



PRODUCT CATALOG

DEEP HOLE GUNDRILLS

Deep hole drilling was first developed for the manufacturing of firearms, hence the name gundrilling. Originally a time-consuming and expensive process, technological advances have made it a highly efficient manufacturing process utilized in all metal cutting industries, including automotive, aircraft, aerospace, construction, medical, tool and die, petro chemical, hydraulics, pneumatics and more. Gundrilling is an ideal solution for most deep hole and high-precision drilling projects.

This operation produces accurate, repeatable holes with excellent surface finishes. Gundrills hold location to precise tolerances, are sized to exact specifications, produce burr-free holes and can be formed to produce specific shapes in blind holes and bottom forming with a minimum of machine adaptation. These systems can be easily integrated with CNC machining centers, lathes and milling machines for a relatively small investment, making it affordable for large or small shops with production requirements varying from one piece to hundreds of thousands.

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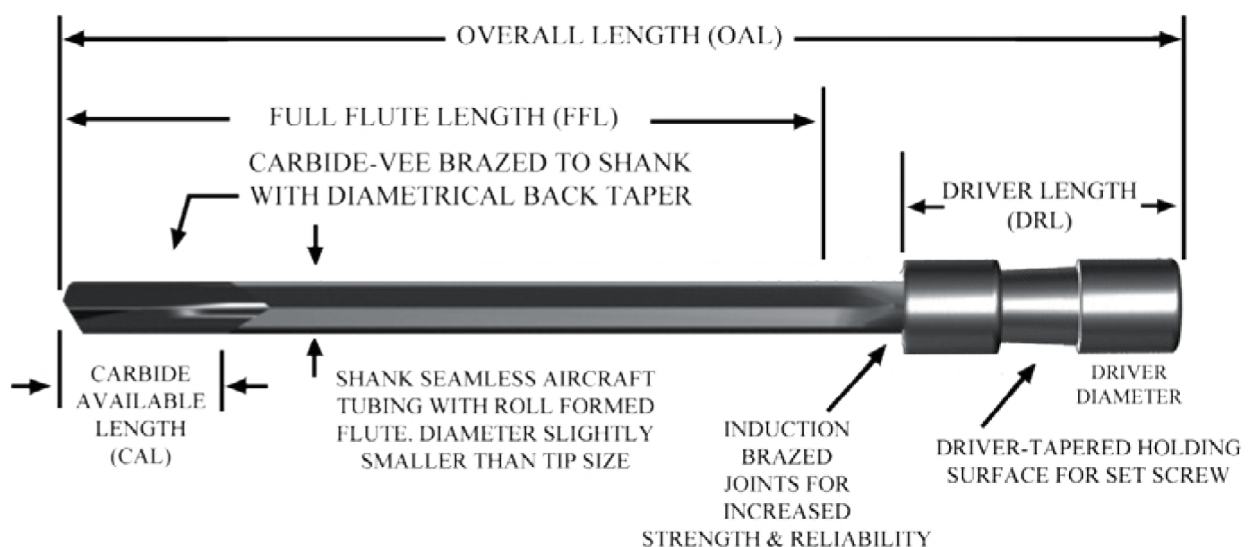
Customer service
bok@tizimplements.com

The gundrill's function

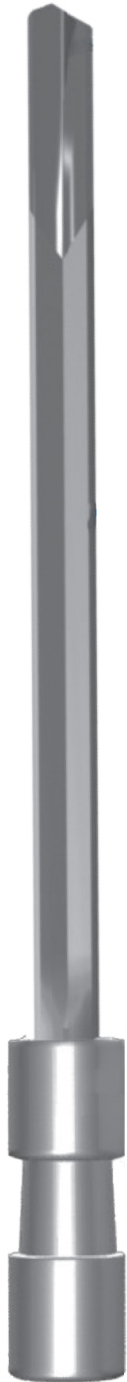
Gundrilling is a metal removal process involving a drilling machine, a high pressure coolant system and a high quality drill with a single or double flute along the shank. In operation, the drill is positioned and held in the spindle nose, then guided into the workpiece through a prestared hole or guide bushing to prevent vibration and ensure accuracy. The drill tip's cutting edges produce thin curled chips that are carried back along the shank by the high pressure coolant and deposited in the chip box. The off-center design of the cutting edges creates pressure within the bore, which is carried by pads behind the drill tip. The coolant that flushes out the chips also lubricates these pads, which burnish the surface and develop the fine finish for which gundrilling is known.

The gundrilling machine

Designed to provide optimum conditions for gundrill operation, the gundrilling machine's high pressure pump delivers lubricant to the rear of the drill. The drill can be driven by the spindle or be held stationary if the workpiece is rotated. During drilling, the workpiece can be advanced or the drill can advance. The gundrill is supported by anti-whip devices along the shank and at the rear of the chip box. The chip box contains chip deflectors and a front end bushing which guides the drill into the workpiece.



The anatomy of a gundrill



The gun drill is a simple basic tool consisting of a carbide tip, a heat treated alloy shank, and a steel driver, typically silver brazed together into one precision unit.

Tip: The most critical element, the tip cuts the hole as it pilots the drill through the workpiece, producing precision holes in a single pass. The drill's point, or nosegrind, has two basic angles that may be varied for optimum results depending upon the material being drilled. These angles balance cutting forces, distributing them to the tip's bearing pads to keep the drill concentric. The tip is slightly larger than the shank, so the shank can rotate freely without contacting the hole wall. A round, kidney-shaped, or two round holes-through-the-tip line up with the shank's channel to allow the flow of coolant at high pressures.

Shank: The shank is made from aircraft grade alloy steel tubing with a 110°-120° vee-flute formed to the center of the shank's diameter. Coolant is forced from the driver through the center of the shank to the tip, where it is flushed back along the shank's flute. The shank maintains proper gundrill alignment and must be strong enough to absorb cutting torque and thrust. If the shank is too stiff it may transfer minor mis-alignment in the machine to the tip, but it must not be flexible enough to sag or whip at high RPMs.

Driver: Drivers are cylindrical, with an undercut or flat section for the set screw, which holds in the spindle bore. They are manufactured to industry standards or to special diameters and a concentric hole through the driver's length allows coolant to pass through to the shank and tip.

| | |
|------------------------------|----------------|
| Diameter range | 2.0 - 70.00 mm |
| Length | Up to 6,000 mm |
| Effective tool length | 40-50 x ø |

Cooling lubricant (coolant) required

Deep hole drilling oil preferred

| | |
|--------------------------|--------------------------------------|
| Filter resolution | 10-20 mm |
| Viscosity | ø 1.9-50 mm=10-20 mm ² /S |

Gundrilling on non-conventional machines

Screw-Machines, Machining Centers, Lathes, etc.

Solid Carbide Gundrills are manufactured as a single piece of carbide. The tip and tube is a single piece which eliminates the braze joint at the head and tube transition resulting in an extremely strong, ridged tool.

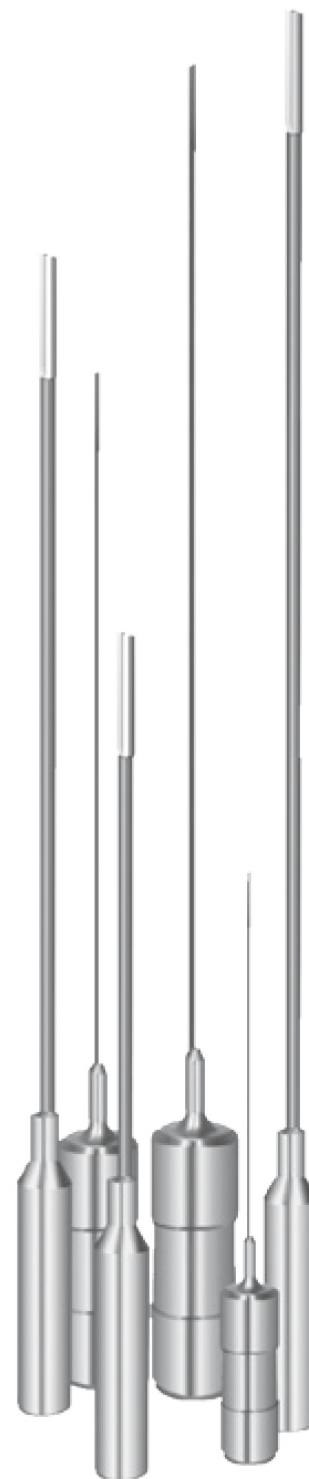
The major advantage in using Solid Carbide drills is you can maximize the surface footage and feed rates due to their rigidity.

Solid Carbide Drills are available on our shelves in stock-standard diameters from .03937" (1mm) - .3125" (7.9375mm) and lengths from 5"-12"; we offer shortest lead times in the industry on specials, 4-weeks.

The Right Drill for the Right application

The gundrilling process is commonly utilized on virtually any machine that incorporates through-the-spindle-high-pressure-coolant.

The tool selection and operation sequence is the same as a conventional Gundrill machine with the exception that a pilot hole is needed to replace the starter bushing to support the tool as it enters the part. The general pilot hole rule-of-thumb is two-times diameter in depth and .0002" -.0005" larger in diameter, preferably with a flat bottom form.



| | |
|---|-----------------|
| Diameter range | 1.0-12.0 mm |
| Length | Up to 3500 mm |
| Effective tool length | 80-100 x ϕ |
| Cooling lubricant (coolant) required | |

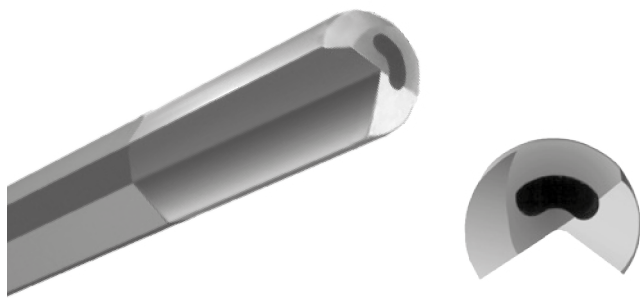
Deep hole drilling oil preferred

| | |
|--------------------------|---|
| Filter resolution | 5-10 mm |
| Viscosity | ϕ 0.6-2.0 mm=7-10 mm ² /S ϕ 2.0-12 mm= 10-20 mm ² /S |

Single Flute Gundrill Types

Screw-Machines, Machining Centers, Lathes, etc.

Gundrill single flute gundrills are available in diameters from .03937" (1.00 mm) to 3.000" (76.20 mm). Included in this range are over 800 sizes and lengths available for same day delivery. We also offer an expedited service for non-stock gundrills to satisfy your urgent requests. As part of our Quality Assurance program, our carbide and steel tubing are subjected to complete metallurgical analysis prior to manufacturing the final product. In addition to the single flute design, we offer two flute, solid carbide tip and shank, Opti-Flo (kidney oil hole), and Opti-Flo II (two oil hole) gun drills. Shown here are some of the popular gundrills and gunbores we manufacture.

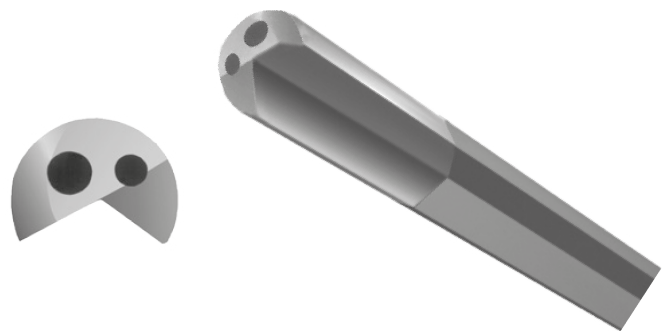


Single kidney hole, single flute

The Opti-Flo features a carbide tip, available from .0750" (1.905mm) to 0.3174" (8.062mm) in standard stock sizes and lengths for immediate delivery and as special orders to customer specifications.

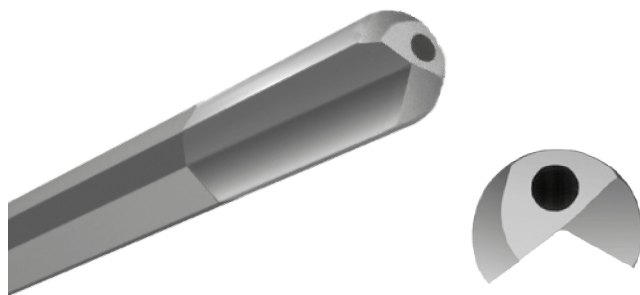
Two round holes, single flute

The Opti-Flo II features a carbide tip, available from .3018" (7.665mm) to 1.500" (38.1mm) in standard stock sizes and lengths for immediate delivery and as special orders to 3.000" (76.2mm) in diameter "inserted".



Single round hole, single flute

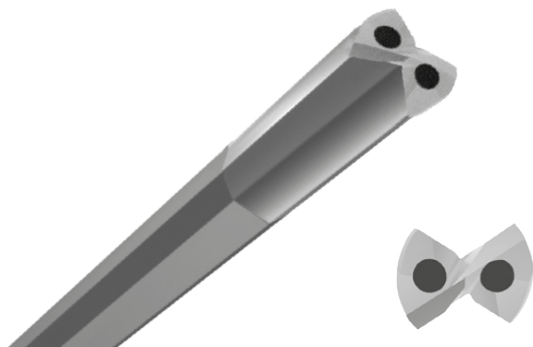
Solid carbide tip, available from .0750" (1.905mm) to 0.1875" (4.762mm) in over 800 standard sizes and lengths for immediate delivery and as special orders to 3.000" (76.2mm) in diameter "inserted".



Two Flute Gundrill

The two flute gundrill design incorporates two cutting edges which reduces chip load and increases penetration rate up to 100% over single flute drills in various non-ferrous applications. They can be used in conventional gundrilling machines and in CNC lathes and machining centers. Two flute gundrill features include:

- Sub-micro grain carbide tips for greater tool life.
- 4135 aircraft grade shanks.
- Dual oil holes for optimum chip evacuation.



Two Hole, Two Flute

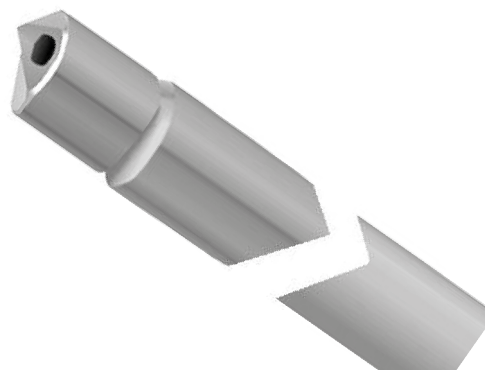
Solid carbide tip with tube (shank) manufactured from 4135 aircraft grade tubing. Diameters available from .375" (4.75mm) to 1.25" (31.75mm) and lengths to 84" (2133mm)

Multi-Diameter Step Gundrills

Many parts require as many as two, three, or four various size holes in a single bore. Certain applications may allow a single multi-diameter gundrill to produce all or some of these holes, reducing machining time.

Step Tools

Step tools may be incorporated in an application to eliminate two to three subsequent operations in a single hole. The use of a step tool dramatically reduces cycle time, scrap, and eccentricity between diameters.



Step drills have manufacturing limitations depending on extreme diameter ranges in the steps. Special carbide developing may sometimes be necessary due to the coolant hole location. Additionally chip breakers may be required due to the lack of an inside angle which curls and breaks the chips under normal circumstances. Ideally using this type of drill yields virtually no eccentricity between diameters.

Reamers

Chips ahead and behind reamers are commonly used to obtain very tight ID bore sizes. Drilling an initial hole .015" - .030" under the desired finished diameter yields the perfect amount of material to be removed with this type of tool. The result is a hole size to .0002" in diameter and finishes to 16 RMS or better in a single pass, usually eliminating the need for honing.

Chips Ahead Reamers

Solid carbide tip reamers are available in most diameters and lengths to produce close tolerances, eliminating the need for honing.

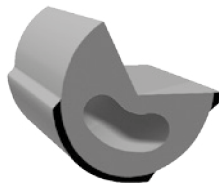


Contours

Contour selection is made on the basis of the material to be drilled, and the details of the particular application. As a rule, the greater the bearing pad's area of contact, the better control of size and finish due to increased support and burnishing action.

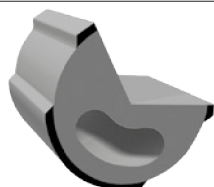
The center design of our gundrills allows for a wide range of nosegrinds from a full spherical radius to a flat bottom design. The nosegrind angles are important in attaining the best quality results. Angles can be modified to improve the flushing action of the high pressure oil and to improve chip control. Specific grinds have been developed for severe applications such as exit breakouts and interrupted or angular entries. Some of the most popular nosegrind configurations are shown here.

R1: Standard
Bearing Pad



General purpose stock drill contour for steel, stainless steel, inconel and aluminum. Offers minimum bearing contact with the workpiece (non-micable).

R2: Standard
Bearing and Guide Pad



Recommended for all non-ferrous and cast iron up to gundrill diameter of .200" (non-micable).

