	TL		L1		OAL	
		mm	in		mm	in	mm	in	mm	in
1075594	RB27NSF	26	1.04	1/2 Whitworth	12	.48	33	1.30	54	2.13



■ 24mm (15/16") Drilling Diameter • Two Prong • DIN 405 Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
4040320	RB24MM	24	.93	DIN 405	21	.81	12	.48	53	2.07



■ 22mm (7/8") Drilling Diameter • Two Prong • DIN 405 Drive

order number	catalog number	D1		DVSM	D5		TL		OAL	
		mm	in		mm	in	mm	in	mm	in
3872319	RB22	22	.87	DIN 405	20	.79	12	.48	53	2.07



Augers and Drilling Systems

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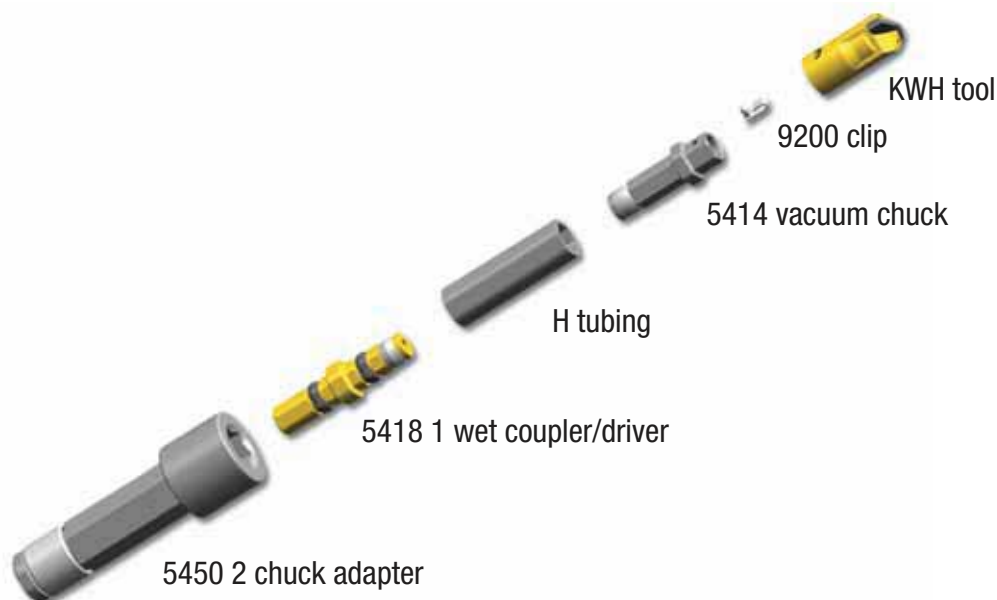
Whether you're wet or dry drilling, Kennametal's stackable hex drill steel is the most adaptable roof drilling system.

This system is fast, easy-to-use, and versatile. It lets you start and finish a hole with the same cutting tool.

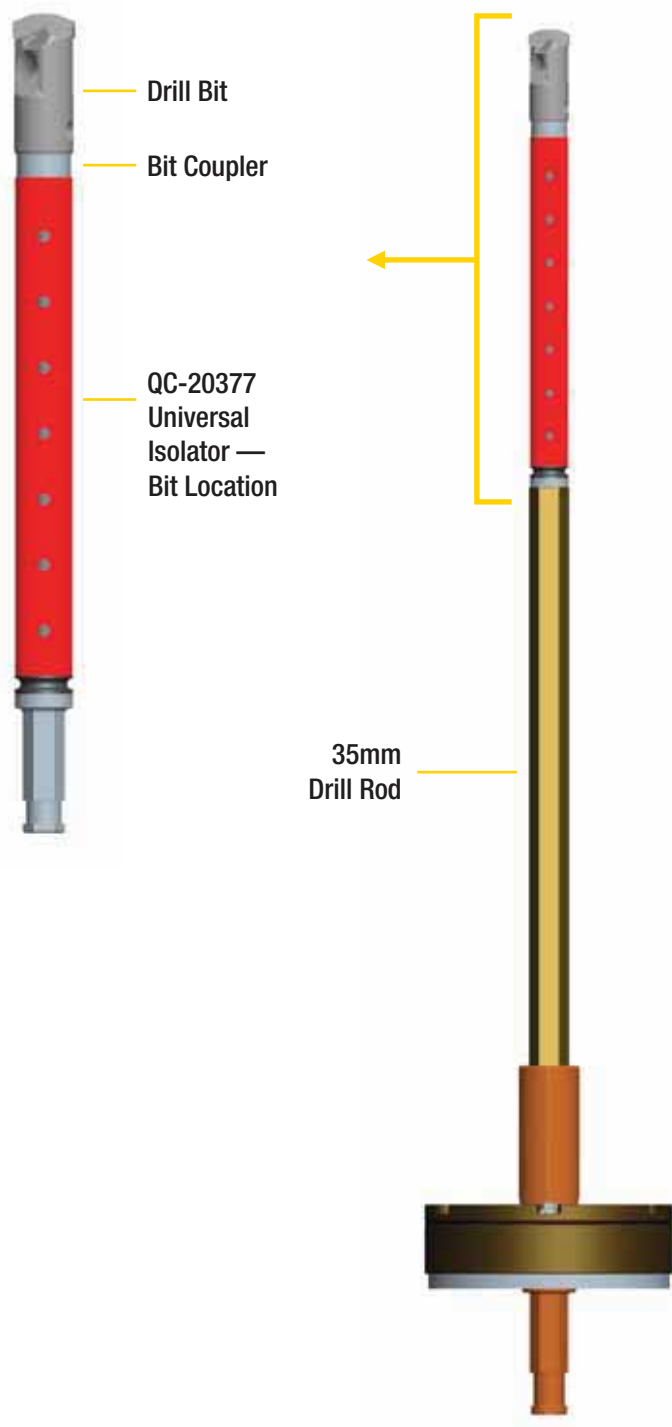
First, it's a starter steel. Just choose your cutting tool and accompanying chuck, and start drilling.

Second, it's a finishing steel. Just add a driver, which is another piece of hex steel, and a coupling, and continue drilling. Need to go deeper? Just add another piece of hex drill steel and a coupling.

At Kennametal, we believe your time is as valuable as your investment in our products. We'll help you save time and keep down your costs to hold up your roof.



Hear the Difference



THE CHALLENGE

Noise sources for roof bolting are centered roughly 4–8" below the drill steel and roof interface, as well as above the drill chuck. When drill steel advances during cutting, noise from the chuck drill steel increases, while the upper noise source effectively remains the same. Beamforming analysis revealed that the drill steel radiated a significant amount of noise.

To isolate the bit and chuck from the drill steel to reduce sound, Kennametal included a flexible, shock-absorbing material to the roof-bolting tool. Multiple tests were run to determine the best placement for this new material.

THE RESULT

Drilling conditions before isolators — 101 dB(A)

With bit isolator only — 98 dB(A) or a decrease of 3 dB(A)

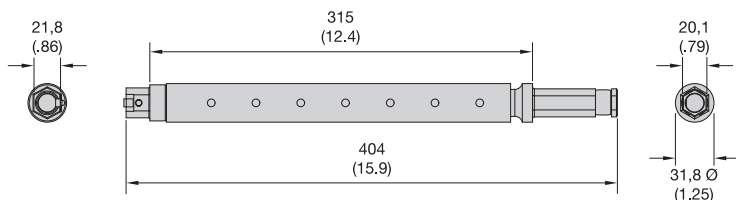
With bit isolator and chuck isolator — 94 dB(A) or a decrease of 7 dB(A)

Kennametal's combination of the bit isolator and chuck isolator considerably reduced vibrations transmitted to the drill steel, resulting in less noise.

Recommendations

- Welded end should be placed down.
- Maximum recommended thrust pressure of 8,000 lbs.
- Outer member should be inspected for any cracks, excessive wear, and dents.
- Keeper rings are recommended.
- When removing plugging, avoid impacting the isolator.
- Life of the isolator can be improved by avoiding excessive misalignment.

■ 1-3/8" Bit Isolator



order number	catalog number
5097019	1-3/8 BIT ISOLATOR

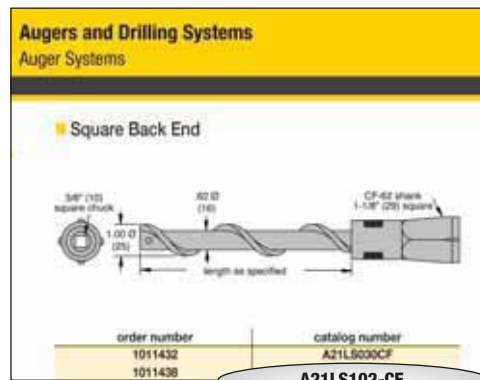
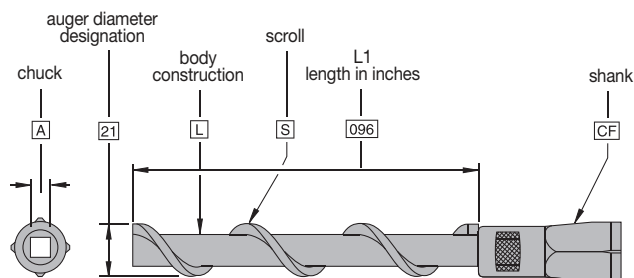
Effectively Addressing Hearing Loss



Bit and chuck isolators are examples of solutions designed within our safety standards.

For underground coal miners, hearing loss remains one of the most common occupational hazards.

Mining industry health and safety officials universally acknowledge hearing loss as a major health issue for employees. Noise-induced hearing loss can be caused by a one-time exposure to an intense “impulse” sound or by continuous exposure to loud sounds over an extended period of time, such as roof bolting. In order to increase the quality of life for roof bolters as well as decrease associated health costs for mining companies, Kennametal provided an effective solution for this health concern utilizing bit and chuck isolators.



A	21	L	S	102	CF
Chuck Letter Designation	Auger Diameter Designation*	Body Construction Designation	Scroll Letter Designation	L1 Length in Inches Designation	Shank Letter Designation

Tool Cutting Hole Dimension	Tool Drive Shank Size	
35mm (1-3/8") 44mm (1-3/4") 48mm (1-7/8")	12,5 (1/2) square	A
50mm (2")	16 (5/8) square	B
57mm (2-1/4") 63mm (2-1/2")	21 (13/16) hex	C
16mm (1") 16,5mm (1-1/32")	10 (3/8) square	D

21 = 1-5/16" 24 = 1-1/2"	L
26 = 1-5/8" 28 = 1-3/4"	L, P
28 = 1-3/4"	L, P
32 = 2"	P
16 = 1"	J

S = single scroll

as required

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*Diameter designation represents number of 1/16" of diameter in inches.

