



## GERMAN QUALITY DRILLING TECHNOLOGY



Kertz Indonesia  
**PT Optimum Niaga Eurasia**  
Maggiore Grande Blok G No.52  
Gading Serpong, Tangerang, Banten 15332  
Email: [sales@kertz-machine.com](mailto:sales@kertz-machine.com)  
[www.kertz-machine.com](http://www.kertz-machine.com)

At Kertz, we're delighted to support our customers across various industries and businesses by offering high-quality tools and machinery. Additionally, we provide exceptional service to ensure our customers' success.

**Tungsten Carbide Tipped (TCT) annular cutters** are specialized cutting tools crafted for precision hole-making in various materials. Featuring a durable tungsten carbide cutting edge, these cutters offer exceptional sharpness and wear resistance, ensuring efficient and long-lasting performance.

Ideal for use with magnetic drilling machines, TCT annular cutters produce clean and precise holes in metal surfaces, making them a preferred choice for professionals in industries such as construction, metalworking, and manufacturing.



## Features

**Enhanced Longevity:** TCT annular cutters stand out for their impressive durability, thanks to the use of tungsten carbide in their edges. This results in a tool life that surpasses that of standard cutters.

**Adaptable for Various Uses:** These cutters are engineered for a broad array of materials and are integral to hole-creating processes in numerous sectors.

**Accurate Cutting:** The exceptional hardness of tungsten carbide allows for cuts that are not only precise but also clean, reducing the necessity for further processing steps.

**Operational Efficiency:** These cutters are optimized for quick and effective hole drilling, boosting efficiency and decreasing idle times in both manufacturing and construction operations.

**Reduced Friction and Heat:** Tungsten carbide's toughness significantly diminishes friction and heat generation during cutting, which translates to reduced tool wear and enhanced performance.

**Seamless Integration:** Crafted to be utilized with magnetic drilling machines, TCT annular cutters are user-friendly and seamlessly fit into existing operational procedures.

**Cost effective:** Although TCT annular cutters may have a higher initial cost, their prolonged lifespan leads to fewer replacements, making them an economically sound investment over time.

**Precision Cuts:** With the ability to produce neater and more refined cuts, TCT annular cutters contribute to the superior finish of drilled holes.

**Low maintenance:** Due to their sturdy build, TCT annular cutters generally demand very little maintenance, which enhances their convenience and cost-effectiveness.

**Diverse Size Options:** TCT annular cutters come in a variety of sizes, offering the flexibility needed to create holes of different diameters, making them apt for a wide range of uses.



## Guidelines for Preventing Cutter Damage

- 1. Use Specialized Cutting Oil or Coolant:** It's essential to use cutting oil or coolant specifically designed for annular cutters. We advise against using general cutting oils or coolants meant for CNC machines, as these may not be suitable.
- 2. Internal Lubrication is Crucial for Annular Cutters:** Annular cutters feature cutting edges on the inside, making internal lubrication critical. For cutters with a diameter above 35 mm, external lubrication is also recommended to ensure optimal performance.
- 3. Avoid Excessive Drilling Pressure:** Using too much pressure during drilling can damage the cutter. Contrary to the belief that more pressure speeds up the drilling process, drilling requires the correct cutting speed and feed rate for efficient and safe operation.
- 4. Minimize Vibration:** Vibration in the drilling machine often leads to cutter breakage. Ensure your machine is stable and operates smoothly to avoid this issue.
- 5. Secure the Material Properly:** Materials that are not securely fastened or that exhibit any vibration can lead to cutter breakage. Make sure the material is stable before beginning your drilling operation.
- 6. Use the Correct Ejector Pin:** Operating annular cutters without an ejector pin (pilot pin) or using an incorrect ejector pin can cause the cutter to break. Always ensure you're using the appropriate pin for your cutter.
- 7. Proper Clamping of the Weldon Shank:** Failing to clamp both flat surfaces of the Weldon shank securely with arbor screws can result in cutter breakage. Ensure the shank is properly fastened to maintain cutter integrity.
- 8. Adjust RPM and Cutting Speed Appropriately:** Incorrect revolutions per minute (RPM) or cutting speed can impair cutter performance or even lead to breakage. Adjust these settings according to the material and cutter specifications for best results.