R3: High Bearing Pad



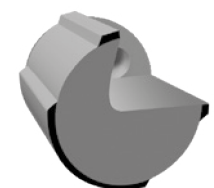
For good size control (including at exit) special purpose contour, where micable diameter is required or extra burnishing action is required, not for all materials (micable).

R4: High Bearing and
Guide Pad



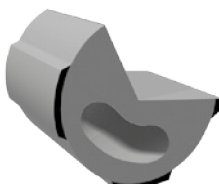
For use in aluminum and brass for best hole finish and for intersecting holes and interrupted cuts, or extra O.D. support and burnishing. Use with wood and plastic in combination with .0015/.002" back taper. Do not use in high nickel content materials due to high burnishing forces (micable).

R6: High Bearing and
Guide Pad
Reamer



For chips ahead reaming applications when opening up existing holes, e.g., valve guides (micable).

R9: High
Interrupted
Bearing Pad



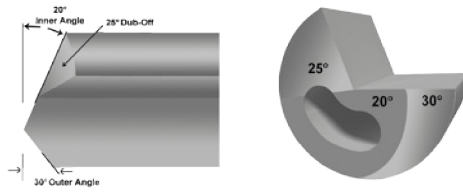
For good size control, including at exit. Special purpose contour where micable diameter is required, or extra burnishing action is required, not for all materials (micable).

R10: Two Flute
Bearing Pad



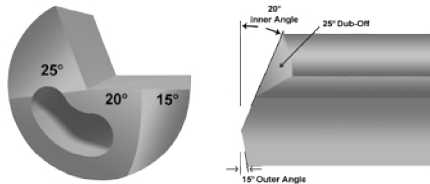
Used for high penetration rates in applications such as lubrication holes. Contour for aluminum shown (micable).

N-8 Nosegrind



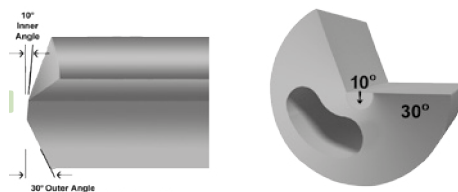
General purpose stock drill grind for steel, inconel and stainless steel, most often used with stock 'R1' O.D. contour.

N-4 Nosegrind



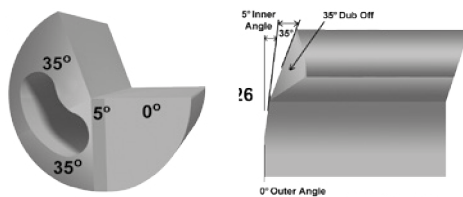
In aluminum and brass, use this grind with 'R4' O.D. contour for best hole finish.

N-73 Nosegrind



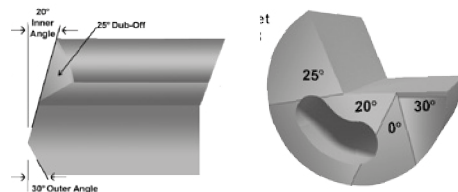
For drilling, stacked parts and angular entries. Due to the point's placement near the center of the drill, this is the strongest gundrill.

N-126 Nosegrind



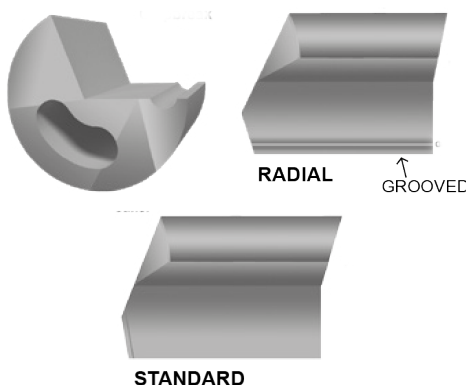
For applications requiring drilling flat bottoms. It can also be ground for a completely flat bottom, or on difficult materials; use to qualify bottoms only.

Facet Nosegrind



Facet grinds are preferred on specific applications, or when regrind fixtures limit the cam type sharpenings. They can be ground to various slash type angles with good performance and allow a greater amount of clearance for coolant to cool the chip at the cutting edge. This grind is standard on most European applications.

Chip Breakers



Chip Breakers are generally used to break string type chips often attributed to gummy material or when machines limit the surface footage necessary to generate the heat needed to break a chip.

Reconditioning Tools “Cradle To Grave ”

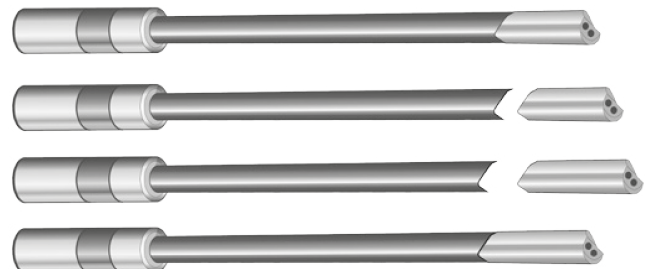
Our goal is to monitor your hole-making process ideally from “Cradle to Grave”. Once the initial tool is engineered and the process is stable our staff can evaluate how the tool is performing by the wear characteristics exhibited on the tool when it is returned for re-sharpening. Throughout the life of the tool we can determine when it’s time to re-tip, re-straighten, change re-sharpen intervals, or alter running conditions. These scenarios may be due to material variances, types of coolant being used, filtration, or the need for coating.

Re-Sharpening

We provide a re-sharpening service which enables our customers to return their used drills and have them re-ground to factory specifications and returned in 24 – 48 hours. By doing so, our customers realize cost savings by maximizing the number of regrinds before re-tipping and allowing our expert staff to observe the wear characteristics and make recommendations for improvements in their processes. Standard & Special grinds: N8, N4, N73, N126, facet, chip-breakers, corner & full spherical radius, step grinds, etc. This service can be performed on all competitors’ tools as well

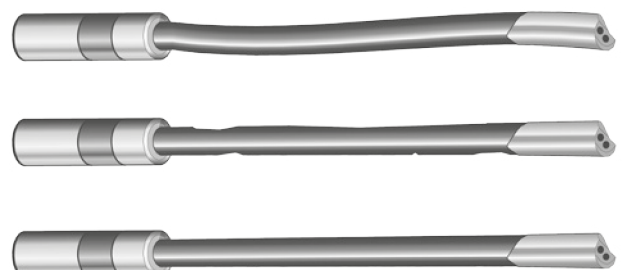
Re-Tipping

When a tool reaches the point when it can no longer be used because it’s been re-sharpened to its limit, it’s chipped, or misused, etc., it can be sent back for re-tipping. Once a tool is re-tipped, it performs exactly as a new tool. This process extends cost savings to our customers as much as 20% of the cost of a new tool.



Re-Straightening

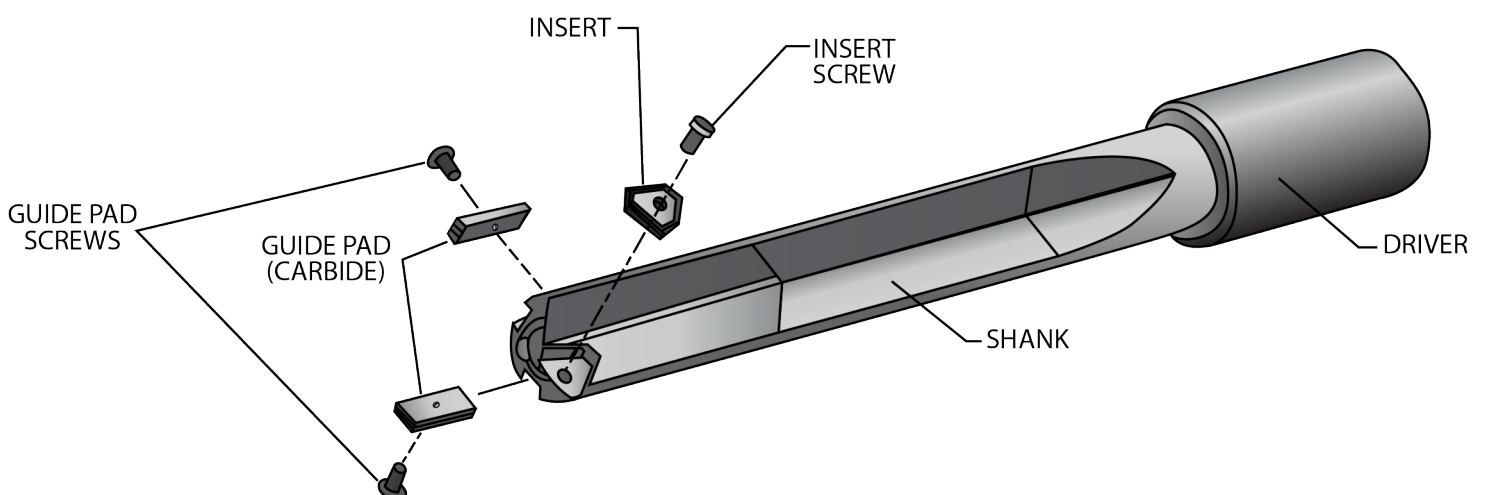
One of the most critical features of the tools performance is it’s straightness from the driver to the tip. Throughout the life of a tool it’s subjected to numerous removals from the machine, re-sharpening, re-installations, crashes, miss-handling, etc. These scenarios will contribute to inconsistency in hole -size, excessive run-out and premature tool wear. Most times as long as a tool isn’t kinked, it can be re-straightened at a fraction of the cost of a new tool.



Indexable Gun Drill

The triangular inserts have 3 cutting edges. The positive rake chip breakers and chip splitting geometries allow the use of feed rates 3 to 4 times that of traditional gun drills. They are manufactured from micrograin carbide and available in several PVD wear resistant coatings.

- **These drills are offered in any diameter from .625 to 1.25 inch. Only 5 insert sizes cover entire range.**
- **Inserts are direct fit and require no adjustment to produce on size bores.**
- **The drills utilize brazed or solid carbide guide pads.**
- **Pads are also available coated.**
- **Indexable drills are also available with double rows of guide pads for extra stability.**



Interlocking Detachable Cutting Heads

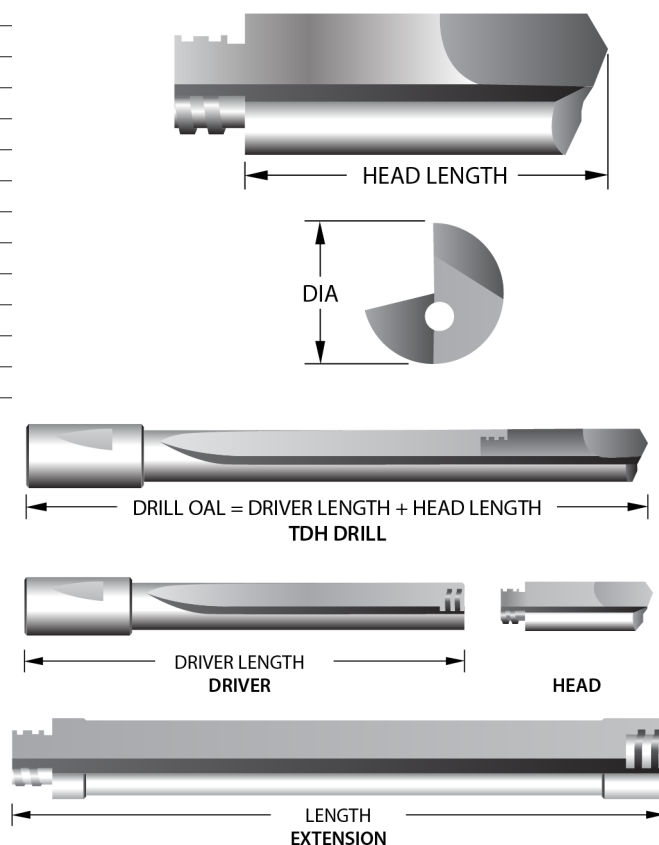
Allow you to install a new head in minutes without removing the shaft from the machine. Once the tool reaches its established re-sharpen point, simply retract the tool from the part, unscrew and remove the head, replace it with a re-ground head and return to the previous drilling position and continue drilling. Additionally, when the drill reaches its maximum depth an extension can easily be added resulting in unlimited drill depths. This is the optimal method of drilling and maintaining concentricity throughout the hole; you are now able to drill hole depths far exceeding the stroke of your machine.

The benefits

- Minimize downtime.
- The ability to drill depths far exceeding the stroke of your machine.
- Ease of re-sharpening heads without the cumbersome process of removing the entire tool.
- Standard head sizes in stock for same day delivery.
- Re-sharpening and re-tipping programs available.
- Ergonomic user-friendly design.

| STOCK STANDARD INTERLOCK HEADS | |
|--------------------------------|--------|
| Dia. | PN |
| .6250" | 100584 |
| .7500" | 100585 |
| .8125" | 100586 |
| .8750" | 100587 |
| .9062" | 100588 |
| .9375" | 100589 |
| .9687" | 100590 |
| .9844" | 100591 |
| 1.000" | 100592 |
| 1.0625" | 100593 |
| 1.1250" | 100594 |
| 1.1562" | 100595 |
| 1.1875" | 100596 |
| 1.2500" | 100597 |
| 1.2656" | 100598 |
| 1.3125" | 100599 |
| 1.3750" | 100600 |
| 1.4375" | 100601 |
| 1.5000" | 100602 |
| 1.6250" | 100603 |
| 1.7500" | 100604 |
| 1.8125" | 100605 |
| 1.8750" | 100606 |
| 1.9375" | 100607 |
| 2.0000" | 100608 |

| DIAMETER RANGE | | |
|----------------|---------|---------|
| Drive# | MIN | MAX |
| 2 | .6250" | .7400" |
| 3A | .7410" | .8420" |
| 3B | .8430" | .9290" |
| 4 | .9300" | 1.1180" |
| 5A | 1.1190" | 1.2170" |
| 5B | 1.2180" | 1.3670" |
| 6 | 1.3680" | 1.5000" |
| 6A | 1.5010" | 1.6800" |
| 6B | 1.6810" | 1.8990" |
| 7 | 1.9000" | 2.0620" |
| 7A | 2.0630" | 2.1250" |
| 7B | 2.1260" | 2.4140" |
| 8 | 2.4150" | 3.0000" |



Eldo-Loc[®] Detachable Tips

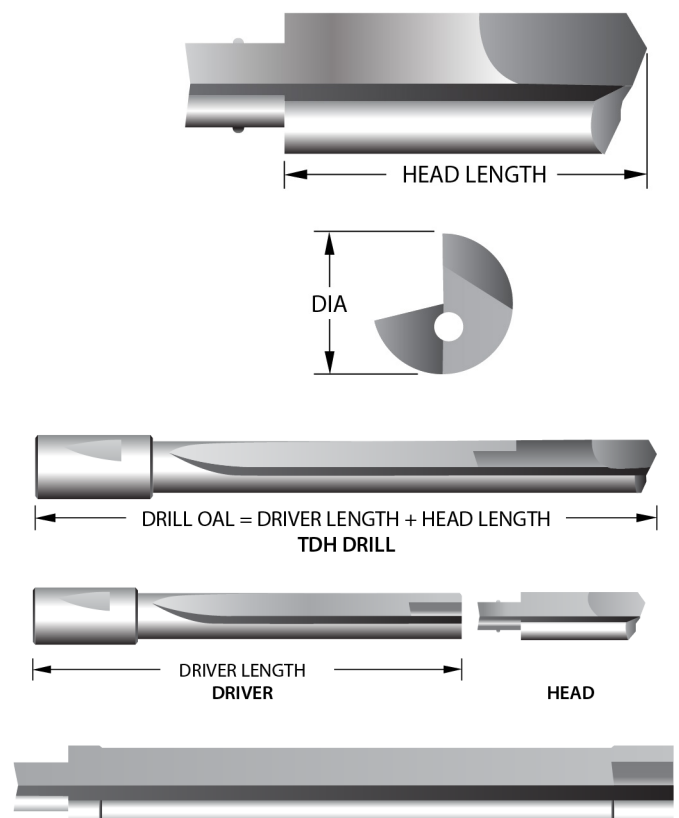
Similar to its counterpart, the Detachabe Style Head, the Eldo-Loc continues to support customers who have the Eldo-Loc style female driver. This allows for easier handling of extra long or large diameter gun-drills. This is an optional method available for gun-drills from .6250" (15.875mm) to 2.3750" (60.325mm) in diameter. Additionally, when the drill reaches its maximum depth an extension can easily be added resulting in unlimited drill depths. This is the optimal method of drilling and maintaining concentricity throughout the hole; you are now able to drill hole depths far exceeding the stroke of your machine.