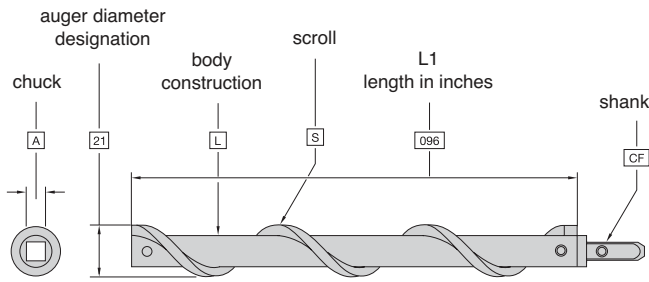
J, solid: 16mm (5/8")

L, solid: 22mm (7/8")

P, hollow: 29mm (1-1/8")

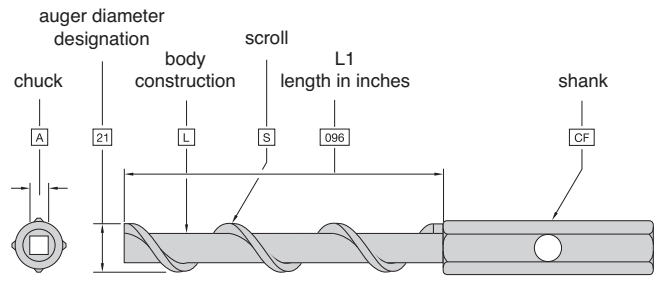
CA = 12,5mm (1/2") square coupling	KS3C = KS3C coupling
CF = 29mm (1-1/8") square	CF62 = CF62 shank
5137 = 29mm (1-1/8") hex	5143 = 5143 shank
WDL = 29mm (1-1/8") deep hex	H008H = H008H shank
WDP = 29mm (1-1/8") deep hex	NS = no drive shank
WD2 = 29mm (1-1/8") short hex	
TS = twist shank	

Lead/Middle Extension



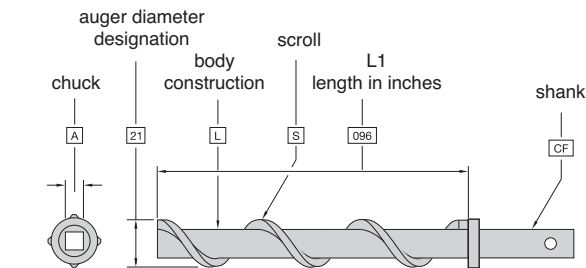
order number	catalog number
1011478	D16JS036KS3C
1011479	D16JS048KS3C

Hex Drive



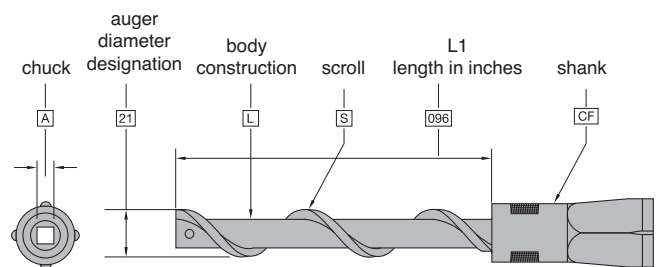
order number	catalog number
1011377	A21LS0185137
1011379	A21LS036 5137
1011382	A21LS060 5137
1011395	D16JS0365143
1011448	D16JS036H008H
1011397	D16JS0485143
1011449	D16JS048H008H

Lead/Middle Extension



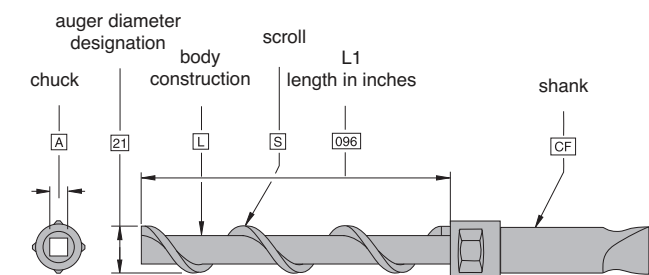
order number	catalog number
1011409	A21LS030CA
1011424	A21LS060CA
1011425	A21LS072CA

Square Drive



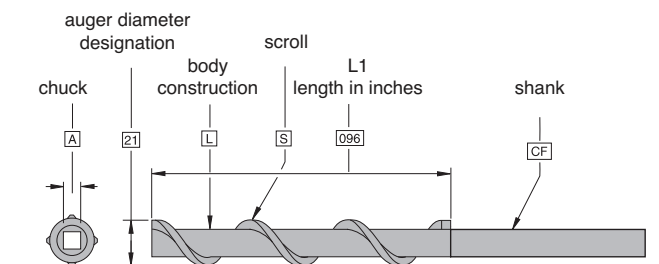
order number	catalog number
1011432	A21LS030CF
1011438	A21LS102CF
1011422	D16JS048CF62

Twist Shank Drive



order number	catalog number
1011368	A21LS018TS
1011371	A21LS036TS
3564400	A28LS048TS

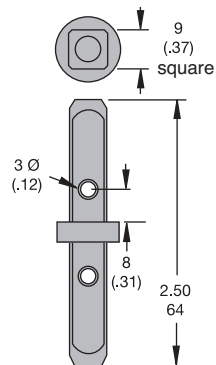
Non-Drive Shank



order number	catalog number
1010182	A24LS084NS4

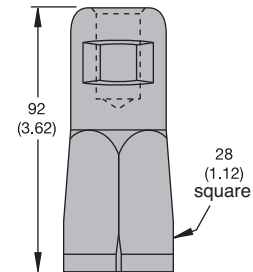
Dimensions below are shown in millimeters and (inches).

■ KS3C Coupling



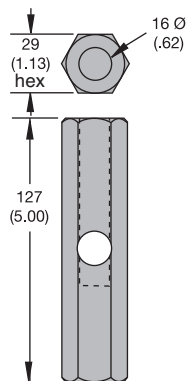
order number	catalog number
1012034	KS3C COUPLING

■ CF62 Shank



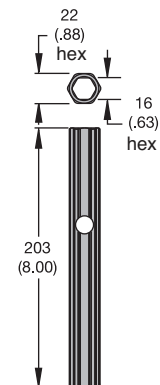
order number	catalog number
1012030	CF62 SHANK

■ 5143 Shank



order number	catalog number
1012064	5143 SHANK

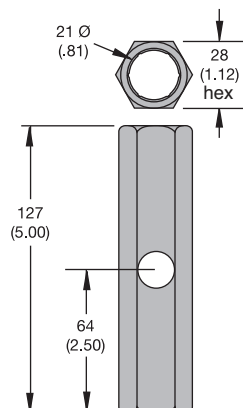
■ H008H Shank



order number	catalog number
1012135	H008H SHANK

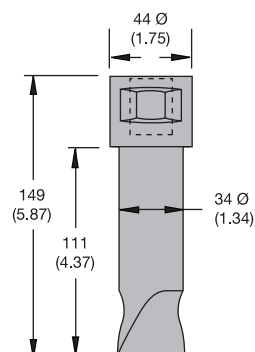
Dimensions below are shown in millimeters and (inches).

5137 Shank



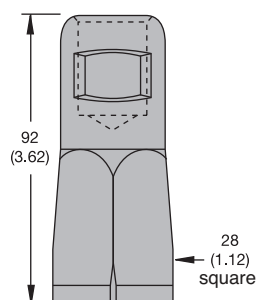
order number	catalog number
1012060	5137 SHANK

TS Shank



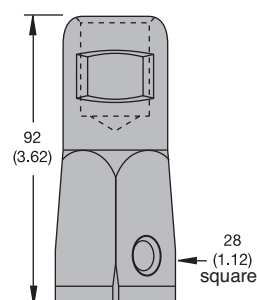
order number	catalog number
1012026	TS SHANK

CFL Shank



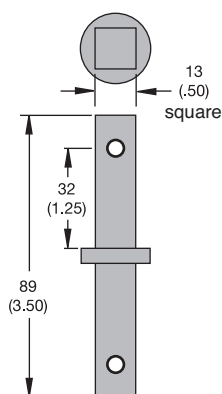
order number	catalog number
1012032	CFL SHANK

CFP Shank



order number	catalog number
1238331	CFP Shank

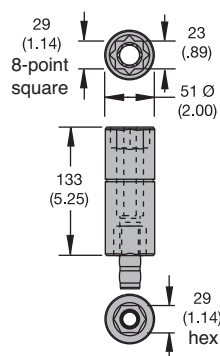
CA Coupling



order number	catalog number
1012027	CA COUPLING

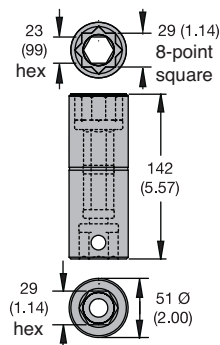
Dimensions below are shown in millimeters and (inches).