## Causes of a Core (Slug) Getting Stuck Inside


- 1. Incorrect Coolant/Lubricant:** Using unsuitable coolant or lubricant can cause increased friction, making the core stick.
- 2. Insufficient Coolant/Lubricant:** Not using enough coolant or lubricant leads to heat and friction, causing sticking.
- 3. Incorrect RPM/Cutting Speed:** The wrong RPM or cutting speed causes excessive friction and material deformation, making the core difficult to remove.
- 4. Excessive Pressure on Feed Handle:** Too much pressure can distort the core, causing it to bind and become stuck.
- 5. Defective Spring Tension in Cutter Holder/Arbor:** Faulty spring mechanisms can fail to properly release the core, resulting in it getting stuck.
- 6. Avoid Sharp Objects/Hammers:** Do not use improper tools to forcibly remove the core, as this can damage the tool and be unsafe.

*Following the manufacturer's instructions for cutter maintenance and slug removal is recommended to prevent damage to the tool and ensure a smooth cutting process.*

## Annular Cutter User Guideline

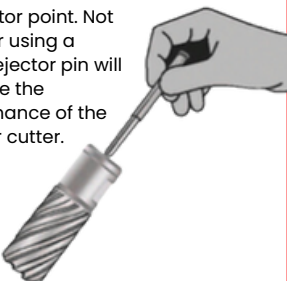
1

As per the length of the annular cutter, select the appropriate ejector pin (pilot pin). An ejector pin helps to locate the center, activate lubrication & eject the core.



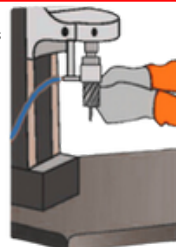
2

Always use an Annular Cutter with an ejector point. Not using or using a wrong ejector pin will damage the performance of the annular cutter.



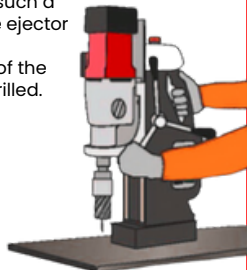
3

The clamping screws of the tool holder must be positioned exactly on the clamping surface of the annular cutter. A Weldon shank annular cutter has two clamping surfaces, both the surfaces must be clamped.




4

Position the magnetic drilling machine in such a way that the ejector pin touches the center of the hole to be drilled.




5

For TCT annular cutter use water-soluble coolant or pure cutting oil. For HSS annular cutters use only pure cutting oil, do not use water-soluble coolant for HSS cutters.



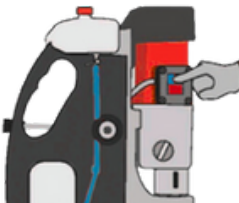
6

Internal lubrication for the annular cutter is a must. Above 35 mm diameter also provide external lubrication to annular cutters. Only external lubrication will damage the annular cutters with few holes.



7

Every diameter of an annular cutter requires a specific cutting speed (RPM) on the drilling machine. The cutting speed formula and common cutting speeds are mentioned in the footer.



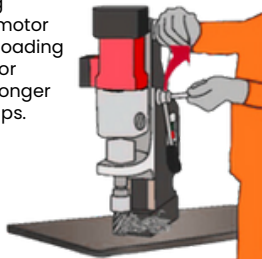
8

Drills with less pressure and steady feed for longer service life of the annular cutter. Extra pressure or fast drilling will damage the annular cutter. Common feed rates are mentioned in the footer.



9

Regularly give reverse feed while drilling for releasing the drilling machine motor from overloading and also for breaking longer drilling chips.



10

After drilling, to avoid accidents and injuries, please clean the work area with proper safety and cleaning tool.



### Cutting Speed Formula

$$V_c = \frac{\pi \times D \times n}{1,000}$$

### Common Cutting Speeds

Considering Vc 25 mm/ min for TCT annular cutter for drilling steels <700n/m²

Ø	RPM	Ø	RPM	Ø	RPM	Ø	RPM
14	570	35	230	65	130	95	85
18	450	40	200	70	120	100	80
22	370	45	180	75	110	110	80
26	310	50	160	80	100	120	70
30	270	55	150	85	95	130	60
32	250	60	140	90	90	140	57

### Common Feed Rates :

Construction and stainless steel (SS) -----0.08-0.12 mm/rpm  
 Cast Iron -----0.12-0.20 mm/rpm  
 Non-ferrous metals -----0.22-0.45 mm/rpm  
 special alloys -----0.05-0.08 mm/rpm