The benefits

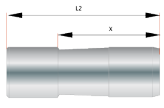
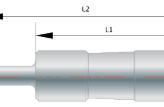
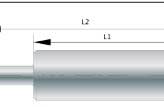
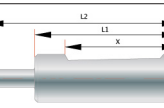
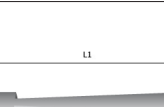

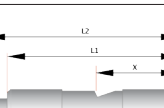
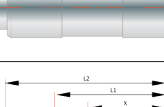
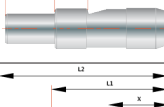
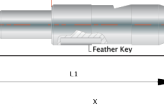
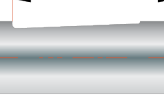
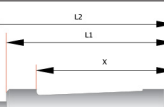
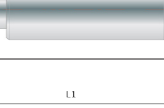
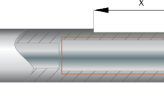
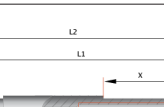


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| STOCK STANDARD ELDO-LOC [®] HEADS | | MALE/FEMALE ELDO-LOKS | |
|--|--------|-----------------------|--------|
| Dia. | PN | Tip Size Range | Driver |
| 1.2500" | 100681 | .7400-.7599 | #8 |
| 1.3125" | 100609 | .7600-.7799 | #9 |
| 1.3437" | 100610 | .7800-.7999 | #10 |
| 1.3750" | 100611 | .8000-.8199 | #11 |
| 1.4375" | 100612 | .8200-.8399 | #12 |
| 1.4844" | 100613 | .8400-.8599 | #13 |
| 1.5000" | 100614 | .8600-.8799 | #14 |
| 1.5625" | 100615 | .8800-.8999 | #15 |
| 1.6250" | 100616 | .9000-.9199 | #16 |
| 1.6875" | 100617 | .9200-.9399 | #17 |
| 1.7500" | 100618 | .9400-.9599 | #18 |
| 1.8125" | 100619 | .9600-.9799 | #19 |
| 1.8750" | 100620 | .9800-1.0049 | #20 |
| 1.9375" | 100621 | 1.0050-1.0449 | #21 |
| 2.0000" | 100622 | 1.0450-1.1049 | #22 |
| | | 1.1050-1.1749 | #23 |
| | | 1.1750-1.2199 | #24 |
| | | 1.2200-1.2949 | #25 |
| | | 1.2950-1.3449 | #26 |
| | | 1.3450-1.4799 | #27 |
| | | 1.4800-1.5849 | #28 |
| | | 1.5850-1.7049 | #29 |
| | | 1.7050-1.8449 | #30 |
| | | 1.8450-1.9649 | #31 |
| | | 1.9650-2.0000 | #32 |

| MALE/FEMALE ELDO-LOKS | |
|-----------------------|--------|
| Tip Size Range | Driver |
| .6200-.6399 | #1 |
| .6400-.6499 | #2 |
| .6500-.6599 | #3 |
| .6600-.6799 | #4 |
| .6800-.6999 | #5 |
| .7000-.7199 | #6 |
| .7200-.7399 | #7 |



TZDRIVER STYLE OVERVIEW

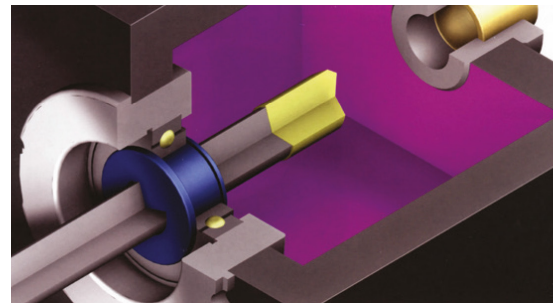
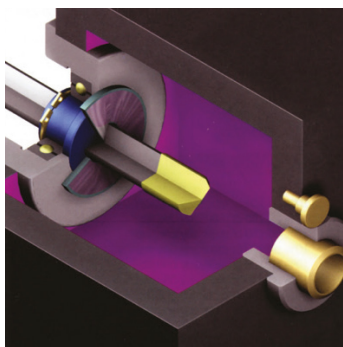
| Part# | Dia. | Length | Description | L1 | L2 | X | Tap |
|--------|-------------------|------------------|---|------------------|------------------|-----------------|----------|
| TZDRAT | 0.500" [12.7mm] | 1.500" [38.1mm] |  | | 1.500" [38.1mm] | 1.000" [25.4mm] | |
| TZDRBT | 0.7500" [19.05mm] | "2.750" [69.8mm] |  | | 2.750" [69.8mm] | 1.748" [44.4mm] | 3/8 X 24 |
| TZDRAS | 0.500" [12.7mm] | 2.000" [50.8mm] |  | 1.500" [38.1mm] | 2.000" [50.8mm] | | |
| TZDRJC | 0.2362" [6mm] | 1.967" [49.9mm] |  | 1.500" [38.1mm] | 1.967" [49.9mm] | | |
| TZDRAC | 0.500" [12.7mm] | 2.000" [50.8mm] |  | 1.500" [38.1mm] | 2.000" [50.8mm] | | |
| TZDRSJ | .2362" [6mm] | 1.967" [49.9mm] |  | 1.417" [36mm] | 1.967" [49.9mm] | .984" [30.0mm] | |
| TZDRCF | 1.000" [25.4mm] | 2.750" [69.8mm] |  | 2.750" [69.8mm] | | | |
| TZDRDF | 1.250" [31.75mm] | 2.750" [69.8mm] |  | 2.750" [69.8mm] | | | |
| TZDREF | 1.500" [38.1mm] | 2.750" [69.8mm] |  | 2.750" [69.8mm] | | | |
| TZDRFF | 2.000" [50.8mm] | 2.750" [69.8mm] |  | 2.750" [69.8mm] | | | |
| TZDRJB | 0.3937" [10.0mm] | "1.575" [40.0mm] |  | 1.575" [40.0mm] | 1.811" [46.0mm] | 0.957" [24.3mm] | |
| TZDRLB | 0.6299" [16.0mm] | 1.969" [50.0mm] |  | 1.969" [50.0mm] | 2.283" [58.0mm] | 1.870" [47.5mm] | |
| TZDRHB | 0.9843" [25.0mm] | 2.756" [70.0mm] |  | 2.756" [70.0mm] | 3.071" [78.0mm] | 1.339" [34.0mm] | |
| TZDRJA | 0.3937" [10.0mm] | 1.575" [40.0mm] |  | 1.654" [42.0mm] | 2.165" [55.0mm] | 0.957" [24.3mm] | |
| TZDRLA | 0.6299" [16.0mm] | 1.969" [50.0mm] |  | 2.047" [52.0mm] | 2.953" [75.0mm] | 1.870" [47.5mm] | |
| TZDRHD | 0.9843" [25.0mm] | 2.756" [70.0mm] |  | 2.835" [72.0mm] | 4.134" [105.0mm] | 1.339" [34.0mm] | |
| TZDRCG | 1.000" [25.4mm] | 2.748" [69.8mm] |  | 2.748" [69.8mm] | | 2.248" [57.1mm] | |
| TZDRDG | 1.250" [31.75mm] | 2.748" [69.8mm] | | 2.748" [69.8mm] | | 2.248" [57.1mm] | |
| TZDREG | 1.500" [38.1mm] | 2.748" [69.8mm] | | 2.748" [69.8mm] | | 2.248" [57.1mm] | |
| TZDRCH | 1.000" [25.4mm] | 2.748" [69.8mm] | | 2.748" [69.8mm] | 4.134" [105.0mm] | 2.248" [57.1mm] | |
| TZDRDH | 1.250" [31.75mm] | 2.748" [69.8mm] | | 2.748" [69.8mm] | 3.397" [100.0mm] | 2.248" [57.1mm] | |
| TZDREH | 1.500" [38.1mm] | 2.748" [69.8mm] | | 2.748" [69.8mm] | 3.397" [100.0mm] | 2.248" [57.1mm] | |
| TZDRJI | 0.3937" [10.0mm] | 2.677" [68.0mm] | | 2.677" [68.0mm] | | 1.380" [35.0mm] | M6 X 0.5 |
| TZDRLI | 0.6299" [16.0mm] | 3.543" [90.0mm] | | 3.543" [90.0mm] | | 1.457" [37.0mm] | M10 X 1 |
| TZDRHI | 0.9843" [25.0mm] | 4.409" [112.0mm] | | 4.409" [112.0mm] | | 1.772" [45.0mm] | M16X0.5 |
| TZDRJE | 0.3937" [10.0mm] | 2.677" [68.0mm] | | 2.677" [68.0mm] | 3.189" [81.0mm] | 1.378" [35.0mm] | M6 X 0.5 |
| TZDRLE | 0.6299" [16.0mm] | 3.543" [90.0mm] | | 3.543" [90.0mm] | 4.331" [110.0mm] | 1.457" [37.0mm] | M10 X 1 |
| TZDRHE | 0.9843" [25.0mm] | 4.409" [112.0mm] | | 4.409" [112.0mm] | 5.591" [142.0mm] | 1.772" [45.0mm] | M16X1.5 |

TZDRIVER STYLE OVERVIEW

| Part# | Dia. | Length | Description | L1 | L2 | X | Tap |
|--------|------------------|------------------|-----------------|------------------|------------------|-------------------|----------|
| TZDRJP | 1.575" [40.0mm] | 1.575" [40.0mm] | | 1.575" [40.0mm] | | | |
| TZDRGP | 1.772" [45.0mm] | 1.772" [45.0mm] | | 1.772" [45.0mm] | | | |
| TZDRLP | 1.890" [48.0mm] | 1.890" [48.0mm] | | 1.890" [48.0mm] | | | |
| TZDRIP | 1.969" [50.0mm] | 1.969" [50.0mm] | | 1.969" [50.0mm] | | | |
| TZDRHP | 2.205" [56.0mm] | 2.205" [56.0mm] | | 2.205" [56.0mm] | | | |
| TZDRKP | 2.362" [60.0mm] | 2.362" [60.0mm] | | 2.362" [60.0mm] | | | |
| TZDRJW | 1.575" [40.0mm] | 1.575" [40.0mm] | | 1.575" [40.0mm] | | 0.787" [20.0mm] | |
| TZDRGW | 1.772" [45.0mm] | 1.772" [45.0mm] | | 1.772" [45.0mm] | | 0.886" [22.5mm] | |
| TZDRLW | 1.890" [48.0mm] | 1.890" [48.0mm] | | 1.890" [48.0mm] | | 0.945" [24.0mm] | |
| TZDRJX | 2.205" [56.0mm] | 2.205" [56.0mm] | | 2.205" [56.0mm] | | 1.260" [32.0mm] | |
| TZDRGX | 2.362" [60.0mm] | 2.362" [60.0mm] | | 2.362" [60.0mm] | | 1.417" [36.0mm] | |
| TZDRLX | 2.756" [70.0mm] | 2.756" [70.0mm] | | 2.756" [70.0mm] | | 1.575" [40.0mm] | |
| TZDRJY | 1.575" [40.0mm] | 1.575" [40.0mm] | | 1.575" [40.0mm] | | 1.102" [28.0mm] | |
| TZDRGY | 1.772" [45.0mm] | 1.772" [45.0mm] | | 1.772" [45.0mm] | | 1.299" [33.0mm] | |
| TZDRLY | 1.890" [48.0mm] | 1.890" [48.0mm] | | 1.890" [48.0mm] | | 1.417" [36.0mm] | |
| TZDRHY | 2.205" [56.0mm] | 2.205" [56.0mm] | | 2.205" [56.0mm] | | 1.732" [44.0mm] | |
| TZDRKY | 2.362" [60.0mm] | 2.362" [60.0mm] | | 2.362" [60.0mm] | | 1.890" [48.0mm] | |
| TZDRJZ | 1.575" [40.0mm] | 1.575" [40.0mm] | | 1.575" [40.0mm] | | 1.102" [28.0mm] | |
| TZDRGZ | 1.772" [45.0mm] | 1.772" [45.0mm] | 1.772" [45.0mm] | | 1.299" [33.0mm] | | |
| TZDRLZ | 1.890" [48.0mm] | 1.890" [48.0mm] | 1.890" [48.0mm] | | 1.417" [36.0mm] | | |
| TZDRHZ | 2.205" [56.0mm] | 2.205" [56.0mm] | 2.205" [56.0mm] | | 1.732" [44.0mm] | | |
| TZDRJU | 2.362" [60.0mm] | 2.362" [60.0mm] | | 2.362" [60.0mm] | | | M6 X0.5" |
| TZDRLU | 3.150" [80.0mm] | 3.150" [80.0mm] | | 3.150" [80.0mm] | | | M10X1.0" |
| TZDRHU | 3.937" [100.0mm] | 3.937" [100.0mm] | | 3.937" [100.0mm] | | | M16X1.5" |
| TZDRLV | 3.150" [80.0mm] | 3.150" [80.0mm] | | 3.150" [80.0mm] | 3.937" [100.0mm] | | M10X1.0" |
| TZDRHV | 3.937" [100.0mm] | 3.937" [100.0mm] | | 3.937" [100.0mm] | 5.512" [140.0mm] | | M16X1.5" |
| TZDRLM | 1.575" [50.0mm] | 1.575" [50.0mm] | | 1.575" [50.0mm] | | 0.61" [15.494mm] | |
| TZDRHM | 1.969" [50.0mm] | 1.969" [50.0mm] | | 1.969" [50.0mm] | | 1.004" [25.5mm] | |
| TZDRRM | 2.362" [60.0mm] | 2.362" [60.0mm] | | 2.362" [60.0mm] | | 1.161" [25.489mm] | |

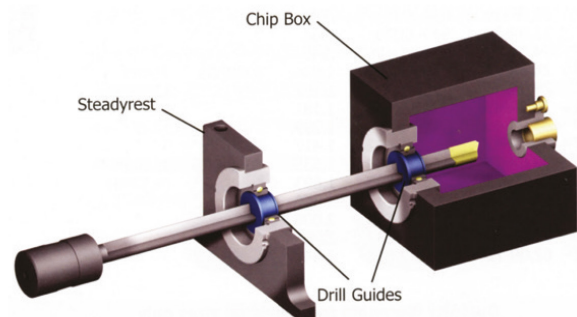
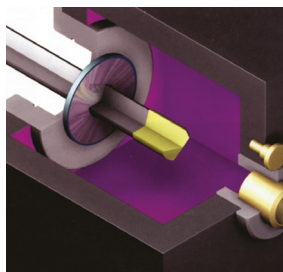
Chip Deflectors

Chip Deflectors stop metal chips and cutting oil from exiting the back of the chip box. They provide sealing only and no drill support. They are used on gun drill machines with short rigid drills when whipping is not a problem. They are also used in front of a Drill Guide or a SnapGuide® to extend bushing and bearing life. Chip Deflectors feature a hardened-steel face bonded to a flexible polymer backing to provide perfect sealing on the drill and long life.



Drill Guides

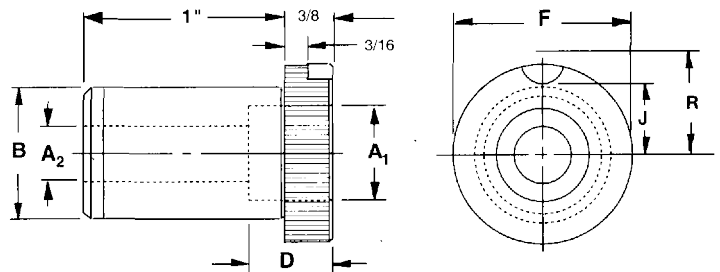
Flexible plastic Drill Guide bushings stop drill whipping and seal the chip box by stretching over the carbide drill tip and contracting onto the steel drill body. They are typically mounted in a bearing and rotate with the drill. This is our first and oldest product and is still used by many customers to maximize penetration rates, accuracy, and stop vibration. These bushings perform the same function as the SnapGuide®. Our signature Blue Bushings® guarantee you top quality.