■ 5421 L8 Assembly



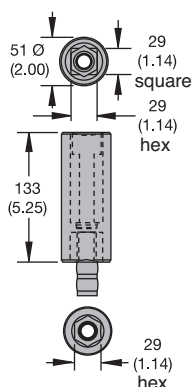
order number	catalog number
1012130	5421 L8 ASSEMBLY

■ 5421 8 Socket



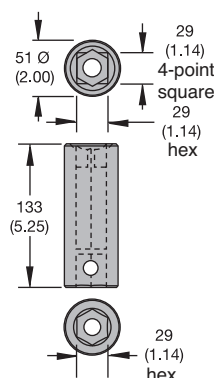
order number	catalog number
1012094	5421 8 SOCKET

■ 5422 L Assembly



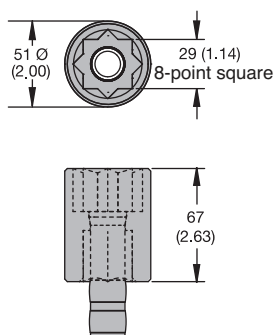
order number	catalog number
1012133	5422 L ASSEMBLY

■ 5422 Socket



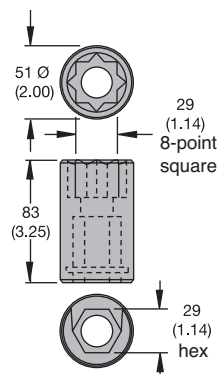
order number	catalog number
1012096	5422 SOCKET

■ 5121 L8 Assembly



order number	catalog number
1012143	5121 L8 ASSEMBLY

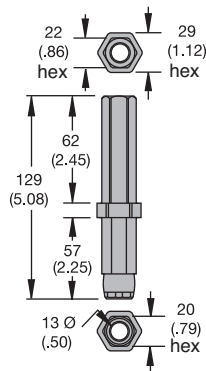
■ 5121 8 Socket



order number	catalog number
1012050	5121 8 SOCKET

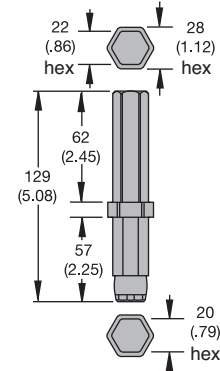
Dimensions below are shown in millimeters and (inches).

■ 5420 Adapter



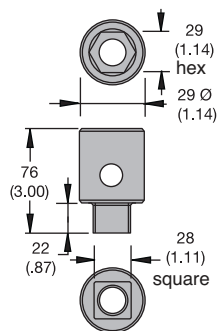
order number	catalog number
1012092	5420 ADAPTER

■ 5420 S Adapter



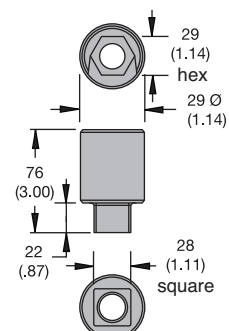
order number	catalog number
1012090	5420S SHANK

■ VFD



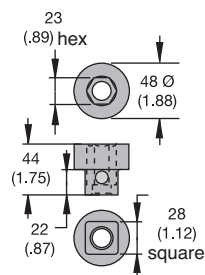
order number	catalog number
1012070	VFD

■ VFH



order number	catalog number
1012048	VFH

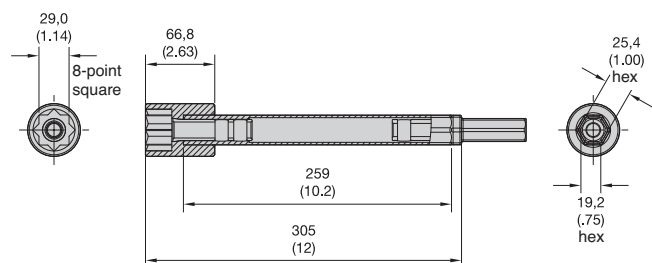
■ 5451 Shank



order number	catalog number
1012103	5451 SHANK

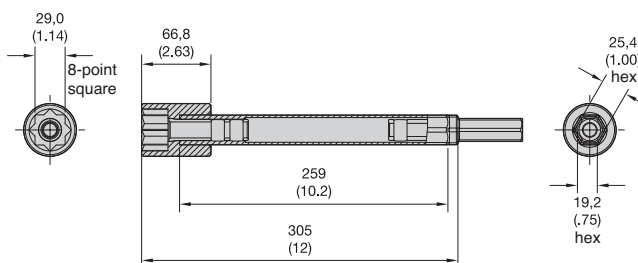
Dimensions below are shown in millimeters and (inches).

■ **5121L8/5420 Wrench Assembly**



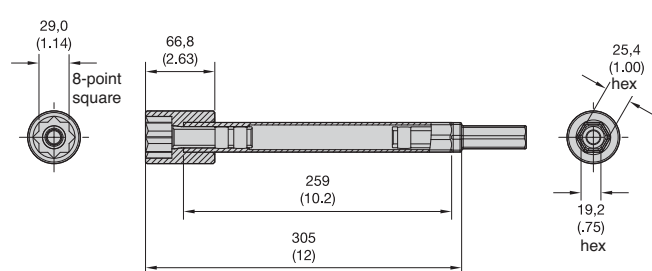
order number	catalog number
1011562	5121L80125420
1011563	5121L80185420
1011564	5121L80245420

■ **5421/5420 Wrench Assembly**



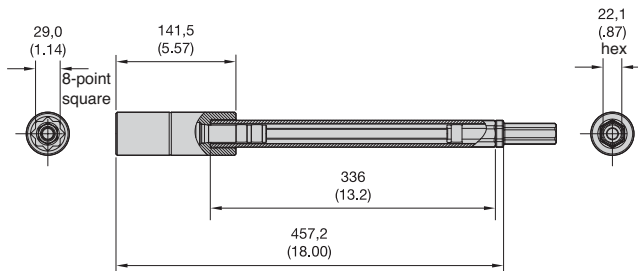
order number	catalog number
1011661	5421L80185420
1011663	5421L80245420
1011665	5421L80485420

■ **5421 Wrench Assembly**



order number	catalog number
1011699	5421024C
3883859	5421036C
4048866	5421048C

■ **5422 Wrench Assembly**



order number	catalog number
1601397	5422036C
1601396	5422048C

Augers and Drilling Systems

Kennametal's bit isolator is the industry standard for reducing noise in underground mine roof drilling. No one else has this technology.



Bit Isolators

Kennametal's bit and chuck isolators are tested and proven to significantly reduce noise levels of underground roof drilling.

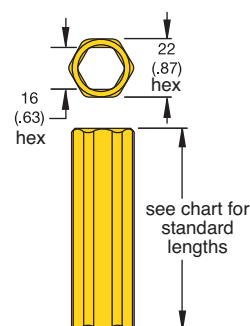
Underground roof drilling creates an intense level of noise for the drill operator. Because equipment operators cannot be exposed to noise levels beyond government-defined limits, it's important to reduce noise as much as possible.

The drill steel-isolator-drill-steel sequence isolates the vibration and noise that travels the length of the drill steel. Testing of our bit isolator has shown a noise reduction of 3–8 db in drilling operations.

Combine the Kennametal bit isolator with a standard roof bit and regular drill steel to achieve lower drilling noise levels in your mine.



- Order as "H [length in inches] H". (Example: for an 8-ft length, order H096H; full-length, H144H).
- Standard lengths listed. Contact your nearest Kennametal Representative regarding custom lengths.

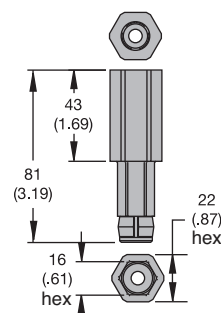
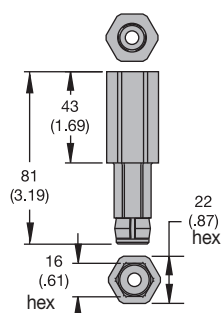


order number	catalog number	length
1011472	H024H Tubing	24"
3102957	H026H Tubing	26"
1011484	H030H Tubing	30"
1011485	H036H Tubing	36"
1011487	H042H Tubing	42"
1011488	H048H Tubing	48"
1011489	H054H Tubing	54"
1011490	H060H Tubing	60"
1011492	H072H Tubing	72"
1011494	H084H Tubing	84"
1011495	H096H Tubing	96"
1011496	H108H Tubing	108"
1011498	H120H Tubing	120"
1011499	H144H Tubing	144"

Dimensions below are shown in millimeters and (inches).

7/8" Hex System and 1/2" Square Bit Chuck

7/8" Hex System and 1/2" Whitworth Thread Bit Chuck

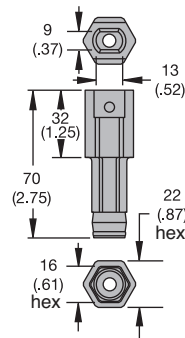


order number	catalog number
1012088	5417 CHUCK ASSEMBLY

order number	catalog number
1012072	5407 CHUCK

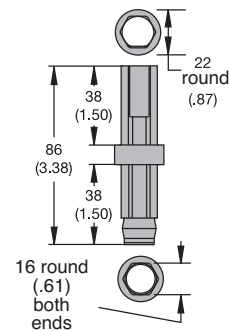
Dimensions below are shown in millimeters and (inches).

7/8" Hex System Bit Chuck



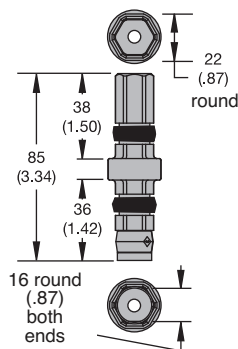
order number	catalog number
1012078	5412 CHUCK
2974559	5414RD ADAPTER

7/8" Hex System Coupler Vacuum



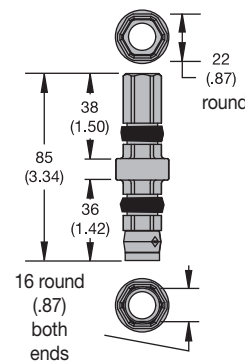
order number	catalog number
2974562	5416RD ADAPTER

7/8" Hex System Coupler Wet



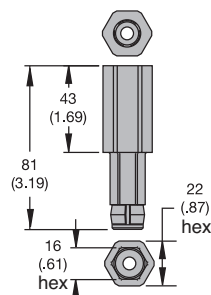
order number	catalog number
3335935	5418-1RD COUPLER

7/8" Hex System Coupler Wet High Volume



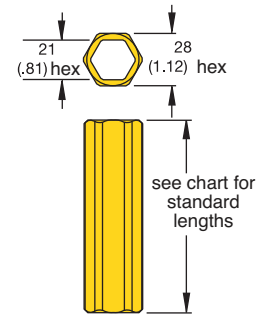
order number	catalog number
3583805	5418-2RD

7/8" Hex System and M16 Thread Bit Chuck



order number	catalog number
1012074	5408 CHUCK

- Order as "C [length in inches] C". (Example: for an 8-ft length, order C096C; full-length tubing, C144C).
- Standard lengths listed. Contact your nearest Kennametal Representative regarding custom lengths.

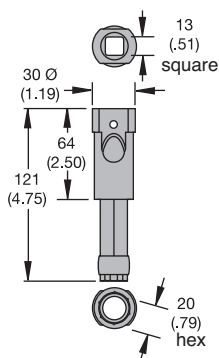


order number	catalog number	length
1011511	C018C Tubing	18"
1011512	C024C Tubing	24"
1011515	C036C Tubing	36"
1011516	C042C Tubing	42"
1011517	C048C Tubing	48"
1011520	C054C Tubing	54"
1011521	C060C Tubing	60"
1011523	C072C Tubing	72"
1011525	C078C Tubing	78"
1011526	C084C Tubing	84"
1011529	C096C Tubing	96"
1011532	C120C Tubing	120"
1011535	C144C Tubing	144"

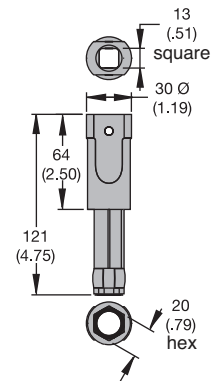
Dimensions below are shown in millimeters and (inches).

■ VAH Vacuum Chuck

■ 1-1/8" Hex System and 1/2" Square Bit Chuck



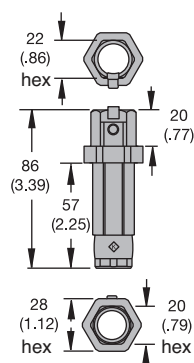
order number	catalog number
1012046	VAH



order number	catalog number
1012112	WAH CHUCK

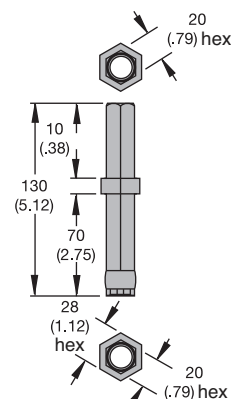
Dimensions below are shown in millimeters and (inches).

1-1/8" Hex System and 3/4" Bit Chuck



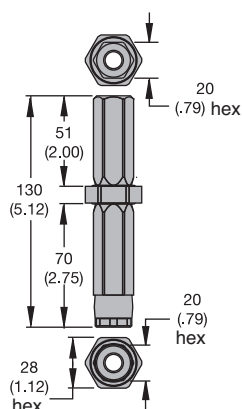
order number	catalog number
1012116	5522 SHANK ASSEMBLY

1-1/8" Hex System Coupler Vacuum



order number	catalog number
1012043	VCH COUPLING ASSEMBLY

1-1/8" Hex System Coupler Wet



order number	catalog number
1012114	WCH COUPLING ASSEMBLY



Dimensions below are shown in millimeters and (inches).

■ 3-Way Vacuum Chuck



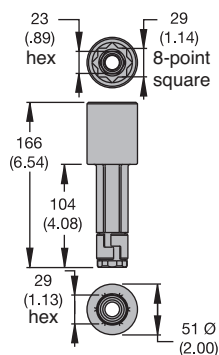
order number	catalog number
1012110	MID KEY FLETCHER CHUCK

■ 3-Way Wet Chuck



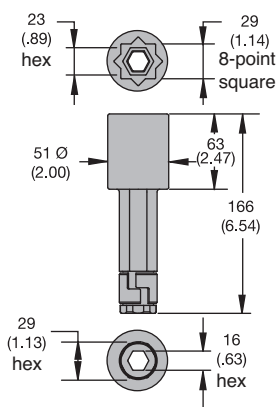
order number	catalog number
1013287	RINEER DBL HX DRILL MTR CHUCK

■ 1-1/8" 8-Point and 7/8" Hex Chuck Adapter



order number	catalog number
1012137	5450 1 CHUCK
1117179	5450 1 SHORT CHUCK ADAPTER
1012100	5450 CHUCK ADAPTER

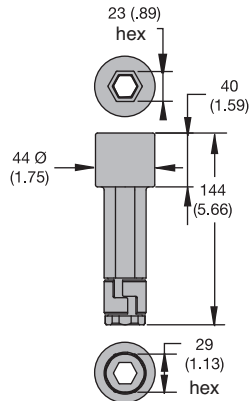
■ 5/8" and 7/8" and 1-1/8" 8-Point Chuck Adapter



order number	catalog number
2461029	5450 3 CHUCK ADAPTER

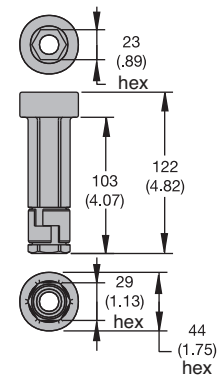
Dimensions below are shown in millimeters and (inches).

■ 5/8" and 7/8" Chuck Adapter



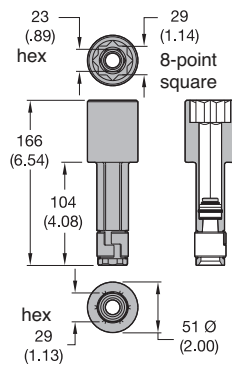
order number	catalog number
2454683	5450 2 CHUCK ADAPTER

■ 7/8" Chuck Adapter



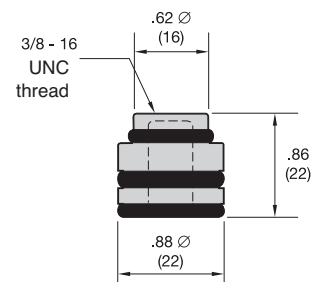
order number	catalog number
1117376	5450 SHORT CHUCK ADAPTER

■ 5450 Wet Chuck Adapter



order number	catalog number
1012119	5450 WET CHUCK ADAPTER

■ 5450 Replacement Water Seal



order number	catalog number
1012041	WATER SEAL - 5450 ADAPTER

■ 19mm • Hex



order number	catalog number
3582459	DS19H-16M-1200
3582451	DS19H-16M-1500
3582446	DS19H-16M-1800
3582458	DS19H-16M-2000
3582448	DS19H-16M-2200
3618428	DS19H-16M-2400

■ 19mm • Round



order number	catalog number
3631209	DS19R-16M-1200

■ 22mm • Hex



order number	catalog number
3582444	DS22H-20M-1200
3582454	DS22H-20M-1500
3125873	DS22H-20M-1800
3582430	DS22H-20M-2400

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Wear Solutions

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Underground mining takes equipment into rough conditions. Unprotected, tooling can suffer wear damage that can slow or even halt production. You can't afford that.

Kennametal is the global benchmark for effectively combating extreme wear. Regardless of how demanding the environment, we provide an unbeatable portfolio of affordable, best-in-class solutions for abrasion- and impact-resistant plates, welding consumables, electrodes, and pins — all designed for your specific requirements.

Kennametal develops **Engineered Solutions** because we know that every mine, mill, quarry, and plant has unique requirements that can't accept a "one-size-fits-all" solution. By working directly with customers, we utilize in-house expertise and capabilities to provide custom, finished solutions quickly.

Weight Reduction can be critical in reducing overall costs. Excess weight translates into higher costs in tires, fuel, and maintenance. By employing advanced material solutions, Kennametal can improve the life of your equipment while reducing weight — saving you valuable time and money.

100% Safe Is Kennametal's Goal. Anytime a mill, mine, or plant is shut down for maintenance, the risk for safety issues increases. By utilizing Kennametal solutions to extend tool life, we assist in improving safety conditions: less welding, less movement of materials, less of a need for scaffolding to replace worn out liners means a safer environment.

Consider **Price vs. Cost.** Many customers reference "cost per pound or kilo" as a method to measure costs. However, many do not consider the overall cost of the product:

- Downtime for maintenance to repair and replace tools results in lost production.
- Producing and managing Drop Management, if buying plate, adds time to the process.

Extended Uptime is an excellent measurement of value. Our goal is to keep you up and running, because more uptime means:

- Equipment running, generating profits.
- Reduced risks for safety issues.
- Employees are hard at work, rather than concentrating on maintenance issues.



■ **Product Selector •**

Material Transfer and Handling

Application/Component		Common Wear Problem			Wear Solution	
		(A)	(I)	(C)	Tri-Braze™	Tri-Braze Dura-Plus™
		Abrasion	Impact	Corrosion	A, I	A, I
	Truck Bed Liners	•	•		•	•
	Buckets and Shovels — Pins	•	•			
	Buckets and Shovels — Lips	•	•		•	•
	Bucket Liners	•	•		•	•
	Dozers — Blade Liners	•	•		•	•
	Dozers — Cutting Edges	•	•		•	•
	Screw Conveyor	•	•	•	•	•
	Chutes	•	•	•	•	•
	Transfer Points	•	•	•	•	•
	LHD (Load-Haul-Dump) Bucket Lips	•	•		•	•
	Coal Bins	•	•	•		•
	Grader Blades	•	•			

Wear Solution					
Super-C™	Duracorr®	Special Treated/ Induction Hardened Pins	Prime Arc™ Wire & Electrodes for Overlay	KenCast™	Dual Carbide Blade
A	A, C	A	A, I, C	A, I	A
•			•		
		•	•		
			•	•	
•			•		
•			•		
			•		
•	•		•	•	
•	•		•		
•	•		•	•	
			•	•	
	•		•		
					•

■ **Product Selector •**

Crushing

Application/Component		Common Wear Problem			Wear Solution	
		(A)	(I)	(C)	Tri-Braze™	Tri-Braze Dura-Plus™
		Abrasion	Impact	Corrosion	A, I	A, I
	Crusher Liners	•	•	•	•	•
	Screens	•	•	•	•	•
	Chutes	•	•	•	•	•
	Transfer Points	•	•	•	•	•
	Hammers	•	•		•	•
	Grizzly Bars	•	•		•	•
	Vertical Shaft Impact (VSI) Crusher Center Feed Disks	•				
	Drum Vanes	•				
	CLA (Continuous Loading Arms)	•				

Wear Solution					
Super-C™	Duracorr®	Special Treated/ Induction Hardened Pins	Prime Arc™ Wire & Electrodes for Overlay	KenCast™	Dual Carbide Blade
A	A, C	A	A, I, C	A, I	A
•	•		•		
	•		•		
•	•		•		
•	•		•	•	
			•	•	
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				•	
				•	
				•	



KenCast Wear Protection

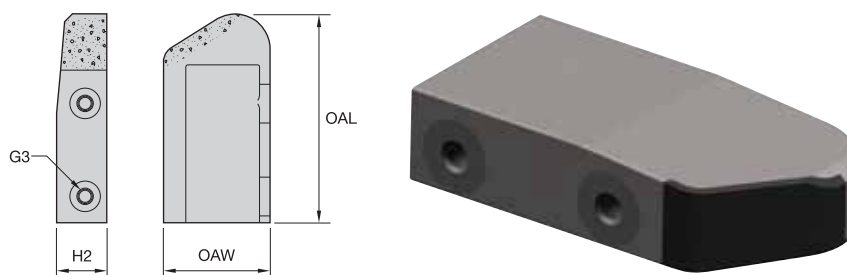
Underground mining takes your tooling equipment into rough conditions.