Gun Drill Bushings

Liners - Type GDL

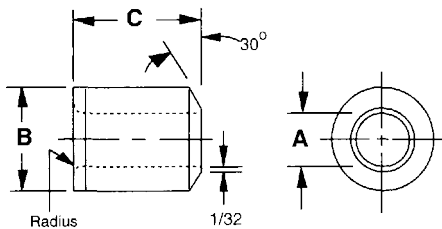
DMET Gun Drill Liners are designed to be used with the replaceable inserts indicated in the table below. All type TZGDL Bushings are ground concentric within .0002" T.I.R. The heads are undercut and ground square with outside diameters so the liner will sit flat against the chip box.



| Part Number | Description | A1 | A2 | B O.D. Size | | D | Head Dimensions | | | Lockscrew | Insert used |
|-------------|-------------|--------|------|----------------|------------------|------|-----------------|-------|--------|-----------|-------------|
| | | | | Nominal | Actual | | F | J | R | | |
| TZ100-10 | TZGDL6416 | .2045 | .125 | 1" | 1.0000 .9998 | 7/16 | 1-27/64 | 19/32 | 59/64 | 2A-LS | TZDI-13-8 |
| TZ100-12 | | .2515 | .156 | | | | | | | | TZDI-16-8 |
| TZ100-14 | | .3140 | .218 | | | | | | | | TZDI-20-8 |
| TZ100-16 | | .5016 | .406 | | | | | | | | TZDI-32-8 |
| TZ100-18 | | .7517 | .625 | | | | | | | | TZDI-48-8 |
| TZ100-40 | TZGDL8816 | .2045 | .125 | 1-3/8 | 1.3750 1.3748 | 7/16 | 1-51/64 | 25/32 | 1-7/64 | 2A-LS | TZDI-13-8 |
| TZ100-42 | | .2515 | .156 | | | | | | | | TZDI-16-8 |
| TZ100-44 | | .3140 | .218 | | | | | | | | TZDI-20-8 |
| TZ100-46 | | .5016 | .406 | | | | | | | | TZDI-32-8 |
| TZ100-48 | | .7517 | .625 | | | | | | | | TZDI-48-8 |
| TZ100-50 | | 1.0017 | .875 | | | | | | | | TZDI-64-12 |

Inserts - Type GDI

DMET Gun Drill Inserts are manufactured from thru-hardened tool steel and heat treated to 62-64 RC for longer life. The I.D., O.D., and face of TZDI Bushings are ground concentric and square within .0002" T.I.R. Inserts are stocked in standard drill sizes only. Special I.D. sizes and special materials (i.e. Carbide or Titanium Nitride coating) are available to meet your requirements.



| Description | A1 I.D. Range +.0002 /-.0000 | B O.D. Size | | C Lenght |
|-------------|------------------------------------|----------------|------------------|-------------|
| | | Nominal | Actual | |
| TZDI-13-8 | 5/16 - #39 (.0781) - (.0995) | 13/64 | .2047 .2044 | 1/2 |
| TZDI-16-8 | #38 - 9/64 (.1015) - (.1406) | 1/4 | .2517 .2514 | |
| TZDI-20-8 | #27 - #10 (.1440) - (.1935) | 5/16 | .3142 .3139 | |
| TZDI-32-8 | 13/64 - O (.2031) - (.3160) | 1/2 | .5018 .5015 | |
| TZDI-48-8 | P - 17/32 (.3230) - (.5312) | 3/4 | .7519 .7516 | |
| TZDI-64-12 | 9/16 - 3/4 (.05625) - (.7500) | 1" | 1.0019 1.0016 | 3/4 |

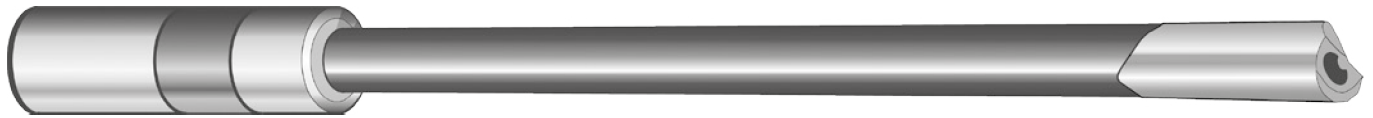
GUNDRILLS

Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|-------|-------------|-----------------------|------------------|-----------------|
| 5/64" | GTZ112758SK | 0.0781 x 6 | 1.984 x 152 | 0.50x1.50 |
| | GTZ112759SK | 0.0781 x 10 | 1.984 x 254 | 0.50x1.50 |
| #46 | GTZ100534SK | 0.0810 x 6 | 2.057 x 152 | 0.50x1.50 |
| | GTZ100535SK | 0.0810 x 10 | 2.057 x 254 | 0.50x1.50 |
| #45 | GTZ100006SK | 0.0820 x 6 | 2.083 x 152 | 0.50x1.50 |
| | GTZ112475SK | 0.0820 x 10 | 2.083 x 254 | 0.50x1.50 |
| #44 | GTZ100007SK | 0.0860 x 6 | 2.184 x 152 | 0.50x1.50 |
| | GTZ104708SK | 0.0860 x 10 | 2.184 x 254 | 0.50x1.50 |
| #43 | GTZ100008SK | 0.0890 x 6 | 2.261 x 152 | 0.50x1.50 |
| | GTZ112476SK | 0.0890 x 10 | 2.261 x 254 | 0.50x1.50 |
| 3/32" | GTZ112764SK | 0.0937 x 6 | 2.380 x 152 | 0.50x1.50 |
| | GTZ112765SK | 0.0937 x 10 | 2.380 x 254 | 0.50x1.50 |
| | GTZ111110SK | 0.0937 x 12 | 2.380 x 305 | 0.50x1.50 |
| | GTZ112766SK | 0.0937 x 16 | 2.380 x 406 | 0.50x1.50 |
| #41 | GTZ100536SK | 0.0960 x 6 | 2.438 x 152 | 0.50x1.50 |
| | GTZ100537SK | 0.0960 x 10 | 2.438 x 254 | 0.50x1.50 |
| #40 | GTZ100538SK | 0.0980 x 6 | 2.489 x 152 | 0.50x1.50 |
| | GTZ100539SK | 0.0980 x 10 | 2.489 x 254 | 0.50x1.50 |
| #39 | GTZ100540SK | 0.0995 x 6 | 2.527 x 152 | 0.50x1.50 |
| | GTZ100541SK | 0.0995 x 10 | 2.527 x 254 | 0.50x1.50 |
| #38 | GTZ100017SK | 0.1015 x 6 | 2.578 x 152 | 0.50x1.50 |
| | GTZ100542SK | 0.1015 x 10 | 2.578 x 254 | 0.50x1.50 |
| #37 | GTZ100019SK | 0.1040 x 6 | 2.642 x 152 | 0.50x1.50 |
| | GTZ100020SK | 0.1040 x 10 | 2.642 x 254 | 0.50x1.50 |
| #36 | GTZ100021SK | 0.1065 x 6 | 2.705 x 152 | 0.50x1.50 |
| | GTZ100543SK | 0.1065 x 10 | 2.705 x 254 | 0.50x1.50 |
| 7/64" | GTZ112767SK | 0.1094 x 6 | 2.778 x 152 | 0.50x1.50 |
| | GTZ112768SK | 0.1094 x 10 | 2.778 x 254 | 0.50x1.50 |
| | GTZ111520SK | 0.1094 x 12 | 2.778 x 305 | 0.50x1.50 |
| | GTZ112769SK | 0.1094 x 16 | 2.778 x 406 | 0.50x1.50 |
| #34 | GTZ100025SK | 0.1110 x 6 | 2.819 x 152 | 0.50x1.50 |
| | GTZ100026SK | 0.1110 x 10 | 2.819 x 254 | 0.50x1.50 |
| #33 | GTZ100027SK | 0.1130 x 6 | 2.870 x 152 | 0.50x1.50 |
| | GTZ100028SK | 0.1130 x 10 | 2.870 x 254 | 0.50x1.50 |
| #32 | GTZ100029SK | 0.1160 x 6 | 2.946 x 152 | 0.50x1.50 |
| | GTZ100030SK | 0.1160 x 10 | 2.946 x 254 | 0.50x1.50 |
| 3mm | GTZ100031SK | 0.1181 x 6 | 3.000 x 152 | 0.50x1.50 |
| | GTZ100544SK | 0.1181 x 10 | 3.000 x 254 | 0.50x1.50 |
| | GTZ112477SK | 0.1181 x 16 | 3.000 x 406 | 0.50x1.50 |

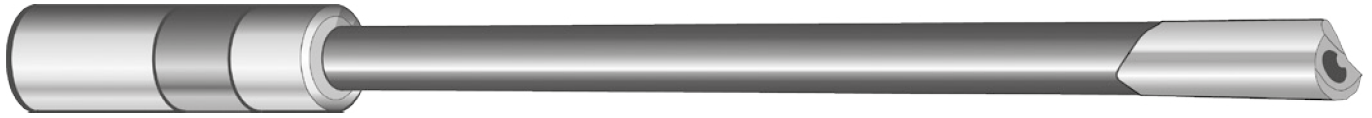
GUNDRILLS Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|-------|-------------|-----------------------|------------------|-----------------|
| #31 | GTZ100033SK | 0.1200 x 6 | 3.048 x 152 | 0.50x1.50 |
| | GTZ100034SK | 0.1200 x 10 | 3.048 x 254 | 0.50x1.50 |
| 1/8" | GTZ112773SK | 0.1250 x 10 | 3.175 x 254 | 0.75x2.75 |
| | GTZ111112SK | 0.1250 x 12 | 3.175 x 305 | 0.75x2.75 |
| | GTZ112774SK | 0.1250 x 16 | 3.175 x 406 | 0.75x2.75 |
| | GTZ112775SK | 0.1250 x 22 | 3.175 x 559 | 0.75x2.75 |
| | GTZ112776SK | 0.1250 x 28 | 3.175 x 711 | 0.75x2.75 |
| | GTZ100666SK | 0.1250 x 36 | 3.175 x 914 | 0.75x2.75 |
| #30 | GTZ100545SK | 0.1285 x 10 | 3.264 x 254 | 0.75x2.75 |
| | GTZ100546SK | 0.1285 x 16 | 3.264 x 406 | 0.75x2.75 |
| | GTZ100547SK | 0.1285 x 22 | 3.264 x 559 | 0.75x2.75 |
| | GTZ111776SK | 0.1285 x 28 | 3.264 x 711 | 0.75x2.75 |
| #29 | GTZ100548SK | 0.1360 x 10 | 3.454 x 254 | 0.75x2.75 |
| | GTZ100549SK | 0.1360 x 16 | 3.454 x 406 | 0.75x2.75 |
| | GTZ100550SK | 0.1360 x 22 | 3.454 x 559 | 0.75x2.75 |
| 9/64" | GTZ112778SK | 0.1406 x 10 | 3.571 x 254 | 0.75x2.75 |
| | GTZ111530SK | 0.1406 x 12 | 3.571 x 305 | 0.75x2.75 |
| | GTZ112779SK | 0.1406 x 16 | 3.571 x 406 | 0.75x2.75 |
| | GTZ112780SK | 0.1406 x 22 | 3.571 x 559 | 0.75x2.75 |
| #27 | GTZ100047SK | 0.1440 x 10 | 3.658 x 254 | 0.75x2.75 |
| | GTZ100048SK | 0.1440 x 16 | 3.658 x 406 | 0.75x2.75 |
| | GTZ100049SK | 0.1440 x 22 | 3.658 x 559 | 0.75x2.75 |
| #26 | GTZ100551SK | 0.1470 x 10 | 3.734 x 254 | 0.75x2.75 |
| | GTZ100552SK | 0.1470 x 16 | 3.734 x 406 | 0.75x2.75 |
| | GTZ100052SK | 0.1470 x 22 | 3.734 x 559 | 0.75x2.75 |
| #25 | GTZ100553SK | 0.1495 x 10 | 3.798 x 254 | 0.75x2.75 |
| | GTZ100554SK | 0.1495 x 16 | 3.798 x 406 | 0.75x2.75 |
| | GTZ100555SK | 0.1495 x 22 | 3.798 x 559 | 0.75x2.75 |
| #24 | GTZ100056SK | 0.1520 x 10 | 3.861 x 254 | 0.75x2.75 |
| | GTZ100057SK | 0.1520 x 16 | 3.861 x 406 | 0.75x2.75 |
| | GTZ100058SK | 0.1520 x 22 | 3.861 x 559 | 0.75x2.75 |
| 5/32" | GTZ112781SK | 0.1562 x 10 | 3.967 x 254 | 0.75x2.75 |
| | GTZ111114SK | 0.1562 x 12 | 3.967 x 305 | 0.75x2.75 |
| | GTZ112782SK | 0.1562 x 16 | 3.967 x 406 | 0.75x2.75 |
| | GTZ112783SK | 0.1562 x 22 | 3.967 x 559 | 0.75x2.75 |
| | GTZ112784SK | 0.1562 x 28 | 3.967 x 711 | 0.75x2.75 |
| | GTZ114079SK | 0.1562 x 36 | 3.967 x 914 | 0.75x2.75 |
| 4mm | GTZ112785SK | 0.1575 x 10 | 4.000 x 254 | 0.75x2.75 |
| | GTZ112786SK | 0.1575 x 16 | 4.000 x 406 | 0.75x2.75 |
| | GTZ112787SK | 0.1575 x 22 | 4.000 x 559 | 0.75x2.75 |

GUNDRILLS

Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|-------------|-----------------------|------------------|-----------------|
| #21 | GTZ100068SK | 0.1590 x 10 | 4.039 x 254 | 0.75x2.75 |
| | GTZ100069SK | 0.1590 x 16 | 4.039 x 406 | 0.75x2.75 |
| | GTZ100070SK | 0.1590 x 22 | 4.039 x 559 | 0.75x2.75 |
| #20 | GTZ100071SK | 0.1610 x 10 | 4.089 x 254 | 0.75x2.75 |
| | GTZ100072SK | 0.1610 x 16 | 4.089 x 406 | 0.75x2.75 |
| | GTZ100073SK | 0.1610 x 22 | 4.089 x 559 | 0.75x2.75 |
| #19 | GTZ100074SK | 0.1660 x 10 | 4.216 x 254 | 0.75x2.75 |
| | GTZ100075SK | 0.1660 x 16 | 4.216 x 406 | 0.75x2.75 |
| | GTZ100076SK | 0.1660 x 22 | 4.216 x 559 | 0.75x2.75 |
| 11/64" | GTZ112788SK | 0.1719 x 10 | 4.366 x 254 | 0.75x2.75 |
| | GTZ111540SK | 0.1719 x 12 | 4.366 x 305 | 0.75x2.75 |
| | GTZ112789SK | 0.1719 x 16 | 4.366 x 406 | 0.75x2.75 |
| | GTZ112790SK | 0.1719 x 22 | 4.366 x 559 | 0.75x2.75 |
| #17 | GTZ100556SK | 0.1730 x 10 | 4.394 x 254 | 0.75x2.75 |
| | GTZ100557SK | 0.1730 x 16 | 4.394 x 406 | 0.75x2.75 |
| | GTZ100085SK | 0.1730 x 22 | 4.394 x 559 | 0.75x2.75 |
| #16 | GTZ100558SK | 0.1770 x 10 | 4.496 x 254 | 0.75x2.75 |
| | GTZ100559SK | 0.1770 x 16 | 4.496 x 406 | 0.75x2.75 |
| | GTZ100088SK | 0.1770 x 22 | 4.496 x 559 | 0.75x2.75 |
| #15 | GTZ100089SK | 0.1800 x 10 | 4.572 x 254 | 0.75x2.75 |
| | GTZ100090SK | 0.1800 x 16 | 4.572 x 406 | 0.75x2.75 |
| | GTZ100091SK | 0.1800 x 22 | 4.572 x 559 | 0.75x2.75 |
| #14 | GTZ100092SK | 0.1820 x 10 | 4.623 x 254 | 0.75x2.75 |
| | GTZ100093SK | 0.1820 x 16 | 4.623 x 406 | 0.75x2.75 |
| | GTZ100094SK | 0.1820 x 22 | 4.623 x 559 | 0.75x2.75 |
| #13 | GTZ100095SK | 0.1850 x 10 | 4.699 x 254 | 0.75x2.75 |
| | GTZ100096SK | 0.1850 x 16 | 4.699 x 406 | 0.75x2.75 |
| | GTZ100097SK | 0.1850 x 22 | 4.699 x 559 | 0.75x2.75 |
| 3/16" | GTZ112791SK | 0.1875 x 10 | 4.763 x 254 | 0.75x2.75 |
| | GTZ111116SK | 0.1875 x 12 | 4.763 x 305 | 0.75x2.75 |
| | GTZ112792SK | 0.1875 x 16 | 4.763 x 406 | 0.75x2.75 |
| | GTZ112793SK | 0.1875 x 22 | 4.763 x 559 | 0.75x2.75 |
| | GTZ112794SK | 0.1875 x 28 | 4.763 x 711 | 0.75x2.75 |
| | GTZ112795SK | 0.1875 x 36 | 4.763 x 914 | 0.75x2.75 |
| | GTZ112796SK | 0.1875 x 48 | 4.763 x 121 | 0.75x2.75 |
| #12 | GTZ100103SK | 0.1890 x 10 | 4.801 x 254 | 0.75x2.75 |
| | GTZ100104SK | 0.1890 x 16 | 4.801 x 406 | 0.75x2.75 |
| | GTZ100105SK | 0.1890 x 22 | 4.801 x 559 | 0.75x2.75 |