Unprotected, tooling can suffer wear damage that can slow or halt production. You can't afford that.

By utilizing KenCast wear protection, you can dramatically improve tooling life. Use it on longwall drums, continuous miners, shearer drums, continuous loading arms, and any other equipment that encounters abrasive materials.

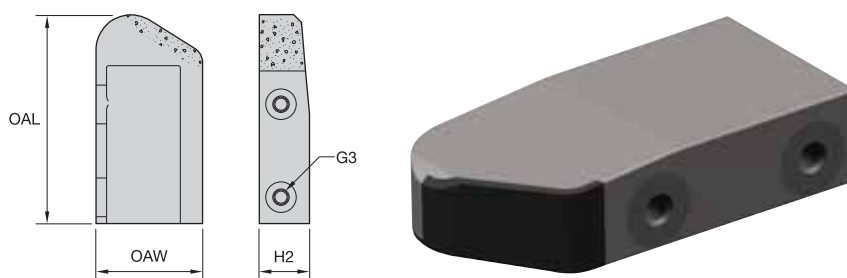


- Proprietary, unique tungsten carbide prevents premature wear damage to equipment.
- Tungsten carbide particles are metallurgically bonded to air-hardened steel for extreme abrasion and impact resistance.
- During use, the smooth, encased outer layer of steel gradually wears to expose the tungsten carbide particles that protect your equipment from abrasive applications.



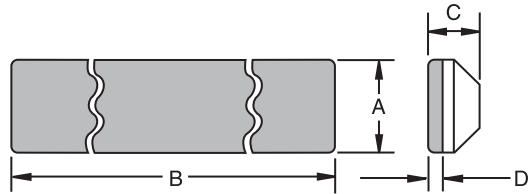
■ CLA • Left Hand

order number	catalog number	G3	H2		OAL		OAW	
			mm	in	mm	in	mm	in
1968133	CLA3-13LA	1 - 8 UNC	83	3.25	343	13.50	175	6.88
5116774	CLA3-13LA-M24	M24	83	3.25	343	13.50	175	6.88
1786378	CLA3-15LA	1 - 8 UNC	83	3.25	381	15.00	175	6.88
1852999	CLA4-15LA	1 - 8 UNC	100	3.94	381	15.00	175	6.88
2451652	CLA4-15LA-M24	M24	100	3.94	381	15.00	175	6.88
2609706	CLA6-15LA	1 - 8 UNC	151	5.94	381	15.00	175	6.88



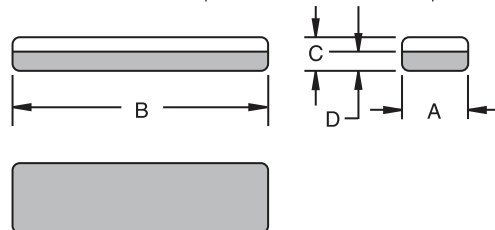
■ CLA • Right Hand

order number	catalog number	G3	H2		OAL		OAW	
			mm	in	mm	in	mm	in
1967832	CLA3-13RA	1 - 8 UNC	83	3.25	343	13.50	175	6.88
5116773	CLA3-13RA-M24	M24	83	3.25	343	13.50	175	6.88
1786377	CLA3-15RA	1 - 8 UNC	83	3.25	381	15.00	175	6.88
1852998	CLA4-15RA	1 - 8 UNC	100	3.94	380	15.00	175	6.88
2451651	CLA4-15RA-M24	M24	100	3.94	381	15.00	175	6.88
2609707	CLA6-15RA	1 - 8 UNC	151	5.94	381	15.00	175	6.88



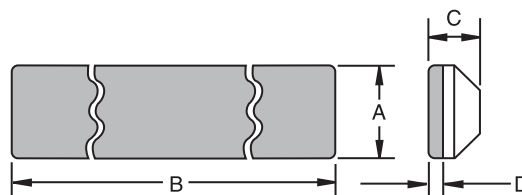
■ Standard Bars with Weld Bevel

order number	catalog number	A		B		C		D	
		mm	in	mm	in	mm	in	mm	in
1094287	KCWB-0367	25,4	1	50,8	2	12,7	1/2	3,18	1/8
1012536	KCWB-0246	25,4	1	50,8	2	12,7	1/2	6,35	1/4
1624932	KCWB-0414	15,88	5/8	133,35	5-1/4	15,88	5/8	6,35	1/4
1012544	KCWB-0254	15,88	5/8	50,8	2	19,05	3/4	6,35	1/4
1012504	KCWB-0201	15,88	5/8	101,6	4	19,05	3/4	6,35	1/4
1012545	KCWB-0255	19,05	3/4	50,8	2	19,05	3/4	6,35	1/4
1155344	KCWB-0378	19,05	3/4	127	5	19,05	3/4	6,35	1/4
1012633	KCWB-0055-20	25,4	1	50,8	2	19,05	3/4	6,35	1/4
1012634	KCWB-0055-30	25,4	1	76,2	3	19,05	3/4	6,35	1/4
1012635	KCWB-0055-35	25,4	1	88,9	3-1/2	19,05	3/4	6,35	1/4
1012636	KCWB-0055-40	25,4	1	101,6	4	19,05	3/4	6,35	1/4
1012637	KCWB-0055-50	25,4	1	127	5	19,05	3/4	6,35	1/4
1012638	KCWB-0055-60	25,4	1	152,4	6	19,05	3/4	6,35	1/4
1012639	KCWB-0055-80	25,4	1	203,2	8	19,05	3/4	6,35	1/4
1012447	KCWB-0096	25,4	1	254	10	19,05	3/4	6,35	1/4
1012448	KCWB-0097	25,4	1	304,8	12	19,05	3/4	6,35	1/4
1083967	KCWB-0362	38,1	1-1/2	50,8	2	19,05	3/4	6,35	1/4
1012436	KCWB-0067	38,1	1-1/2	127	5	19,05	3/4	6,35	1/4
1012640	KCWB-0056-20	50,8	2	50,8	2	19,05	3/4	6,35	1/4
1012641	KCWB-0056-35	50,8	2	88,9	3-1/2	19,05	3/4	6,35	1/4
1012642	KCWB-0056-40	50,8	2	101,6	4	19,05	3/4	6,35	1/4
1012643	KCWB-0056-60	50,8	2	152,4	6	19,05	3/4	6,35	1/4
1012644	KCWB-0056-80	50,8	2	203,2	8	19,05	3/4	6,35	1/4
1012628	KCWB-0342	50,8	2	254	10	19,05	3/4	6,35	1/4



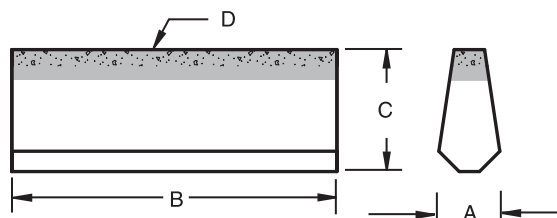
■ Standard Wear Bars

order number	catalog number	A		B		C		D	
		mm	in	mm	in	mm	in	mm	in
1012566	KDWB-0277	25,4	1	203,2	8	6,35	1/4	3,18	1/8
1012515	KCWB-0216	38,1	1-1/2	152,4	6	6,35	1/4	3,18	1/8
1012512	KCWB-0210	50,8	2	50,8	2	6,35	1/4	3,18	1/8
1012567	KCWB-0278	50,8	2	203,2	8	6,35	1/4	3,18	1/8
1012532	KCWB-0241	76,2	3	152,4	6	6,35	1/4	3,18	1/8
1012461	KCWB-0132	12,7	1/2	101,6	4	12,7	1/2	6,35	1/4
1012586	KCWB-0300	19,05	3/4	101,6	4	12,7	1/2	6,35	1/4
1174410	KCWB-0301	25,4	1	76,2	3	12,7	1/2	6,35	1/4
1012454	KCWB-0114	25,4	1	101,6	4	12,7	1/2	6,35	1/4
1012494	KCWB-0188	38,1	1-1/2	127	5	12,7	1/2	6,35	1/4
1012445	KCWB-0092	50,8	2	76,2	3	12,7	1/2	6,35	1/4
1012614	KCWB-0329	50,8	2	133,35	5-1/4	12,7	1/2	6,35	1/4
1012444	KCWB-0091	50,8	2	152,4	6	12,7	1/2	6,35	1/4
1012450	KCWB-0100	50,8	2	203,2	8	12,7	1/2	6,35	1/4
1012446	KCWB-0095	50,8	2	400,05	15-3/4	12,7	1/2	6,35	1/4
1012435	KCWB-0065	76,2	3	101,6	4	12,7	1/2	6,35	1/4
1012539	KCWB-0249	76,2	3	152,4	6	12,7	1/2	6,35	1/4
1714701	KCWB-0302	25,4	1	114,3	4-1/2	15,88	5/8	6,35	1/4
1012442	KCWB-0083	12,7	1/2	69,85	2-3/4	19,05	3/4	6,35	1/4
1012492	KCWB-0186	38,1	1-1/2	254	10	19,05	3/4	6,35	1/4
1012575	KCWB-0286	127	5	304,8	12	19,05	3/4	6,35	1/4
1714704	KCWB-0010	177,8	7	330,2	13	50,8	2	6,35	1/4