GUNDRILLS

Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|-------------|-----------------------|------------------|-----------------|
| #11 | GTZ100106SK | 0.1910 x 10 | 4.851 x 254 | 0.75x2.75 |
| | GTZ100107SK | 0.1910 x 16 | 4.851 x 406 | 0.75x2.75 |
| | GTZ100108SK | 0.1910 x 22 | 4.851 x 559 | 0.75x2.75 |
| #10 | GTZ100109SK | 0.1935 x 10 | 4.915 x 254 | 0.75x2.75 |
| | GTZ100110SK | 0.1935 x 16 | 4.915 x 406 | 0.75x2.75 |
| | GTZ100111SK | 0.1935 x 22 | 4.915 x 559 | 0.75x2.75 |
| 5 mm | GTZ100560SK | 0.1968 x 10 | 5.000 x 254 | 0.75x2.75 |
| | GTZ100561SK | 0.1968 x 16 | 5.000 x 406 | 0.75x2.75 |
| | GTZ100114SK | 0.1968 x 22 | 5.000 x 559 | 0.75x2.75 |
| #8 | GTZ100115SK | 0.1990 x 10 | 5.055 x 254 | 0.75x2.75 |
| | GTZ100116SK | 0.1990 x 16 | 5.055 x 406 | 0.75x2.75 |
| | GTZ100117SK | 0.1990 x 22 | 5.055 x 559 | 0.75x2.75 |
| #7 | GTZ100118SK | 0.2010 x 10 | 5.105 x 254 | 0.75x2.75 |
| | GTZ100119SK | 0.2010 x 16 | 5.105 x 406 | 0.75x2.75 |
| | GTZ100120SK | 0.2010 x 22 | 5.105 x 559 | 0.75x2.75 |
| 13/64" | GTZ112802SK | 0.2031 x 10 | 5.159 x 254 | 0.75x2.75 |
| | GTZ111550SK | 0.2031 x 12 | 5.159 x 305 | 0.75x2.75 |
| | GTZ112803SK | 0.2031 x 16 | 5.159 x 406 | 0.75x2.75 |
| | GTZ112804SK | 0.2031 x 22 | 5.159 x 559 | 0.75x2.75 |
| | GTZ112805SK | 0.2031 x 28 | 5.159 x 711 | 0.75x2.75 |
| | GTZ112806SK | 0.2031 x 36 | 5.159 x 914 | 0.75x2.75 |
| #4 | GTZ100132SK | 0.2090 x 10 | 5.309 x 254 | 0.75x2.75 |
| | GTZ100133SK | 0.2090 x 16 | 5.309 x 406 | 0.75x2.75 |
| | GTZ100134SK | 0.2090 x 22 | 5.309 x 559 | 0.75x2.75 |
| #3 | GTZ100562SK | 0.2130 x 10 | 5.410 x 254 | 0.75x2.75 |
| | GTZ100563SK | 0.2130 x 16 | 5.410 x 406 | 0.75x2.75 |
| | GTZ100564SK | 0.2130 x 22 | 5.410 x 559 | 0.75x2.75 |
| 7/32" | GTZ112807SK | 0.2187 x 10 | 5.555 x 254 | 0.75x2.75 |
| | GTZ111778SK | 0.2187 x 12 | 5.555 x 305 | 0.75x2.75 |
| | GTZ112808SK | 0.2187 x 16 | 5.555 x 406 | 0.75x2.75 |
| | GTZ112809SK | 0.2187 x 22 | 5.555 x 559 | 0.75x2.75 |
| | GTZ112810SK | 0.2187 x 28 | 5.555 x 711 | 0.75x2.75 |
| | GTZ112811SK | 0.2187 x 36 | 5.555 x 914 | 0.75x2.75 |
| #2 | GTZ100565SK | 0.2210 x 10 | 5.613 x 254 | 0.75x2.75 |
| | GTZ100566SK | 0.2210 x 16 | 5.613 x 406 | 0.75x2.75 |
| | GTZ100567SK | 0.2210 x 22 | 5.613 x 559 | 0.75x2.75 |
| #1 | GTZ100146SK | 0.2280 x 10 | 5.791 x 254 | 0.75x2.75 |
| | GTZ100147SK | 0.2280 x 16 | 5.791 x 406 | 0.75x2.75 |
| | GTZ100148SK | 0.2280 x 22 | 5.791 x 559 | 0.75x2.75 |

GUNDRILLS

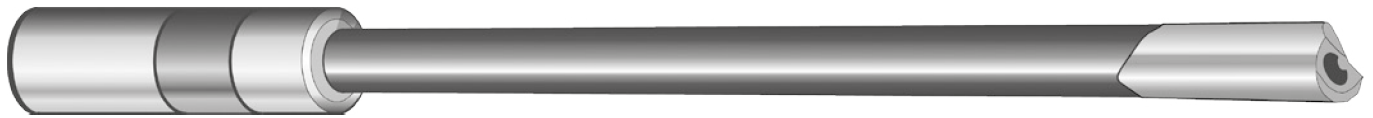
Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|---------------|-------------|-----------------------|------------------|-----------------|
| 15/64" | GTZ112812SK | 0.2344 x 10 | 5.953 x 254 | 0.75x2.75 |
| | GTZ111560SK | 0.2344 x 12 | 5.953 x 305 | 0.75x2.75 |
| | GTZ112813SK | 0.2344 x 16 | 5.953 x 406 | 0.75x2.75 |
| | GTZ112814SK | 0.2344 x 22 | 5.953 x 559 | 0.75x2.75 |
| | GTZ100568SK | 0.2344 x 28 | 5.953 x 711 | 0.75x2.75 |
| | GTZ100569SK | 0.2344 x 36 | 5.953 x 914 | 0.75x2.75 |
| 6mm | GTZ112817SK | 0.2362 x 10 | 6.000 x 254 | 0.75x2.75 |
| | GTZ112818SK | 0.2362 x 16 | 6.000 x 406 | 0.75x2.75 |
| | GTZ1112819S | K 0.236 2 x 2 | 2 6.00 0 x 55 | 0.75x2.75 |
| Let. B | GTZ100157SK | 0.2380 x 10 | 6.045 x 254 | 0.75x2.75 |
| | GTZ100158SK | 0.2380 x 16 | 6.045 x 406 | 0.75x2.75 |
| | GTZ100159SK | 0.2380 x 22 | 6.045 x 559 | 0.75x2.75 |
| Let. C | GTZ100160SK | 0.2420 x 10 | 6.147 x 254 | 0.75x2.75 |
| | GTZ100161SK | 0.2420 x 16 | 6.147 x 406 | 0.75x2.75 |
| | GTZ100162SK | 0.2420 x 22 | 6.147 x 559 | 0.75x2.75 |
| Let. D | GTZ100163SK | 0.2460 x 10 | 6.248 x 254 | 0.75x2.75 |
| | GTZ112821SK | 0.2460 x 16 | 6.248 x 406 | 0.75x2.75 |
| | GTZ100165SK | 0.2460 x 22 | 6.248 x 559 | 0.75x2.75 |
| 1/4" & Let. E | GTZ112823SK | 0.2500 x 10 | 6.350 x 254 | 0.75x2.75 |
| | GTZ111118SK | 0.2500 x 12 | 6.350 x 305 | 0.75x2.75 |
| | GTZ112824SK | 0.2500 x 16 | 6.350 x 406 | 0.75x2.75 |
| | GTZ112825SK | 0.2500 x 22 | 6.350 x 559 | 0.75x2.75 |
| | GTZ112826SK | 0.2500 x 28 | 6.350 x 711 | 0.75x2.75 |
| | GTZ100570SK | 0.2500 x 36 | 6.350 x 914 | 0.75x2.75 |
| | GTZ100571SK | 0.2500 x 48 | 6.350 x 121 | 0.75x2.75 |
| Let. F | GTZ100572SK | 0.2570 x 10 | 6.528 x 254 | 0.75x2.75 |
| | GTZ100573SK | 0.2570 x 16 | 6.528 x 406 | 0.75x2.75 |
| | GTZ100574SK | 0.2570 x 22 | 6.528 x 559 | 0.75x2.75 |
| Let. G | GTZ100175SK | 0.2610 x 10 | 6.629 x 254 | 0.75x2.75 |
| | GTZ100176SK | 0.2610 x 16 | 6.629 x 406 | 0.75x2.75 |
| | GTZ100177SK | 0.2610 x 22 | 6.629 x 559 | 0.75x2.75 |
| | GTZ112478SK | 0.2610 x 28 | 6.629 x 711 | 0.75x2.75 |
| | GTZ114080SK | 0.2610 x 36 | 6.629 x 914 | 0.75x2.75 |
| 17/64" | GTZ100575SK | 0.2610 x 10 | 6.629 x 254 | 0.75x2.75 |
| | GTZ100570SK | 0.2610 x 12 | 6.629 x 304 | 0.75x2.75 |
| | GTZ111576SK | 0.2610 x 16 | 6.629 x 406 | 0.75x2.75 |
| | GTZ100577SK | 0.2610 x 22 | 6.629 x 559 | 0.75x2.75 |
| | GTZ100181SK | 0.2610 x 28 | 6.629 x 711 | 0.75x2.75 |
| | GTZ100578SK | 0.2610 x 36 | 6.629 x 914 | 0.75x2.75 |
| | GTZ114081SK | 0.2610 x 48 | 6.629 x 121 | 0.75x2.75 |

GUNDRILLS

Kidney Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|-------------|-----------------------|------------------|-----------------|
| Let. I | GTZ100183SK | 0.2720 x 10 | 6.909 x 254 | 0.75x2.75 |
| | GTZ100184SK | 0.2720 x 16 | 6.909 x 406 | 0.75x2.75 |
| | GTZ100185SK | 0.2720 x 22 | 6.909 x 559 | 0.75x2.75 |
| 7mm | GTZ100186SK | 0.2756 x 10 | 7.000 x 254 | 0.75x2.75 |
| | GTZ100187SK | 0.2756 x 16 | 7.000 x 406 | 0.75x2.75 |
| | GTZ100188SK | 0.2756 x 22 | 7.000 x 559 | 0.75x2.75 |
| Let. J | GTZ100189SK | 0.2770 x 10 | 7.036 x 254 | 0.75x2.75 |
| | GTZ100190SK | 0.2770 x 16 | 7.036 x 406 | 0.75x2.75 |
| | GTZ100191SK | 0.2770 x 22 | 7.036 x 559 | 0.75x2.75 |
| 9/32" | GTZ100192SK | 0.2812 x 10 | 7.142 x 254 | 0.75x2.75 |
| | GTZ111580SK | 0.2812 x 12 | 7.142 x 304 | 0.75x2.75 |
| | GTZ100579SK | 0.2812 x 16 | 7.142 x 406 | 0.75x2.75 |
| | GTZ100580SK | 0.2812 x 22 | 7.142 x 559 | 0.75x2.75 |
| | GTZ100195SK | 0.2812 x 28 | 7.142 x 711 | 0.75x2.75 |
| | GTZ100581SK | 0.2812 x 36 | 7.142 x 914 | 0.75x2.75 |
| | GTZ100582SK | 0.2812 x 48 | 7.142 x 121 | 0.75x2.75 |
| Let. L | GTZ100198SK | 0.2900 x 10 | 7.366 x 254 | 0.75x2.75 |
| | GTZ100199SK | 0.2900 x 16 | 7.366 x 406 | 0.75x2.75 |
| | GTZ100583SK | 0.2900 x 22 | 7.366 x 559 | 0.75x2.75 |
| 19/64" | GTZ112846SK | 0.2969 x 10 | 7.541 x 254 | 0.75x2.75 |
| | GTZ111590SK | 0.2969 x 12 | 7.541 x 304 | 0.75x2.75 |
| | GTZ112847SK | 0.2969 x 16 | 7.541 x 406 | 0.75x2.75 |
| | GTZ112848SK | 0.2969 x 22 | 7.541 x 559 | 0.75x2.75 |
| | GTZ112849SK | 0.2969 x 28 | 7.541 x 711 | 0.75x2.75 |
| | GTZ112850SK | 0.2969 x 36 | 7.541 x 914 | 0.75x2.75 |
| Let. N | GTZ100209SK | 0.3020 x 10 | 7.671 x 254 | 0.75x2.75 |
| | GTZ100210SK | 0.3020 x 16 | 7.671 x 406 | 0.75x2.75 |
| | GTZ100211SK | 0.3020 x 22 | 7.671 x 559 | 0.75x2.75 |
| | GTZ112851SK | 0.3125 x 10 | 7.938 x 254 | 0.75x2.75 |
| 5/16" | GTZ111121SK | 0.3125 x 12 | 7.938 x 304 | 0.75x2.75 |
| | GTZ112852SK | 0.3125 x 16 | 7.938 x 406 | 0.75x2.75 |
| | GTZ112853SK | 0.3125 x 22 | 7.938 x 559 | 0.75x2.75 |
| | GTZ112854SK | 0.3125 x 28 | 7.938 x 711 | 0.75x2.75 |
| | GTZ112855SK | 0.3125 x 36 | 7.938 x 914 | 0.75x2.75 |
| | GTZ112856SK | 0.3125 x 48 | 7.938 x 121 | 0.75x2.75 |
| 8mm | GTZ100218SK | 0.3150 x 10 | 8.000 x 254 | 0.75x2.75 |
| | GTZ100219SK | 0.3150 x 16 | 8.000 x 406 | 0.75x2.75 |
| | GTZ100220SK | 0.3150 x 22 | 8.000 x 559 | 0.75x2.75 |
| | GTZ114082SK | 0.3150 x 36 | 8.000 x 914 | 0.75x2.75 |

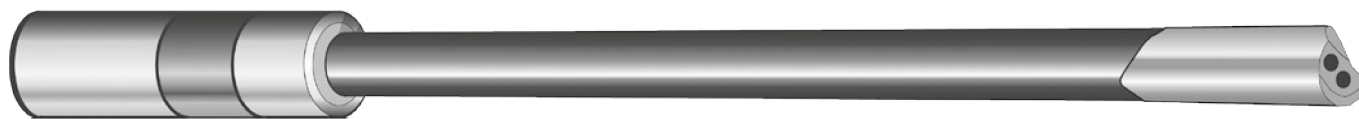
GUNDRILLS

Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|------------|-----------------------|------------------|-----------------|
| Let. P | GCTZ100225 | 0.3230 x 10 | 8.204 x 254 | .75 x 2.75 |
| | GCTZ100226 | 0.3230 x 16 | 8.204 x 406 | .75 x 2.75 |
| | GCTZ100646 | 0.3230 x 22 | 8.204 x 559 | .75 x 2.75 |
| 21/64" | GCTZ100227 | 0.3281 x 10 | 8.204 x 254 | .75 x 2.75 |
| | GCTZ111610 | 0.3281 x 12 | 8.204 x 305 | .75 x 2.75 |
| | GCTZ100228 | 0.3281 x 16 | 8.204 x 406 | .75 x 2.75 |
| | GCTZ100229 | 0.3281 x 22 | 8.204 x 559 | .75 x 2.75 |
| | GCTZ100230 | 0.3281 x 28 | 8.204 x 711 | .75 x 2.75 |
| | GCTZ100231 | 0.3281 x 36 | 8.204 x 914 | .75 x 2.75 |
| Let. Q | GCTZ100232 | 0.3320 x 10 | 8.433 x 254 | .75 x 2.75 |
| | GCTZ100233 | 0.3320 x 16 | 8.433 x 406 | .75 x 2.75 |
| | GCTZ100234 | 0.3320 x 22 | 8.433 x 559 | .75 x 2.75 |
| Let. R | GCTZ100235 | 0.3390 x 10 | 8.611 x 254 | .75 x 2.75 |
| | GCTZ100236 | 0.3390 x 16 | 8.611 x 406 | .75 x 2.75 |
| | GCTZ100237 | 0.3390 x 22 | 8.611 x 559 | .75 x 2.75 |
| 11/32" | GCTZ100238 | 0.3437 x 10 | 8.730 x 254 | .75 x 2.75 |
| | GCTZ111620 | 0.3437 x 12 | 8.730 x 305 | .75 x 2.75 |
| | GCTZ100239 | 0.3437 x 16 | 8.730 x 406 | .75 x 2.75 |
| | GCTZ100240 | 0.3437 x 22 | 8.730 x 559 | .75 x 2.75 |
| | GCTZ100241 | 0.3437 x 28 | 8.730 x 711 | .75 x 2.75 |
| | GCTZ100242 | 0.3437 x 36 | 8.730 x 914 | .75 x 2.75 |
| | GCTZ100243 | 0.3437 x 48 | 8.730 x 1219 | .75 x 2.75 |
| Let. S | GCTZ100244 | 0.3480 x 10 | 8.839 x 254 | .75 x 2.75 |
| | GCTZ100245 | 0.3480 x 16 | 8.839 x 406 | .75 x 2.75 |
| | GCTZ100246 | 0.3480 x 22 | 8.839 x 559 | .75 x 2.75 |
| 9mm | GCTZ100438 | 0.3543 x 10 | 9.000 x 254 | .75 x 2.75 |
| | GCTZ100439 | 0.3543 x 16 | 9.000 x 406 | .75 x 2.75 |
| | GCTZ100440 | 0.3543 x 22 | 9.000 x 559 | .75 x 2.75 |
| 23/64" | GCTZ100253 | 0.3594 x 10 | 9.129 x 254 | .75 x 2.75 |
| | GCTZ111630 | 0.3594 x 12 | 9.129 x 305 | .75 x 2.75 |
| | GCTZ100254 | 0.3594 x 16 | 9.129 x 406 | .75 x 2.75 |
| | GCTZ100255 | 0.3594 x 22 | 9.129 x 559 | .75 x 2.75 |
| | GCTZ100256 | 0.3594 x 28 | 9.129 x 711 | .75 x 2.75 |
| | GCTZ100257 | 0.3594 x 36 | 9.129 x 914 | .75 x 2.75 |
| Let. U | GCTZ100258 | 0.3680 x 10 | 9.347 x 254 | .75 x 2.75 |
| | GCTZ100259 | 0.3680 x 16 | 9.347 x 406 | .75 x 2.75 |
| | GCTZ100260 | 0.3680 x 22 | 9.347 x 559 | .75 x 2.75 |
| 3/8" | GCTZ100261 | 0.3750 x 10 | 9.525 x 254 | .75 x 2.75 |
| | GCTZ111121 | 0.3750 x 12 | 9.525 x 305 | .75 x 2.75 |
| | GCTZ100262 | 0.3750 x 16 | 9.525 x 406 | .75 x 2.75 |

GUNDRILLS Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|------------|-----------------------|------------------|-----------------|
| 3/8" | GCTZ100263 | 0.3750 x 22 | 9.525 x 559 | .75 x 2.75 |
| | GCTZ100264 | 0.3750 x 28 | 9.525 x 711 | .75 x 2.75 |
| | GCTZ100265 | 0.3750 x 36 | 9.525 x 914 | .75 x 2.75 |
| | GCTZ100266 | 0.3750 x 48 | 9.525 x 1219 | .75 x 2.75 |
| Let. V | GCTZ100668 | 0.3770 x 10 | 9.576 x 254 | .75 x 2.75 |
| | GCTZ100267 | 0.3770 x 16 | 9.576 x 406 | .75 x 2.75 |
| | GCTZ100268 | 0.3770 x 22 | 9.576 x 559 | .75 x 2.75 |
| | GCTZ100269 | 0.3770 x 36 | 9.576 x 914 | .75 x 2.75 |
| Let. W | GCTZ100270 | 0.3860 x 16 | 9.804 x 406 | .75 x 2.75 |
| | GCTZ100271 | 0.3860 x 22 | 9.804 x 559 | .75 x 2.75 |
| | GCTZ100272 | 0.3860 x 36 | 9.804 x 914 | .75 x 2.75 |
| 25/64" | GCTZ100647 | 0.3906 x 10 | 9.921 x 254 | .75 x 2.75 |
| | GCTZ111640 | 0.3906 x 12 | 9.921 x 305 | .75 x 2.75 |
| | GCTZ100274 | 0.3906 x 16 | 9.921 x 406 | .75 x 2.75 |
| | GCTZ100275 | 0.3906 x 22 | 9.921 x 559 | .75 x 2.75 |
| | GCTZ100276 | 0.3906 x 28 | 9.921 x 711 | .75 x 2.75 |
| | GCTZ100277 | 0.3906 x 36 | 9.921 x 914 | .75 x 2.75 |
| 10mm | GCTZ114083 | 0.3937 x 10 | 10.000 x 254 | .75 x 2.75 |
| | GCTZ100278 | 0.3937 x 16 | 10.000 x 406 | .75 x 2.75 |
| | GCTZ100279 | 0.3937 x 22 | 10.000 x 559 | .75 x 2.75 |
| | GCTZ100280 | 0.3937 x 36 | 10.000 x 914 | .75 x 2.75 |
| | GCTZ114084 | 0.3937 x 48 | 10.000 x 1219 | .75 x 2.75 |
| Let. X | GCTZ100281 | 0.3970 x 16 | 10.084 x 406 | .75 x 2.75 |
| | GCTZ100282 | 0.3970 x 22 | 10.084 x 559 | .75 x 2.75 |
| | GCTZ100283 | 0.3970 x 36 | 10.084 x 914 | .75 x 2.75 |
| 13/32" | GCTZ100287 | 0.4062 x 10 | 10.317 x 254 | .75 x 2.75 |
| | GCTZ111650 | 0.4062 x 12 | 10.317 x 305 | .75 x 2.75 |
| | GCTZ100288 | 0.4062 x 16 | 10.317 x 406 | .75 x 2.75 |
| | GCTZ100289 | 0.4062 x 22 | 10.317 x 559 | .75 x 2.75 |
| | GCTZ100290 | 0.4062 x 28 | 10.317 x 711 | .75 x 2.75 |
| | GCTZ100291 | 0.4062 x 36 | 10.317 x 914 | .75 x 2.75 |
| | GCTZ100292 | 0.4062 x 48 | 10.317 x 1219 | .75 x 2.75 |
| 27/64" | GCTZ100296 | 0.4219 x 10 | 10.716 x 254 | .75 x 2.75 |
| | GCTZ111660 | 0.4219 x 12 | 10.716 x 305 | .75 x 2.75 |
| | GCTZ100297 | 0.4219 x 16 | 10.716 x 406 | .75 x 2.75 |
| | GCTZ100298 | 0.4219 x 22 | 10.716 x 559 | .75 x 2.75 |
| | GCTZ100299 | 0.4219 x 28 | 10.716 x 711 | .75 x 2.75 |
| | GCTZ100300 | 0.4219 x 36 | 10.716 x 914 | .75 x 2.75 |
| | GCTZ112479 | 0.4219 x 48 | 10.716 x 1219 | .75 x 2.75 |

GUNDRILLS

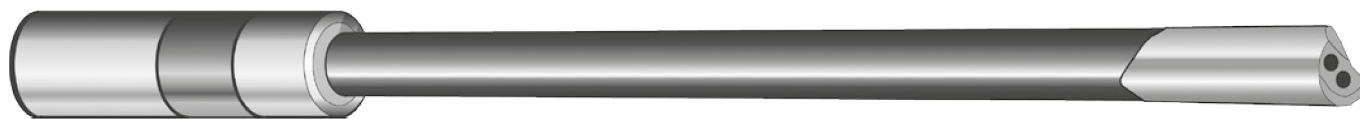
Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (Inches) |
|--------|------------|-----------------------|------------------|-----------------|
| 11mm | GCTZ100301 | 0.4331 x 16 | 11.000 x 406 | .75 x 2.75 |
| | GCTZ100302 | 0.4331 x 22 | 11.000 x 559 | .75 x 2.75 |
| | GCTZ100303 | 0.4331 x 36 | 11.000 x 914 | .75 x 2.75 |
| 7/16" | GCTZ100304 | 0.4375 x 10 | 11.113 x 254 | .75 x 2.75 |
| | GCTZ111123 | 0.4375 x 12 | 11.113 x 305 | .75 x 2.75 |
| | GCTZ100305 | 0.4375 x 16 | 11.113 x 406 | .75 x 2.75 |
| | GCTZ100306 | 0.4375 x 22 | 11.113 x 559 | .75 x 2.75 |
| | GCTZ100307 | 0.4375 x 28 | 11.113 x 711 | .75 x 2.75 |
| | GCTZ100308 | 0.4375 x 36 | 11.113 x 914 | .75 x 2.75 |
| | GCTZ100309 | 0.4375 x 48 | 11.113 x 1219 | .75 x 2.75 |
| 29/64" | GCTZ100310 | 0.4531 x 10 | 11.509 x 254 | .75 x 2.75 |
| | GCTZ111670 | 0.4531 x 12 | 11.509 x 305 | .75 x 2.75 |
| | GCTZ100311 | 0.4531 x 16 | 11.509 x 406 | .75 x 2.75 |
| | GCTZ100312 | 0.4531 x 22 | 11.509 x 559 | .75 x 2.75 |
| | GCTZ100313 | 0.4531 x 28 | 11.509 x 711 | .75 x 2.75 |
| | GCTZ100314 | 0.4531 x 36 | 11.509 x 914 | .75 x 2.75 |
| | GCTZ112480 | 0.4531 x 48 | 11.509 x 1219 | .75 x 2.75 |
| 15/32" | GCTZ100315 | 0.4687 x 10 | 11.905 x 254 | .75 x 2.75 |
| | GCTZ111680 | 0.4687 x 12 | 11.905 x 305 | .75 x 2.75 |
| | GCTZ100316 | 0.4687 x 16 | 11.905 x 406 | .75 x 2.75 |
| | GCTZ100317 | 0.4687 x 22 | 11.905 x 559 | .75 x 2.75 |
| | GCTZ100318 | 0.4687 x 28 | 11.905 x 711 | .75 x 2.75 |
| | GCTZ100319 | 0.4687 x 36 | 11.905 x 914 | .75 x 2.75 |
| | GCTZ100320 | 0.4687 x 48 | 11.905 | .75 x 2.75 |
| 12mm | GCTZ100321 | 0.4724 x 16 | 12.000 x 406 | .75 x 2.75 |
| | GCTZ100322 | 0.4724 x 22 | 12.000 x 559 | .75 x 2.75 |
| | GCTZ100323 | 0.4724 x 36 | 12.000 x 914 | .75 x 2.75 |
| 31/64" | GCTZ114085 | 0.4844 x 10 | 12.304 x 254 | .75 x 2.75 |
| | GCTZ111690 | 0.4844 x 12 | 12.304 x 305 | .75 x 2.75 |
| | GCTZ100325 | 0.4844 x 16 | 12.304 x 406 | .75 x 2.75 |
| | GCTZ100326 | 0.4844 x 22 | 12.304 x 559 | .75 x 2.75 |
| | GCTZ100327 | 0.4844 x 28 | 12.304 x 711 | .75 x 2.75 |
| | GCTZ100328 | 0.4844 x 36 | 12.304 x 914 | .75 x 2.75 |
| 1/2" | GCTZ100329 | 0.5000 x 10 | 12.700 x 254 | .75 x 2.75 |
| | GCTZ111720 | 0.5000 x 12 | 12.700 x 305 | .75 x 2.75 |
| | GCTZ100330 | 0.5000 x 16 | 12.700 x 406 | .75 x 2.75 |
| | GCTZ100331 | 0.5000 x 22 | 12.700 x 559 | .75 x 2.75 |
| | GCTZ100332 | 0.5000 x 28 | 12.700 x 711 | .75 x 2.75 |
| | GCTZ100333 | 0.5000 x 36 | 12.700 x 914 | .75 x 2.75 |
| | GCTZ100334 | 0.5000 x 48 | 12.700 x 1219 | .75 x 2.75 |

GUNDRILLS

Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|------------|-----------------------|------------------|-----------------|
| 33/64" | GCTZ100335 | 0.5156 x 16 | 13.096 x 406 | .75 x 2.75 |
| | GCTZ100336 | 0.5156 x 22 | 13.096 x 559 | .75 x 2.75 |
| | GCTZ100337 | 0.5156 x 36 | 13.096 x 914 | .75 x 2.75 |
| 17/32" | GCTZ100338 | 0.5312 x 16 | 13.492 x 406 | .75 x 2.75 |
| | GCTZ100339 | 0.5312 x 22 | 13.492 x 559 | .75 x 2.75 |
| | GCTZ100340 | 0.5312 x 36 | 13.492 x 914 | .75 x 2.75 |
| | GCTZ114086 | 0.5312 x 48 | 13.492 x 1219 | .75 x 2.75 |
| 35/64" | GCTZ100341 | 0.5469 x 16 | 13.891 x 406 | .75 x 2.75 |
| | GCTZ100342 | 0.5469 x 22 | 13.891 x 559 | .75 x 2.75 |
| | GCTZ100343 | 0.5469 x 36 | 13.891 x 914 | .75 x 2.75 |
| 9/16" | GCTZ100344 | 0.5625 x 16 | 14.288 x 406 | .75 x 2.75 |
| | GCTZ100345 | 0.5625 x 22 | 14.288 x 559 | .75 x 2.75 |
| | GCTZ119839 | 0.5625 x 28 | 14.288 x 711 | .75 x 2.75 |
| | GCTZ100346 | 0.5625 x 36 | 14.288 x 914 | .75 x 2.75 |
| | GCTZ100347 | 0.5625 x 48 | 14.288 x 1219 | .75 x 2.75 |
| 37/64" | GCTZ100348 | 0.5781 x 16 | 14.684 x 406 | .75 x 2.75 |
| | GCTZ100349 | 0.5781 x 22 | 14.684 x 559 | .75 x 2.75 |
| | GCTZ100350 | 0.5781 x 36 | 14.684 x 914 | .75 x 2.75 |
| 19/32" | GCTZ100351 | 0.5937 x 16 | 15.080 x 406 | .75 x 2.75 |
| | GCTZ100352 | 0.5937 x 22 | 15.080 x 559 | .75 x 2.75 |
| | GCTZ100353 | 0.5937 x 36 | 15.080 x 914 | .75 x 2.75 |
| | GCTZ112481 | 0.5937 x 48 | 15.080 x 1219 | .75 x 2.75 |
| 39/64" | GCTZ100354 | 0.6094 x 16 | 15.479 x 406 | .75 x 2.75 |
| | GCTZ100355 | 0.6094 x 22 | 15.479 x 559 | .75 x 2.75 |
| | GCTZ100356 | 0.6094 x 36 | 15.479 x 914 | .75 x 2.75 |
| 5/8" | GCTZ100357 | 0.6250 x 16 | 15.875 x 406 | .75 x 2.75 |
| | GCTZ100358 | 0.6250 x 22 | 15.875 x 559 | .75 x 2.75 |
| | GCTZ114087 | 0.6250 x 28 | 15.875 x 711 | .75 x 2.75 |
| | GCTZ100359 | 0.6250 x 36 | 15.875 x 914 | .75 x 2.75 |
| | GCTZ100360 | 0.6250 x 48 | 15.875 x 1219 | .75 x 2.75 |
| 41/64" | GCTZ100361 | 0.6406 x 16 | 16.271 x 406 | .75 x 2.75 |
| | GCTZ100362 | 0.6406 x 22 | 16.271 x 559 | .75 x 2.75 |
| | GCTZ100363 | 0.6406 x 36 | 16.271 x 914 | .75 x 2.75 |
| 21/32" | GCTZ100364 | 0.6562 x 16 | 16.667 x 406 | .75 x 2.75 |
| | GCTZ100365 | 0.6562 x 22 | 16.667 x 559 | .75 x 2.75 |
| | GCTZ100366 | 0.6562 x 36 | 16.667 x 914 | .75 x 2.75 |
| 43/64" | GCTZ100367 | 0.6719 x 16 | 17.066 x 406 | .75 x 2.75 |
| | GCTZ100368 | 0.6719 x 22 | 17.066 x 559 | .75 x 2.75 |
| | GCTZ100369 | 0.6719 x 36 | 17.066 x 914 | .75 x 2.75 |

GUNDRILLS

Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|------------|-----------------------|------------------|-----------------|
| 11/16" | GCTZ100370 | 0.6875 x 16 | 17.463 x 406 | .75 x 2.75 |
| | GCTZ100371 | 0.6875 x 22 | 17.463 x 559 | .75 x 2.75 |
| | GCTZ119840 | 0.6875 x 28 | 17.463 x 711 | .75 x 2.75 |
| | GCTZ100372 | 0.6875 x 36 | 17.463 x 914 | .75 x 2.75 |
| | GCTZ100373 | 0.6875 x 48 | 17.463 x 1219 | .75 x 2.75 |
| 45/64" | GCTZ100656 | 0.7031 x 16 | 17.859 x 406 | .75 x 2.75 |
| | GCTZ114088 | 0.7031 x 22 | 17.859 x 559 | .75 x 2.75 |
| | GCTZ100376 | 0.7031 x 36 | 17.859 x 914 | .75 x 2.75 |
| | GCTZ114089 | 0.7031 x 48 | 17.859 x 1219 | .75 x 2.75 |
| 23/32" | GCTZ100377 | 0.7187 x 16 | 18.255 x 406 | .75 x 2.75 |
| | GCTZ100378 | 0.7187 x 22 | 18.255 x 559 | .75 x 2.75 |
| | GCTZ100379 | 0.7187 x 36 | 18.255 x 914 | .75 x 2.75 |
| | GCTZ100669 | 0.7187 x 48 | 18.255 x 1219 | .75 x 2.75 |
| 47/64" | GCTZ100380 | 0.7344 x 16 | 18.654 x 406 | .75 x 2.75 |
| | GCTZ100381 | 0.7344 x 22 | 18.654 x 559 | .75 x 2.75 |
| | GCTZ100382 | 0.7344 x 36 | 18.654 x 914 | .75 x 2.75 |
| 3/4" | GCTZ100383 | 0.7500 x 16 | 19.050 x 406 | .75 x 2.75 |
| | GCTZ100384 | 0.7500 x 22 | 19.050 x 559 | .75 x 2.75 |
| | GCTZ112482 | 0.7500 x 28 | 19.050 x 711 | .75 x 2.75 |
| | GCTZ100385 | 0.7500 x 36 | 19.050 x 914 | .75 x 2.75 |
| | GCTZ100386 | 0.7500 x 48 | 19.050 x 1219 | .75 x 2.75 |
| 49/64" | GCTZ100441 | 0.7656 x 22 | 19.446 x 559 | .75 x 2.75 |
| | GCTZ100442 | 0.7656 x 36 | 19.446 x 914 | .75 x 2.75 |
| | GCTZ100443 | 0.7656 x 48 | 19.446 x 1219 | .75 x 2.75 |
| 25/32" | GCTZ100389 | 0.7812 x 22 | 19.842 x 559 | .75 x 2.75 |
| | GCTZ100390 | 0.7812 x 36 | 19.842 x 914 | .75 x 2.75 |
| | GCTZ100648 | 0.7812 x 48 | 19.842 x 1219 | .75 x 2.75 |
| 51/64" | GCTZ100391 | 0.7969 x 22 | 20.242 x 559 | .75 x 2.75 |
| | GCTZ100392 | 0.7969 x 36 | 20.242 x 914 | .75 x 2.75 |
| | GCTZ100649 | 0.7969 x 48 | 20.242 x 1219 | .75 x 2.75 |
| 13/16" | GCTZ100393 | 0.8125 x 22 | 20.638 x 559 | .75 x 2.75 |
| | GCTZ100394 | 0.8125 x 36 | 20.638 x 914 | .75 x 2.75 |
| | GCTZ100395 | 0.8125 x 48 | 20.638 x 1219 | .75 x 2.75 |
| 53/64" | GCTZ100444 | 0.8281 x 22 | 21.034 x 559 | 1.25 x 2.75 |
| | GCTZ100445 | 0.8281 x 36 | 21.034 x 914 | 1.25 x 2.75 |
| | GCTZ100446 | 0.8281 x 48 | 21.034 x 1219 | 1.25 x 2.75 |
| 27/32" | GCTZ100398 | 0.8437 x 22 | 21.430 x 559 | 1.25 x 2.75 |
| | GCTZ100399 | 0.8437 x 36 | 21.430 x 914 | 1.25 x 2.75 |
| | GCTZ100650 | 0.8437 x 48 | 21.430 x 1219 | 1.25 x 2.75 |