■ Standard Bars with Weld Bevel

order number	catalog number	A		B		C		D	
		mm	in	mm	in	mm	in	mm	in
1324494	KCWB-0384	63,5	2-1/2	203,2	8	19,05	3/4	6,35	1/4
1324495	KCWB-0395	63,5	2-1/2	304,8	12	19,05	3/4	6,35	1/4
1012437	KCWB-0073	66,68	2-5/8	133,35	5-1/4	19,05	3/4	6,35	1/4
1012645	KCWB-0057-20	76,2	3	50,8	2	19,05	3/4	6,35	1/4
1012646	KCWB-0057-35	76,2	3	88,9	3-1/2	19,05	3/4	6,35	1/4
1012647	KCWB-0057-40	76,2	3	101,6	4	19,05	3/4	6,35	1/4
1012648	KCWB-0057-60	76,2	3	152,4	6	19,05	3/4	6,35	1/4
1012649	KCWB-0057-80	76,2	3	203,2	8	19,05	3/4	6,35	1/4
1012622	KCWB-0337	101,6	4	330,2	13	19,05	3/4	6,35	1/4
1012618	KCWB-0333	152,4	6	254	10	19,05	3/4	6,35	1/4
1080018	KCWB-0345	44,45	1-3/4	228,6	9	22,23	7/8	6,35	1/4
1012422	KCWB-0019	50,8	2	228,6	9	22,23	7/8	6,35	1/4
1308317	KCWB-0389	15,88	5/8	76,2	3	25,4	1	6,35	1/4
1502226	KCWB-0399	19,05	3/4	203,2	8	25,4	1	6,35	1/4
1012443	KCWB-0084	25,4	1	101,6	4	25,4	1	6,35	1/4
1012423	KCWB-0022	50,8	2	254	10	25,4	1	6,35	1/4
1012452	KCWB-0105	50,8	2	304,8	12	25,4	1	6,35	1/4
1012449	KCWB-0098	127	5	203,2	8	25,4	1	6,35	1/4
1085557	KCWB-0094	222,25	8-3/4	273,05	10-3/4	25,4	1	6,35	1/4
1012573	KCWB-0284	50,8	2	330,2	13	31,75	1-1/4	6,35	1/4
1919347	KCWB-0471	38,1	1-1/2	152,4	6	25,4	1	6,35 + 101,6	1/4 + 4
2036144	KCWB-0496	152,4	6	152,4	6	31,75	1-1/4	6,35 + 101,6	1/4 + 4



■ Standard Bars with Weld Bevel

order number	catalog number	A		B		C		D	
		mm	in	mm	in	mm	in	mm	in
1012598	KCWB0313	20,64	13/16	152,4	6	44,45	1-3/4	6,35 + 101,6	1/4 + 4
2259012	KCWB0515	19,05	3/4	101,6	4	38,1	1-1/2	negative 101,6 + 152,4	negative 4 + 6



Tri-Braze™

Impact- and Abrasion-Resistant Alloy Steel

Designed to tackle your toughest abrasion and impact applications, Tri-Braze combines a balance of alloying elements with controlled heat treating and extremely low sulfur for an ideal hardness/toughness ratio.

Tri-Braze is the standard by which all other impact- and abrasion-resistant alloy steels are measured.

Features and Benefits

- High hardness for better wear resistance (444 BHN).
- Balanced alloy steel chemistry for optimum hardness/toughness ratio.
- Extremely low sulfur content, fine-grain structure, and excellent internal cleanliness provides the highest impact resistance in the industry.
- Tri-Braze chemistry and processing ensures full hardness throughout the plate and avoids the soft middle of lesser quality plates.
- Long performance life and less downtime lowers overall maintenance costs.
- Tri-Braze chemistry provides excellent weldability in field conditions.
- Available in thicknesses up to 254mm (10"), widths up to 3048mm (120"), and lengths up to 7315mm (288").



Tri-Braze™ Dura-Plus™

The Next Generation of Abrasion-Resistant Alloy Steel

Tri-Braze Dura-Plus is the next step in the evolution of abrasion- and impact-resistant alloy steels. This proprietary technology provides a combination of hardness, toughness, formability, and weldability that is unavailable in any other wear plate.

Tri-Braze Dura-Plus is designed for extreme wear conditions. It is the perfect choice for liners, chutes, cutting edges, and blades in mining, quarrying, earth moving, manufacturing, and material-handling applications.

Features and Benefits

- Average hardness exceeds 470 BHN.
- Longest performance life in the industry reduces downtime to lower overall maintenance costs.
- Tri-Braze Dura-Plus chemistry provides excellent weldability in field conditions.
- Balanced alloy steel chemistry for optimum hardness/toughness ratio.
- Extremely low sulfur content, fine-grain structure, and excellent internal cleanliness provides the highest impact resistance in the industry.
- Tri-Braze Dura-Plus chemistry and processing ensures full hardness throughout the plate and avoids the soft middle of lesser quality plates.
- Available in thicknesses up to 20mm (3/4"), widths up to 3048mm (120"), and lengths up to 5880mm (240").



Super-C™

Chromium Carbide Abrasion-Resistant Plate

Super-C is a chromium carbide overlay, wear-resistant plate with a mild steel base for weldability. The Kennametal Tricon™ unique cladding process produces a harder, tougher, and more wear-resistant surface, making Super-C superior to other chromium carbide plates.

Features and Benefits

- Mild steel base plate can be easily welded, bolted, or studded to existing structures.
- Can be applied to nickel-based, stainless, and other steel substrates.
- Ideal for severe-abrasion and moderate-impact applications.
- Maximum carbide concentration and alignment throughout the proprietary process.
- Consistent hardness and controlled chemistry.
- Excellent impact, abrasion, corrosion, and heat resistance.
- Proprietary herringbone pattern breaks up flow channels and premature plate wear, regardless of installation direction.



Duracorr®

Low-Carbon Stainless Steel

Duracorr 50®

A low carbon, 12% chromium dual-phase stainless steel. When compared to weathering, painted, or galvanized steels, it has a lifecycle cost advantage that enables its use in a wide variety of applications.

Duracorr 300®

Duracorr 300 is produced to a nominal hardness of 300 BHN for applications where both abrasion- and corrosion-resistance are required.

Features and Benefits

- Much higher yield strength than Type 304 stainless steels.
- Substantially more corrosion resistant than weathering, painted, or galvanized steels.
- High toughness.
- Excellent formability.
- Good elevated temperature yield strength.
- Weldable using conventional welding processes (SMAW, GMAW, FCAW).
- Coefficient of sliding friction comparable to Type 304 stainless in polished surface condition.



Special Treated Pins

Delivering the Ultimate in Quality and Performance

Through careful selection and control of raw materials and proprietary processing, Kennametal Tricon™ Special Treated Pins are the ultimate in quality and performance. The final result is a product that delivers substantial savings, less equipment downtime, and increased productivity.

Induction Hardened Pins

Through the use of our proprietary material and the latest in heat-treat technology, Kennametal Tricon™ Induction Hardened Pins achieve an unmatched depth of hardness while still maintaining an extremely tough inner core.

Super-X™ Pins

Developed specifically for applications involving severe heat and wear, this unique pin is a composite product consisting of a tough inner core and a super-hard, heat-resisting surface.

Pin Stock

Downtime of wear-prone equipment is not always scheduled. To maximize your uptime, we maintain pin stock inventories to fill your order on short notice. Kennametal Tricon™ Pin Stock is mill certified, ultrasonically inspected, heat treated, straightened, and stress relieved to our specifications.

Manufacturing

Because Kennametal Tricon™ believes in producing the highest quality pin on the market, our machine shop has been equipped with the latest in CNC equipment. Manufacturing is closely monitored throughout the machining operation to ensure close tolerances and consistency.



Prime Arc™

Welding Consumables

Prime Arc welding consumables are designed to provide our customers with the highest quality hard surfacing, build-up, and joining products available in the industry.

More than 35 years of welding and fabrication experience has enabled us to develop a unique product line that provides extended service life while reducing costly downtime.

Joining

Prime Arc joining electrodes and wires are formulated for field welding under the most difficult field conditions. We have a full line of electrodes and wires designed to join high-strength abrasion-resistant steel, manganese steel, and dissimilar metals.

Build-Up

Rebuilt parts often exceed OEM specifications for service life. Prime Arc build-up consumables are used for repairing and resurfacing expensive, worn parts.

Hard Surfacing

Whatever your wear problem, there is a Prime Arc wire designed for your needs. We have a full line of chromium carbide, complex carbide, tungsten carbide, manganese, martensitic, and tool steel consumables that can handle hard rock, earth moving, metal-to-metal, and other demanding applications.

Tubular

Our unique tubular hard-surfacing rods provide extremely high deposition rates and are available in a variety of chromium and tungsten carbide formulations.

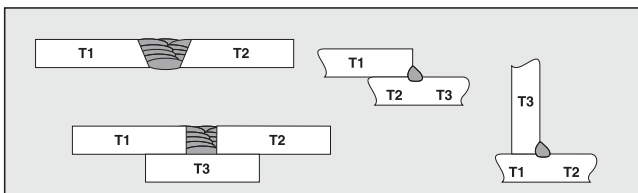
Welding Tri-Braze and Tri-Braze Dura-Plus — Designed with the Welder in Mind

1. Material Preparation

- Thoroughly remove rust, scale, grease, or oil from the weld areas.

Preheating Guidelines

		Combined Plate Thickness (T _{max})						
T _{max} = T1 + T2 + T3 =		25mm (1")	30mm (1.5")	51mm (2")	64mm (2.5")	76mm (3")	102mm (4")	127mm (5")
Preheat °F		21°C (70°F)	52°C (125°F)	66°C (150°F)	93°C (200°F)	107°C (225°F)	135°C (275°F)	149°C (300°F)
								204°C (400°F)



2. Preheating

- Preheating may be performed by furnace heating, localized gas torches, or thermal strip blankets.
- Localized preheating should be done in a manner to ensure that the weld area and 305mm (12") beyond are uniformly heated through the material thickness.
- Preheat must be maintained until all welding has been completed.
- Cyclic heating and large temperature differentials should be avoided.

3. Weld Interpass Temperature

- Maximum interpass temperature 260°C (500°F).

4. Filler Material

Shielded Metal Arc Welding

- Welding electrodes should meet AWS 5.5 E8018 C-3 classification.
- Tri-Weld 3™ electrodes recommended.
- Electrode size for this procedure should not exceed 4,76mm (3/16") diameter.
- Ensure the electrodes are free of moisture.

Flux Cored Arc Welding

- The following listed AWS 5.29 wires can be used: E80T1Ni1, E80T5Ni1, E80T5K1, and E81T1Ni1.
- Tri-Weld 3 FCG™ wire recommended.
- Wire should not exceed 2,38mm (3/32") diameter.