GUNDRILLS

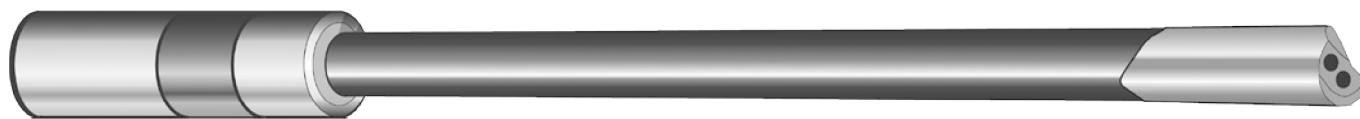
Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|------------|-----------------------|------------------|-----------------|
| 55/64" | GCTZ100400 | 0.8594 x 22 | 21.829 x 559 | 1.25 x 2.75 |
| | GCTZ100401 | 0.8594 x 36 | 21.829 x 914 | 1.25 x 2.75 |
| | GCTZ100651 | 0.8594 x 48 | 21.829 x 1219 | 1.25 x 2.75 |
| 7/8" | GCTZ100402 | 0.8750 x 22 | 22.225 x 559 | 1.25 x 2.75 |
| | GCTZ100403 | 0.8750 x 36 | 22.225 x 914 | 1.25 x 2.75 |
| | GCTZ100404 | 0.8750 x 48 | 22.225 x 1219 | 1.25 x 2.75 |
| 57/64" | GCTZ100447 | 0.8906 x 22 | 22.621 x 559 | 1.25 x 2.75 |
| | GCTZ100448 | 0.8906 x 36 | 22.621 x 914 | 1.25 x 2.75 |
| | GCTZ100449 | 0.8906 x 48 | 22.621 x 1219 | 1.25 x 2.75 |
| 29/32" | GCTZ100407 | 0.9062 x 22 | 23.017 x 559 | 1.25 x 2.75 |
| | GCTZ100408 | 0.9062 x 36 | 23.017 x 914 | 1.25 x 2.75 |
| | GCTZ100652 | 0.9062 x 48 | 23.017 x 1219 | 1.25 x 2.75 |
| 59/64" | GCTZ100409 | 0.9219 x 22 | 23.416 x 559 | 1.25 x 2.75 |
| | GCTZ100410 | 0.9219 x 36 | 23.416 x 914 | 1.25 x 2.75 |
| | GCTZ100653 | 0.9219 x 48 | 23.416 x 1219 | 1.25 x 2.75 |
| 15/16" | GCTZ114090 | 0.9375 x 16 | 23.813 x 406 | 1.25 x 2.75 |
| | GCTZ100411 | 0.9375 x 22 | 23.813 x 559 | 1.25 x 2.75 |
| | GCTZ100412 | 0.9375 x 36 | 23.813 x 914 | 1.25 x 2.75 |
| | GCTZ100654 | 0.9375 x 48 | 23.813 x 1219 | 1.25 x 2.75 |
| 61/64" | GCTZ100450 | 0.9531 x 22 | 24.209 x 559 | 1.25 x 2.75 |
| | GCTZ100451 | 0.9531 x 36 | 24.209 x 914 | 1.25 x 2.75 |
| | GCTZ100452 | 0.9531 x 48 | 24.209 x 1219 | 1.25 x 2.75 |
| 31/32" | GCTZ100655 | 0.9687 x 22 | 24.605 x 559 | 1.25 x 2.75 |
| | GCTZ100417 | 0.9687 x 36 | 24.605 x 914 | 1.25 x 2.75 |
| | GCTZ100670 | 0.9687 x 48 | 24.605 x 1219 | 1.25 x 2.75 |
| 63/64" | GCTZ100418 | 0.9844 x 22 | 25.003 x 559 | 1.25 x 2.75 |
| | GCTZ100419 | 0.9844 x 36 | 25.003 x 914 | 1.25 x 2.75 |
| | GCTZ100657 | 0.9844 x 48 | 25.003 x 1219 | 1.25 x 2.75 |
| 1" | GCTZ100690 | 1.0000 x 16 | 25.400 x 406 | 1.25 x 2.75 |
| | GCTZ100420 | 1.0000 x 22 | 25.400 x 559 | 1.25 x 2.75 |
| | GCTZ100689 | 1.0000 x 28 | 25.400 x 711 | 1.25 x 2.75 |
| | GCTZ100421 | 1.0000 x 36 | 25.400 x 914 | 1.25 x 2.75 |
| | GCTZ100422 | 1.0000 x 48 | 25.400 x 1219 | 1.25 x 2.75 |
| 11/16" | GCTZ100453 | 1.0625 x 22 | 26.987 x 559 | 1.5 x 2.75 |
| | GCTZ100454 | 1.0625 x 36 | 26.987 x 914 | 1.5 x 2.75 |
| | GCTZ100455 | 1.0625 x 48 | 26.987 x 1219 | 1.5 x 2.75 |
| 1 1/8" | GCTZ100658 | 1.1250 x 22 | 28.575 x 559 | 1.5 x 2.75 |
| | GCTZ100425 | 1.1250 x 36 | 28.575 x 914 | 1.5 x 2.75 |
| | GCTZ100426 | 1.1250 x 48 | 28.575 x 1219 | 1.5 x 2.75 |

GUNDRILLS

Two Coolant Hole



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|---------|------------|-----------------------|------------------|-----------------|
| 1 3/16" | GCTZ100659 | 1.1875 x 22 | 30.162 x 559 | 1.5 x 2.75 |
| | GCTZ100660 | 1.1875 x 36 | 30.162 x 914 | 1.5 x 2.75 |
| | GCTZ100428 | 1.1875 x 48 | 30.162 x 1219 | 1.5 x 2.75 |
| 1 1/4" | GCTZ100661 | 1.2500 x 22 | 31.750 x 559 | 1.5 x 2.75 |
| | GCTZ100429 | 1.2500 x 36 | 31.750 x 914 | 1.5 x 2.75 |
| | GCTZ100430 | 1.2500 x 48 | 31.750 x 1219 | 1.5 x 2.75 |
| 1 5/16" | GCTZ100662 | 1.3125 x 22 | 33.337 x 559 | 1.5 x 2.75 |
| | GCTZ100431 | 1.3125 x 36 | 33.337 x 914 | 1.5 x 2.75 |
| | GCTZ100432 | 1.3125 x 48 | 33.337 x 1219 | 1.5 x 2.75 |
| 1 3/8" | GCTZ100663 | 1.3750 x 22 | 34.925 x 559 | 1.5 x 2.75 |
| | GCTZ100433 | 1.3750 x 36 | 34.925 x 914 | 1.5 x 2.75 |
| | GCTZ100434 | 1.3750 x 48 | 34.925 x 1219 | 1.5 x 2.75 |
| 7/16" | GCTZ100664 | 1.4375 x 36 | 36.512 x 914 | 1.5 x 2.75 |
| | GCTZ100436 | 1.4375 x 48 | 36.512 x 1219 | 1.5 x 2.75 |
| 1 1/2" | GCTZ100437 | 1.5000 x 36 | 38.100 x 914 | 1.5 x 2.75 |
| | GCTZ100667 | 1.5000 x 48 | 38.100 x 1219 | 1.5 x 2.75 |

SOLID CARBIDE GUNDRILLS



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|-------|-------------|-----------------------|------------------|-----------------|
| 1.0mm | GTZ101010SC | 0.0394 x 5 | 1.000 x 127 | .50 x 2 |
| 1.2mm | GTZ101030SC | 0.0472 x 5 | 1.200 x 127 | .50 x 2 |
| 1.4mm | GTZ100682SC | 0.0550 x 6 | 1.400 x 152 | .50 x 2 |
| | GTZ101051SC | 0.0550 x 8 | 1.400 x 203 | .50 x 2 |
| 1.5mm | GTZ101080SC | 0.0591 x 6 | 1.500 x 152 | .50 x 2 |
| | GTZ101081SC | 0.0591 x 8 | 1.500 x 203 | .50 x 2 |
| 1/16" | GTZ100683SC | 0.0625 x 6 | 1.587 x 152 | .50 x 2 |
| | GTZ101101SC | 0.0625 x 8 | 1.587 x 203 | .50 x 2 |
| | GTZ100687SC | 0.0625 x 10 | 1.587 x 254 | .50 x 2 |
| 1.8mm | GTZ100684SC | 0.0700 x 6 | 1.778 x 152 | .50 x 2 |
| | GTZ101131SC | 0.0700 x 8 | 1.778 x 203 | .50 x 2 |
| | GTZ101132SC | 0.0700 x 10 | 1.778 x 254 | .50 x 2 |
| 5/64" | GTZ100685SC | 0.0781 x 6 | 1.983 x 152 | .50 x 2 |
| | GTZ101151SC | 0.0781 x 8 | 1.983 x 203 | .50 x 2 |
| | GTZ100688SC | 0.0781 x 10 | 1.983 x 254 | .50 x 2 |
| 2mm | GTZ101170SC | 0.0787 x 6 | 2.000 x 152 | .50 x 2 |
| | GTZ101171SC | 0.0787 x 8 | 2.000 x 203 | .50 x 2 |
| | GTZ101172SC | 0.0787 x 10 | 2.000 x 254 | .50 x 2 |
| #43 | GTZ101200SC | 0.0890 x 6 | 2.260 x 152 | .50 x 2 |
| | GTZ101201SC | 0.0890 x 8 | 2.260 x 203 | .50 x 2 |
| | GTZ101202SC | 0.0890 x 10 | 2.260 x 254 | .50 x 2 |
| 3/32" | GTZ100686SC | 0.0937 x 6 | 2.379 x 152 | .50 x 2 |
| | GTZ101221SC | 0.0937 x 8 | 2.379 x 203 | .50 x 2 |
| | GTZ100692SC | 0.0937 x 10 | 2.379 x 254 | .50 x 2 |
| 2.5mm | GTZ101250SC | 0.0984 x 6 | 2.500 x 152 | .50 x 2 |
| | GTZ101251SC | 0.0984 x 8 | 2.500 x 203 | .50 x 2 |
| | GTZ101252SC | 0.0984 x 10 | 2.500 x 254 | .50 x 2 |
| #39 | GTZ101255SC | 0.0995 x 6 | 2.527 x 152 | .50 x 2 |
| | GTZ101256SC | 0.0995 x 8 | 2.527 x 203 | .50 x 2 |
| | GTZ101257SC | 0.0995 x 10 | 2.527 x 254 | .50 x 2 |
| #38 | GTZ101260SC | 0.1015 x 6 | 2.578 x 152 | .50 x 2 |
| | GTZ101261SC | 0.1015 x 8 | 2.578 x 203 | .50 x 2 |
| | GTZ101262SC | 0.1015 x 10 | 2.578 x 254 | .50 x 2 |
| #36 | GTZ101265SC | 0.1065 x 6 | 2.705 x 152 | .50 x 2 |
| | GTZ101266SC | 0.1065 x 8 | 2.705 x 203 | .50 x 2 |
| | GTZ101267SC | 0.1065 x 10 | 2.705 x 254 | .50 x 2 |
| 7/64" | GTZ100693SC | 0.1094 x 6 | 2.778 x 152 | .50 x 2 |
| | GTZ101271SC | 0.1094 x 8 | 2.778 x 203 | .50 x 2 |
| | GTZ100694SC | 0.1094 x 10 | 2.778 x 254 | .50 x 2 |
| 3mm | GTZ101300SC | 0.1181 x 6 | 3.000 x 152 | .50 x 2 |
| | GTZ101301SC | 0.1181 x 8 | 3.200 x 203 | .50 x 2 |

SOLID CARBIDE GUNDRILLS



| Size | EDP. No. | Decimal Size (inches) | Metric Size (mm) | Driver (inches) |
|--------|-------------|-----------------------|------------------|-----------------|
| 3mm | GTZ101302SC | 0.1181 x 10 | 3.400 x 254 | .50 x 2 |
| 1/8" | GTZ100696SC | 0.1250 x 6 | 3.175 x 152 | .50 x 2 |
| | GTZ101341SC | 0.1250 x 8 | 3.175 x 203 | .50 x 2 |
| | GTZ100697SC | 0.1250 x 10 | 3.175 x 254 | .50 x 2 |
| | GTZ101343SC | 0.1250 x 12 | 3.175 x 304 | .50 x 2 |
| 3.5mm | GTZ101381SC | 0.1378 x 8 | 3.500 x 203 | .50 x 2 |
| | GTZ101382SC | 0.1378 x 10 | 3.500 x 254 | .50 x 2 |
| 9/64" | GTZ101411SC | 0.1406 x 8 | 3.571 x 203 | .50 x 2 |
| | GTZ101412SC | 0.1406 x 10 | 3.571 x 254 | .50 x 2 |
| | GTZ101413SC | 0.1406 x 12 | 3.571 x 304 | .50 x 2 |
| 5/32" | GTZ101441SC | 0.1562 x 8 | 3.967 x 203 | .50 x 2 |
| | GTZ101442SC | 0.1562 x 10 | 3.967 x 254 | .50 x 2 |
| | GTZ101443SC | 0.1562 x 12 | 3.967 x 304 | .50 x 2 |
| 4mm | GTZ101471SC | 0.1575 x 8 | 4.000 x 203 | .50 x 2 |
| | GTZ101472SC | 0.1575 x 10 | 4.000 x 254 | .50 x 2 |
| | GTZ101473SC | 0.1575 x 12 | 4.000 x 304 | .50 x 2 |
| 11/64" | GTZ101501SC | 0.1719 x 8 | 4.366 x 203 | .50 x 2 |
| | GTZ101502SC | 0.1719 x 10 | 4.366 x 254 | .50 x 2 |
| | GTZ101503SC | 0.1719 x 12 | 4.366 x 304 | .50 x 2 |
| 3/16" | GTZ101532SC | 0.1875 x 10 | 4.762 x 254 | .50 x 2 |
| | GTZ101533SC | 0.1875 x 12 | 4.762 x 304 | .50 x 2 |
| 5mm | GTZ101572SC | 0.1968 x 10 | 5.000 x 254 | .50 x 2 |
| | GTZ101573SC | 0.1968 x 12 | 5.000 x 304 | .50 x 2 |
| 13/64" | GTZ101602SC | 0.2031 x 10 | 5.158 x 254 | .50 x 2 |
| | GTZ101603SC | 0.2031 x 12 | 5.158 x 304 | .50 x 2 |
| 7/32" | GTZ101632SC | 0.2187 x 10 | 5.554 x 254 | .50 x 2 |
| | GTZ101633SC | 0.2187 x 12 | 5.554 x 304 | .50 x 2 |
| 15/64" | GTZ101662SC | 0.2344 x 10 | 5.953 x 254 | .50 x 2 |
| | GTZ101663SC | 0.2344 x 12 | 5.953 x 304 | .50 x 2 |
| 6mm | GTZ101692SC | 0.2362 x 10 | 6.000 x 254 | .50 x 2 |
| | GTZ101693SC | 0.2362 x 12 | 6.000 x 304 | .50 x 2 |
| 1/4" | GTZ101722SC | 0.2500 x 10 | 6.350 x 254 | .50 x 2 |
| | GTZ101723SC | 0.2500 x 12 | 6.350 x 304 | .50 x 2 |
| 17/64" | GTZ101742SC | 0.2656 x 10 | 6.746 x 254 | .50 x 2 |
| | GTZ101743SC | 0.2656 x 12 | 6.746 x 304 | .50 x 2 |
| 9/32" | GTZ101772SC | 0.2812 x 10 | 7.142 x 254 | .50 x 2 |
| | GTZ101773SC | 0.2812 x 12 | 7.142 x 304 | .50 x 2 |
| 19/64" | GTZ101802SC | 0.2969 x 10 | 7.541 x 254 | .50 x 2 |
| | GTZ101803SC | 0.2969 x 12 | 7.541 x 304 | .50 x 2 |
| 5/16" | GTZ101852SC | 0.3125 x 10 | 7.937 x 254 | .50 x 2 |
| | GTZ101853SC | 0.3125 x 12 | 7.937 x 304 | .50 x 2 |