5. Post Weld

- Allow complete weldment to slow cool to ambient temperature.
- Post-weld thermal treatment is generally not necessary, but is suggested when the welded component is subject to extreme load conditions. When deemed necessary, the welded component can be stress relieved by heating to 204 °C (400 °F) and held for 1/2–1 hour per inch of thickness of the plate. The cooling should be done in still air.
- Post Weld Inspection — rough, irregular-shaped welds should be ground smooth to remove stress risers that could cause cracks. 48–72 hours after welding, visually examine for cracks, gouges, laps, undercut, or other imperfections.

6. Cold Forming

With adequate power and proper procedures, moderate forming is possible on all thicknesses. Tri-Braze requires 4x the power of carbon steel. Remove flame-cut and rough edges with a grinder in the bend area using the largest permissible forming radii. Generally, T8 is the minimum inside radius recommended.

7. Flame Cutting

Conventional flame-cutting procedures and fuels are satisfactory for Tri-Braze. Hardening of the cut edges may occur when the heated cut surface is drastically quenched by surrounding cold base metal. If machining torch-cut metal, allow sufficient stock removal to get below the hardened edge or preheat to approximately 204 °C (400 °F) prior to flame cutting. Plates that reach temperatures below 10 °C (50 °F) and plates thicker than 38mm (1-1/2") should be preheated to approximately 93 °C (200 °F).

8. Plasma Cutting

Conventional gases and machine procedures recommended by the supplier of the equipment are usually sufficient for successful plasma cutting of Tri-Braze. Plasma-cut heat-affected zones are generally shallower than cuts made with flame. However, the same precautions apply.

9. Machining

Tri-Braze can be drilled and machined through conventional methods. Please contact your Kennametal Tricon™ Representative for specific machining instructions.

Welding and Forming Guidelines for Super-C™ Cladded Wear Plate

Cutting Examples

Plasma arc cutting with conventional arc cutting techniques and gases are recommended for shape cutting, piercing large holes, and beveling.

Grinding

Grinding and EDM methods are the only proven, satisfactory methods for precision removal of metal. When grinding a hard-grit, a soft bond wheel is required. For non-precision metal removal and hole piercing, use carbon arc gouging.

Cold Forming

Generally, the power required to form Super-C will be approximately the same as required for low carbon.

Welding

Super-C is normally supplied with plasma arc cut edges ready for welding. Welding to carbon steel support structures is accomplished with either Multi-Alloy 85™ or Tri-Weld 3™ electrodes using the proper welding procedures. Care should be taken to prevent the clad portion of the plate from diluting the fillet weld.

1-Layer

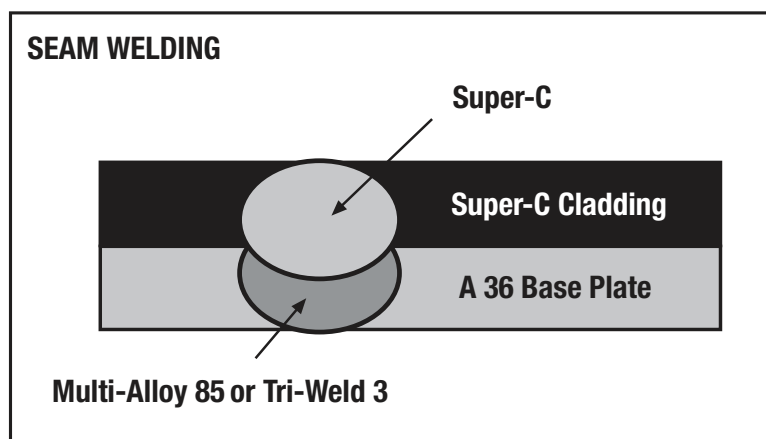
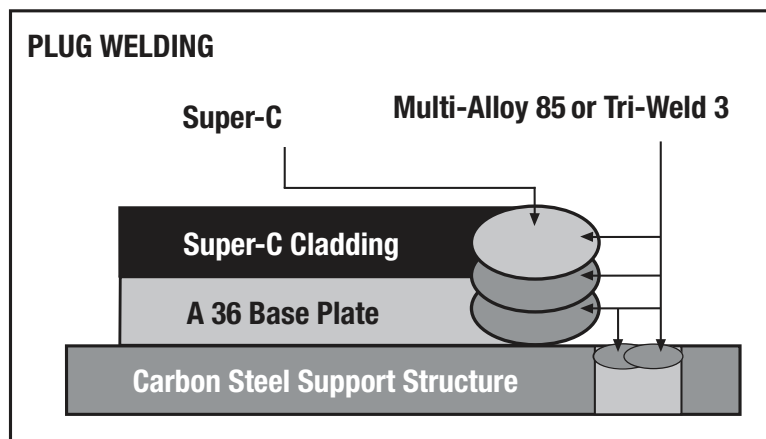
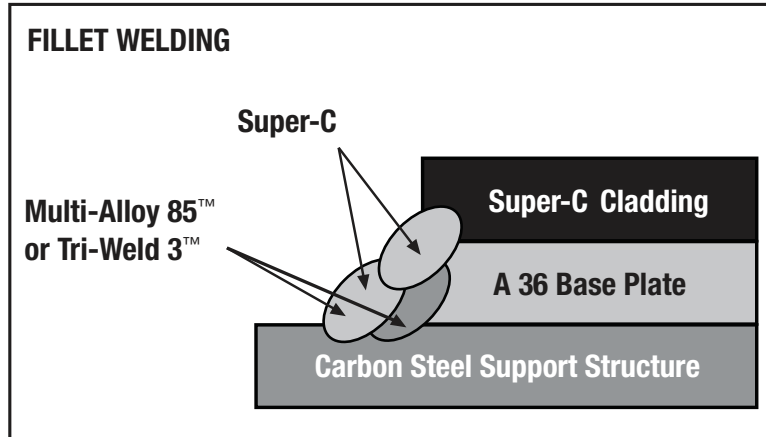
Nominal Thickness		Cladding Thickness*		Base Plate Thickness	
mm	inch	mm	inch	mm	inch
9,53	3/8	4,76	3/16	4,76	3/16
12,70	1/2	6,35	1/4	6,35	1/4
15,88	5/8	6,35	1/4	9,53	3/8
19,05	3/4	6,35	1/4	15,88	5/8
22,23	7/8	6,35	1/4	15,88	5/8
25,40	1	6,35	1/4	19,05	3/4

2-Layer

Nominal Thickness		Cladding Thickness*		Base Plate Thickness	
mm	inch	mm	inch	mm	inch
12,70	1/2	7,94	5/16	6,35	1/4
15,88	5/8	9,53	3/8	6,35	1/4
19,05	3/4	9,53	3/8	9,53	3/8
22,23	7/8	9,53	3/8	12,70	1/2
25,40	1	9,53	3/8	15,88	5/8

*Thicknesses generally exceed the nominal size by 1,59mm (1/16").

Examples:



Attachment Guidelines

These are general guidelines on how to apply KenCast to your equipment. However, weld applications may vary substantially, depending on the material to which KenCast is applied. Consult a local welding representative or contact your Kennametal Representative for recommendations on your particular application.

Weld Material

.052" wire (flux cored)	1/8" weld rod
• 7100 ESAB or equivalent, shielded with carbon dioxide • 22–24 volts and 200–235 amps	• 7018M or equivalent, low hydrogen • 21–33 volts and 135–185 amps

NOTE: These specifications are for welding to low- to medium-carbon steels. When welding to specialty steels, such as stainless steel and manganese, contact your Kennametal Representative for welding recommendations.

Welding Instructions

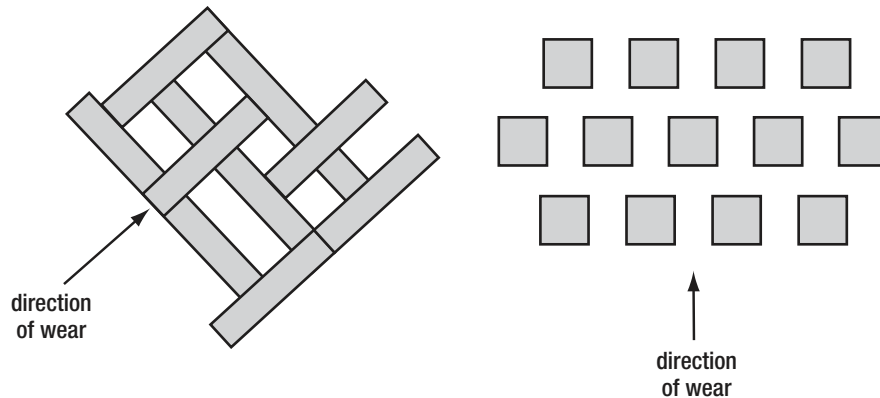
It's important to weld KenCast parts properly to achieve optimum performance. Always attach the castings with the steel side against the surface to be protected and the carbide wear surface facing out. Welding on the carbide surface can cause cracking and is detrimental to the carbide particles. The carbide wear surface of the KenCast part is identified with this sticker:

KENNAMETAL® – KenCast
Wear Surface is This Side
Weld Opposite Side

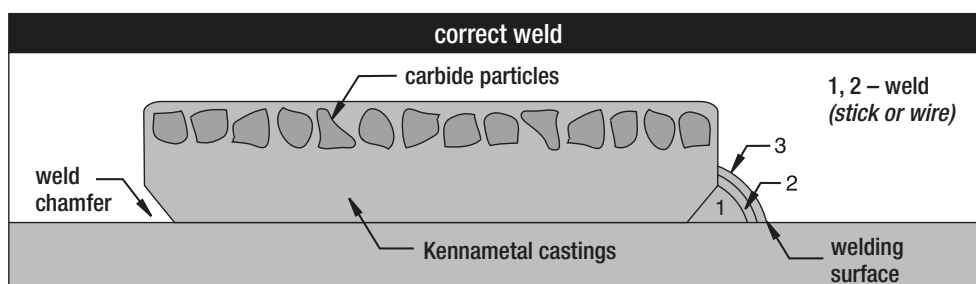
Sometimes, the shape or size of the KenCast part makes it difficult to apply this sticker. On these parts, the carbide side will be painted yellow to clearly identify it as the wear side. Additionally, the KenCast part number is always placed on the steel side of the KenCast part.

Recommendations

- Protect welds by using weld chamfers, hardfacing over the welds, or positioning the KenCast part to avoid wear on the welds.
- When using KenCast parts to cover large areas, create a “dead-bed” effect by positioning the castings so that the work material packs between the KenCast pieces (see illustrations).



- Stagger the placements of the KenCast parts to avoid wearing troughs between the parts.
- Parts to be welded should be about 70 °F.
- The KenCast part should not exceed 600 °F at any time during welding.
- First, tack weld parts lightly to ensure proper placement before total welding is done.
- Pre-heating and post-heating of KenCast parts is not usually necessary. However, if the material to which the KenCast part is being applied requires heating, then pre-heat the KenCast part up to 600 °F (do not exceed 600 °F). Our KenCast parts have been welded to 4130 and 4140 steel with no pre- or post-heating. Pre-heating is recommended to prevent underbead cracking when KenCast parts are applied to oil-and-gas string components and to high-manganese steels.
- If weld washout is a concern, we recommend applying hardface material over the welds.
- Do not weld on the carbide layer of the KenCast part.





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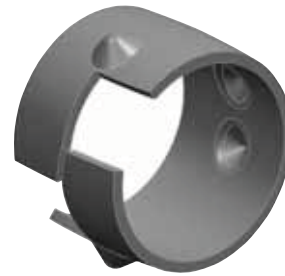
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■ LR



order number	catalog number
1011940	LR118
1011929	LR138 RETAINER

■ U43K Retainer



order number	catalog number
1011978	U43K

■ U75K Retainer



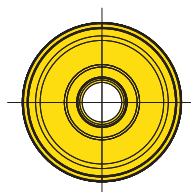
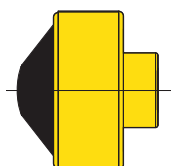
order number	catalog number
1011967	U75K

■ TR3 Retainer



order number	catalog number
4073124	TR3 RETAINER

■ Button Lock



order number	catalog number
1547540	3LB1

■ KR225 Retainer



order number	catalog number
2401741	KR225

■ H Clip

- Replacement clips for 22mm (7/8") and 29mm (1-1/8") Hex couplings and chucks.



order number	catalog number
1011890	5400#7/8

■ 9239 Retainer



order number	catalog number
1012069	9239 RETAINER

■ Hair Pin



order number	catalog number
1012056	9231HP
1012059	9232HP

■ Spring Retainer



order number	catalog number
1012000	A15 HOSE KEEPER

■ Hair Pin Clip



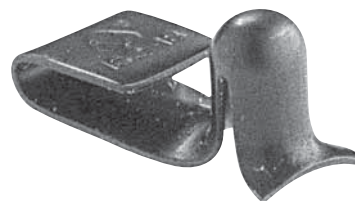
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1304100	HP CLIP

■ Snap Ring



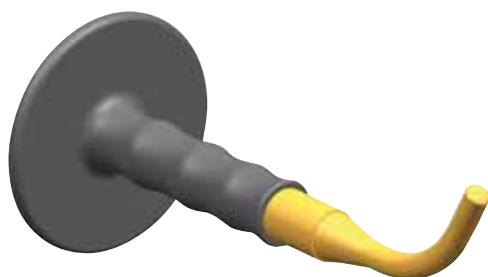
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1327207	5160193 SNAP RING
1012081	KR 150 SNAP RING
4055765	KR-112 BE RETAINER
1011893	KR200 RING
1012084	SHR175

■ Keeper



order number	catalog number
1012023	9200-.52L
1326958	BC118-.59L
1850729	M101BS HD

■ Hammer Punch



order number	catalog number
3003465	KHP 4 HAMMER PUNCH

■ Puller Components



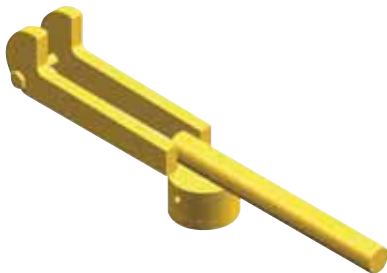
order number	catalog number
2555217	K35 PULLER KIT

■ SVP100 Puller



order number	catalog number
1326637	SVP100

■ 9222 Puller



order number	catalog number
1012049	9222 PULLER

■ Squeeze Puller



order number	catalog number
2493970	9232 SQUEEZE PULLER
4011823	UHP 1 PULLER

■ U40 Puller Series

- Removes 25mm (1") shank tools with collars.



order number	catalog number
1012003	U40HP P1 BIT PULLER ASSEMBLY

■ U43 Puller Series

- Removes 19mm (.75") shank tools with collars.



order number	catalog number
1012004	U43HP P1 BIT PULLER ASSEMBLY

■ U170 Bit Puller Series

- Removes 43mm (1-3/4") step shank tools with collars.



order number	catalog number
2616518	K225 PULLER KIT
3321961	U170 PAD COAT PULLER

■ U70 Bit Puller Series

- Removes 25mm (1") shank tools with collars.



order number	catalog number
1012037	K178S 1 PULLER
3043394	U70 PAD COATED PULLER

■ U80 Bit Puller Series

- Removes 30mm (1-3/16") shank tools with collars.



order number	catalog number
1618613	PULLER 118/9 HD PICK PULLER
3043395	U80 PAD COATED PULLER

■ U90 Bit Puller Series

- Removes 35mm (1-3/8") shank tools with collars.



order number	catalog number
1618611	PULLER 35MM HD PICK PULLER
3043351	U90 PAD COATED PULLER

■ External Snap Ring Plier • KRP

- Used on external snap rings.
- Replaceable tips.
- Heavy duty.



order number	catalog number
1012012	KRPT1/C4 TIP

■ Internal/External Snap Ring Plier • KRP2

- Used on internal or external snap rings.



order number	catalog number
1012014	KRP2 PLIER

■ External Snap Ring Plier • KRP4

- Used on external snap rings.
- Heavy duty.



order number	catalog number
1012047	KRP4 PLIER

■ External Snap Ring Plier • KRP200

- Large replaceable tips for use on KR200 snap rings.



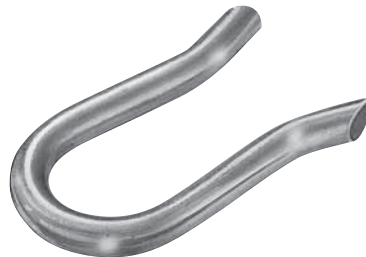
order number	catalog number
1012063	KRP200 PLIER

■ O-Ring/Seal



order number	catalog number
1803295	C15R RETAINER
1011961	C21R RETAINER
1012065	C31R RETAINER
1012120	C3R RETAINER
3781368	CB10HD SEAL
1012223	CM4 RETAINER
3785292	ELECTRA 3000 WS O-RING KIT
1011897	SC SEAL
1011938	SHR-87 RETAINER

■ Staple



order number	catalog number
1011899	SC STAPLE

NOTE: For SC2801 sprays.

■ Spray Housing



order number	catalog number
1011920	SC 2801ES HOUSING
1771165	SNAPPER SPRAY HOUSINGS 73274

■ Spray System and Component



order number	catalog number
1011907	SC JET(2801DC)
1011917	2801CC SPRAY
2254116	GIZ/B 1,0 MM WATERSPRAY
2254124	GIZ/C 1,5 MM WATERSPRAY
4082075	K178DVC 12 SPRAY EXT
3870222	K225 SS BFF 1.5 SPRAY
3879206	KPBF XOR SPRAY 1.2
3350822	NOZZEL, SEAL, SPRAY

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- Make sure tools are properly seated and securely retained.
- Do not strike tools with metal objects. Carbide tips could shatter.
- Exercise care when removing tools.
- Inspect tools before each use. If they are dull, cracked, burred, or bent, do not use them.
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- Do not change tools when the drum is moving or still engaged.



**Argentina**

Phone: 54.11.4719.0700

Fax: 54.11.4719.6116

Australia/New Zealand

Phone: 61.7.3801.5844

Fax: 61.7.3801.5826

k-sydn.service@kennametal.com

Brazil/Latin America

Phone: 55.19.3936.9200

Fax: 55.19.3936.9201

bra.marketing@kennametal.com

Chile

Phone: 56.2.2641177

Fax: 001.888.442.4964

China

Phone: 86.400.650.1388

Fax: 86.10.8561.5263

k-cn-earthwork.service@kennametal.com

Germany/European Served Area

Phone: 49.6172.737.498

Fax: 49.6172.737.42.453

mcs-ag.service@kennametal.com

India

Phone: 91.80.4328.1444

Phone: 91.80.2219.8444

Fax: 91.80.2839.1300

bangalore.information@kennametal.com

Japan

Phone: 81.3.3820.2855

Fax: 81.3.3820.2800

k-jp.service@kennametal.com

Korea

Phone: 82.2.2109.6100

Fax: 82.2.2109.6981

Malaysia

Phone: 6.03.5569.9080

Fax: 6.03.5569.0080

Poland/Slovakia/Baltics

Phone: 48.61.665.6520

Fax: 48.61.665.6521

zory.orders@kennametal.com

South Africa/Sub Saharan Area

Phone: 27.11397.3540

Fax: 27.11397.3222

**Singapore/Vietnam/
Philippines/Indonesia**

Phone: 65.6265.9222

Fax: 65.6861.0922

k-sg.sales@kennametal.com

Thailand

Phone: 66.2642.3455

Fax: 66.2641.2736-8

United States/Canada/Mexico

Phone: 800.458.3608

Fax: 800.521.3319

mcs-na.service@kennametal.com

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WORLD HEADQUARTERS

Kennametal Inc.

1600 Technology Way
Latrobe, PA 15650
USA
Tel: 800.446.7738 (United States and Canada)
E-mail: ftmill.service@kennametal.com

EUROPEAN HEADQUARTERS

Kennametal Europe GmbH

Rheingoldstrasse 50
CH 8212 Neuhausen am Rheinfall
Switzerland
Tel: 41.52.6750.100
E-mail: neuhausen.info@kennametal.com

ASIA-PACIFIC HEADQUARTERS

Kennametal Singapore Pte. Ltd.

3A International Business Park
Unit #01-02/03/05, ICON@IBP
Singapore 609935
Tel: 65.6265.9222
E-mail: k-sg.sales@kennametal.com

INDIA HEADQUARTERS

Kennametal India Limited

8/9th Mile, Tumkur Road
Bangalore - 560 073
Tel: 91.80.4328.1444
E-mail: bangalore.information@kennametal.com



Kennametal Inc.

1600 Technology Way
Latrobe, PA 15650
USA

www.kennametal.com