GUNDRILL SPEEDS, FEEDS & COOLANT PRESSURES

STARTING PARAMETERS (Single Flute)

| GUNDRILL DIAMETER | COOLANT PRESSURE | K-MONEL HASTELLOY TUNGSTEN INCOLOY 800-825 SFM=80 | | | WASPALLOY A286, RENE, HAYNES INCONEL 600,625 NIMONIC SFM=100 | | | TITANIUM 718 INCONEL MOLLY NITRONIC 40-80 SFM=135 | | | NITRALLOY GREEK ASCOLY 400 MONEL SFM=200 | | | ETD-15 COPPER SFM=275 | | | DUCTILE SFM=150 | | | BRASS BRONZE SFM=550 | | | | | |
|-------------------|------------------|---|-----|------|---|-----|------|---|-----|------|---|-----|------|-----------------------------|-----|------|-------------------------|-----|------|----------------------------|-----|------|-------------------------|-----|------|
| | | PSI | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | | |
| 0.0550 | 1800 | 5556 | 0.3 | 4.0 | 6945 | 0.3 | 4.0 | 9376 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 |
| 0.0781 | 1500 | 3913 | 0.4 | 7.2 | 4891 | 0.5 | 6.6 | 6603 | 0.7 | 5.8 | 9782 | 1.0 | 4.6 | 10000 | 1.0 | 4.6 | 8560 | 0.9 | 5.0 | 10000 | 1.0 | 5.0 | 10000 | 1.0 | 5.0 |
| 0.0937 | 1500 | 3261 | 0.5 | 9.0 | 4077 | 0.6 | 8.0 | 5504 | 0.8 | 6.5 | 8154 | 1.2 | 3.6 | 10000 | 1.5 | 4.6 | 7134 | 1.1 | 6.1 | 10000 | 1.5 | 5.1 | 10000 | 1.5 | 5.1 |
| 0.1250 | 1500 | 2445 | 0.4 | 12.0 | 3056 | 0.7 | 11.0 | 4126 | 0.9 | 9.0 | 6112 | 1.4 | 7.7 | 8404 | 1.9 | 6.5 | 5348 | 1.2 | 8.0 | 10000 | 2.3 | 6.0 | 10000 | 2.3 | 6.0 |
| 0.1562 | 1300 | 1956 | 0.6 | 15.3 | 2446 | 0.7 | 13.7 | 3302 | 1.0 | 11.4 | 4891 | 1.5 | 9.7 | 6725 | 2.0 | 8.2 | 4280 | 1.3 | 10.0 | 10000 | 3.0 | 7.1 | 10000 | 3.0 | 7.1 |
| 0.1875 | 1150 | 1630 | 0.6 | 18.5 | 2037 | 0.7 | 16.6 | 2750 | 1.0 | 14.0 | 4075 | 1.4 | 11.7 | 5603 | 2.0 | 9.9 | 3565 | 1.3 | 12.2 | 10000 | 3.5 | 7.4 | 10000 | 3.5 | 7.4 |
| 0.2187 | 1050 | 1397 | 0.6 | 18.5 | 1747 | 0.7 | 19.0 | 2358 | 0.9 | 15.5 | 3493 | 1.4 | 13.4 | 4803 | 1.9 | 11.4 | 3057 | 1.2 | 14.0 | 9607 | 3.8 | 8.2 | 9607 | 3.8 | 8.2 |
| 0.2500 | 925 | 1222 | 0.6 | 21.2 | 1528 | 0.8 | 22.3 | 2063 | 1.0 | 18.5 | 3056 | 1.5 | 15.7 | 4202 | 2.1 | 13.3 | 2674 | 1.3 | 16.4 | 8404 | 4.2 | 9.6 | 8404 | 4.2 | 9.6 |
| 0.2812 | 850 | 1087 | 0.6 | 28.0 | 1358 | 0.8 | 24.0 | 1834 | 1.0 | 21.0 | 2717 | 1.6 | 17.7 | 3736 | 2.2 | 15.0 | 2377 | 1.4 | 19.0 | 7472 | 4.3 | 10.8 | 7472 | 4.3 | 10.8 |
| 0.3125 | 775 | 978 | 0.6 | 31.2 | 1222 | 0.7 | 28.0 | 1650 | 1.0 | 24.0 | 2445 | 1.5 | 19.7 | 3362 | 2.0 | 16.8 | 2139 | 1.3 | 20.5 | 6723 | 4.0 | 12.0 | 6723 | 4.0 | 12.0 |
| 0.3437 | 725 | 889 | 0.6 | 34.4 | 1111 | 0.7 | 30.0 | 1500 | 0.9 | 26.0 | 2223 | 1.4 | 21.7 | 3056 | 1.9 | 18.2 | 1945 | 1.4 | 23.0 | 6113 | 3.9 | 13.3 | 6113 | 3.9 | 13.3 |
| 0.3750 | 675 | 815 | 0.5 | 37.0 | 1019 | 0.7 | 33.7 | 1375 | 0.9 | 29.5 | 2037 | 1.3 | 23.0 | 2801 | 1.8 | 20.0 | 1783 | 1.2 | 25.0 | 5603 | 3.6 | 14.5 | 5603 | 3.6 | 14.5 |
| 0.4062 | 625 | 752 | 0.5 | 40.8 | 940 | 0.6 | 36.5 | 1270 | 0.9 | 32.0 | 1881 | 1.3 | 25.7 | 2586 | 1.8 | 21.9 | 1646 | 1.1 | 27.3 | 5172 | 3.5 | 15.0 | 5172 | 3.5 | 15.0 |
| 0.4375 | 600 | 699 | 0.5 | 44.0 | 873 | 0.6 | 39.5 | 1179 | 0.8 | 35.0 | 1746 | 1.2 | 27.8 | 2401 | 1.6 | 23.6 | 1528 | 1.0 | 29.5 | 4802 | 3.3 | 17.0 | 4802 | 3.3 | 17.0 |
| 0.4687 | 550 | 652 | 0.5 | 47.0 | 815 | 0.6 | 42.0 | 1100 | 0.8 | 35.0 | 1630 | 1.1 | 29.8 | 2241 | 1.6 | 25.3 | 1426 | 1.0 | 31.5 | 4483 | 3.1 | 18.2 | 4483 | 3.1 | 18.2 |
| 0.5000 | 525 | 611 | 0.5 | 54.0 | 764 | 0.5 | 45.0 | 1031 | 0.7 | 38.0 | 1528 | 1.1 | 31.8 | 2101 | 1.5 | 27.0 | 1337 | 0.9 | 33.6 | 4202 | 2.9 | 19.0 | 4202 | 2.9 | 19.0 |
| 0.5312 | 500 | 575 | 0.5 | 55.0 | 719 | 0.5 | 47.9 | 971 | 0.7 | 40.0 | 1438 | 1.0 | 33.8 | 1978 | 1.4 | 28.7 | 1258 | 0.9 | 36.3 | 3955 | 2.9 | 20.5 | 3955 | 2.9 | 20.5 |
| 0.5625 | 500 | 543 | 0.5 | 56.0 | 679 | 0.5 | 50.8 | 917 | 0.7 | 42.3 | 1358 | 1.0 | 35.8 | 1868 | 1.4 | 30.4 | 1188 | 0.9 | 39.0 | 3735 | 2.7 | 22.0 | 3735 | 2.7 | 22.0 |
| 0.5937 | 475 | 515 | 0.4 | 59.0 | 643 | 0.5 | 53.9 | 869 | 0.7 | 45.0 | 1287 | 1.0 | 38.0 | 1769 | 1.3 | 32.3 | 1126 | 0.8 | 40.7 | 3539 | 2.7 | 23.3 | 3539 | 2.7 | 23.3 |
| 0.6250 | 475 | 489 | 0.4 | 63.6 | 611 | 0.5 | 57.0 | 825 | 0.6 | 48.0 | 1222 | 0.9 | 40.2 | 1681 | 1.3 | 34.2 | 1070 | 0.8 | 42.5 | 3362 | 2.5 | 24.6 | 3362 | 2.5 | 24.6 |
| 0.6562 | 425 | 466 | 0.4 | 66.8 | 582 | 0.5 | 59.0 | 786 | 0.6 | 50.5 | 1164 | 0.9 | 42.0 | 1601 | 1.2 | 36.0 | 1019 | 0.8 | 45.0 | 3202 | 2.5 | 26.0 | 3202 | 2.5 | 26.0 |
| 0.6875 | 425 | 445 | 0.4 | 70.0 | 556 | 0.4 | 62.7 | 750 | 0.6 | 53.0 | 1111 | 0.9 | 44.0 | 1528 | 1.2 | 38.0 | 972 | 0.8 | 50.0 | 3056 | 2.4 | 27.0 | 3056 | 2.4 | 27.0 |
| 0.7187 | 400 | 425 | 0.4 | 73.0 | 532 | 0.4 | 65.0 | 718 | 0.6 | 55.0 | 1063 | 0.9 | 46.0 | 1462 | 1.2 | 39.5 | 930 | 0.7 | 51.0 | 2923 | 2.4 | 28.0 | 2923 | 2.4 | 28.0 |
| 0.7500 | 400 | 407 | 0.4 | 76.3 | 509 | 0.4 | 68.0 | 688 | 0.6 | 57.0 | 1019 | 0.8 | 48.0 | 1401 | 1.1 | 41.0 | 891 | 0.7 | 52.0 | 2801 | 2.3 | 29.0 | 2801 | 2.3 | 29.0 |
| 0.8750 | 350 | 349 | 0.4 | 89.0 | 437 | 0.4 | 79.0 | 589 | 0.5 | 73.0 | 873 | 0.8 | 56.0 | 1201 | 1.1 | 47.0 | 764 | 0.7 | 59.0 | 2401 | 2.2 | 34.0 | 2401 | 2.2 | 34.0 |
| 1.0000 | 310 | 306 | 0.4 | 100 | 382 | 0.4 | 91.0 | 516 | 0.5 | 80.0 | 764 | 0.8 | 64.0 | 1051 | 1.1 | 54.0 | 669 | 0.7 | 68.0 | 2101 | 2.1 | 39.0 | 2101 | 2.1 | 39.0 |
| 1.2500 | 270 | 244 | 0.4 | 126 | 306 | 0.4 | 113 | 413 | 0.5 | 95.0 | 611 | 0.6 | 80.0 | 840 | 0.8 | 68.0 | 535 | 0.5 | 86.0 | 1681 | 1.7 | 49.0 | 1681 | 1.7 | 49.0 |
| 1.5000 | 230 | 204 | 0.4 | 154 | 255 | 0.4 | 138 | 344 | 0.5 | 120 | 509 | 0.5 | 91.0 | 700 | 0.7 | 82.0 | 446 | 0.5 | 105 | 1401 | 1.4 | 60.0 | 1401 | 1.4 | 60.0 |

| Dia | FPR | Dia | FPR |
|--------|---------|--------|---------|
| 0.055- | 0.00005 | 0.500- | 0.00070 |
| 0.078- | 0.00010 | 0.750- | 0.00080 |
| 0.156- | 0.00030 | 1.000- | 0.00100 |
| 0.200- | 0.00040 | 1.250- | 0.00100 |
| 0.250- | 0.00050 | 1.500- | 0.00100 |

RPM = 3.82 x SFM/Diameter

SFM = RPM x Diameter/3.82

FPR = IPM/RPM

IPM = FPR x RMP

D = Drill Diameter (inch)

IPM = Inches Per Minute IPR x RPM = IPM

IPR = Inches Per Revolution IPM/RPM = IPR

RPM = Revolutions Per Minute (SFM x 3.82)/D = RPM

SFM = Surface Feet Per Minute D x RPM x .26 = SFM

D = Drill Diameter (mm)

FPM = mm Per Minute FPR x RPM = FPM

FPR = Feed Per Revolution FPM/RPM = FPR

RPM = Revolutions Per Minute (SMM x 318.5)/D = RPM

SMM = Surface Meter Per Minute (3.14 x D x RPM)/1000 = SMM

GUNDRILL SPEEDS, FEEDS & COOLANT PRESSURES
STARTING PARAMETERS (Single Flute)

| GUNDRILL DIAMETER | COOLANT PRESSURE | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|------------------|-------|-----|-------------------------|--|-----|-------------------------|-------|-----------------------|-------------------------|-------|-----|---|-------|-----|-------------------------|--|-----|-------------------------|-------|--------------------------|-------------------------|---------------------------|
| | 8620 SFM=550 | | | | 416 STAINLESS 4140, 5120 SFM=325 | | | | TOOL STEEL SFM=175 | | | | 15-5, 17-4, 13-8, H-13 455 Custom 303, 304, 310, 316 341, 347, 420, 501 SFM=200 | | | | 2024AL*, 6061AL* 7075AL* 1010, 1118, 1145 SFM=550 | | | | CAST ALUMINUM SFM=600 | | GRAY CAST IRON SFM=200 |
| | PSI | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | RMP | IPM | MAX. UNSU-PORTED LENGHT | |
| 0,0550 | 1800 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | 10000 | 0.5 | 4.0 | |
| 0,0781 | 1500 | 10000 | 1.0 | 4.6 | 10000 | 1.0 | 4.6 | 8560 | 0.9 | 4.6 | 9782 | 1.0 | 4.6 | 10000 | 1.0 | 4.6 | 10000 | 1.0 | 4.6 | 9782 | 1.0 | 4.6 | |
| 0,0937 | 1500 | 10000 | 1.5 | 5.0 | 10000 | 1.5 | 5.0 | 7134 | 1.1 | 6.0 | 8154 | 1.2 | 5.0 | 10000 | 1.5 | 5.0 | 10000 | 1.5 | 5.0 | 8154 | 1.2 | 5.0 | |
| 0,1250 | 1500 | 10000 | 2.0 | 6.0 | 9932 | 2.0 | 6.0 | 5348 | 1.1 | 8.0 | 6112 | 1.2 | 7.7 | 10000 | 2.0 | 6.0 | 10000 | 2.0 | 6.0 | 6112 | 1.2 | 7.7 | |
| 0,1562 | 1300 | 10000 | 3.0 | 6.7 | 7948 | 2.4 | 7.7 | 4280 | 1.3 | 10.3 | 4891 | 1.5 | 9.7 | 10000 | 3.0 | 6.6 | 10000 | 3.0 | 6.6 | 4891 | 1.5 | 9.7 | |
| 0,1875 | 1150 | 10000 | 3.5 | 7.5 | 6621 | 2.3 | 9.2 | 3565 | 1.2 | 12.4 | 4075 | 1.4 | 11.7 | 10000 | 3.5 | 7.5 | 10000 | 3.5 | 7.5 | 4075 | 1.4 | 11.7 | |
| 0,2187 | 1050 | 9607 | 3.8 | 8.2 | 5677 | 2.3 | 10.6 | 3057 | 1.2 | 14.2 | 3493 | 1.4 | 13.4 | 9607 | 3.8 | 8.2 | 10000 | 4.0 | 7.8 | 3493 | 1.4 | 13.4 | |
| 0,2500 | 925 | 8404 | 4.2 | 9.6 | 4966 | 2.5 | 12.4 | 2674 | 1.3 | 16.5 | 3056 | 1.5 | 15.7 | 8404 | 4.2 | 9.6 | 9168 | 4.6 | 9.1 | 3056 | 1.5 | 15.7 | |
| 0,2812 | 850 | 7472 | 4.1 | 10.8 | 4415 | 2.3 | 14.0 | 2377 | 1.2 | 18.7 | 2717 | 1.4 | 17.7 | 7472 | 3.9 | 10.8 | 8151 | 4.2 | 10.3 | 2717 | 1.4 | 17.7 | |
| 0,3125 | 775 | 6723 | 4.0 | 12.0 | 3973 | 2.4 | 15.6 | 2139 | 1.3 | 20.9 | 2445 | 1.5 | 19.7 | 6723 | 4.0 | 12.0 | 7334 | 4.4 | 11.5 | 2445 | 1.5 | 19.7 | |
| 0,3437 | 725 | 6113 | 3.9 | 13.3 | 3612 | 2.3 | 17.2 | 1945 | 1.2 | 23.0 | 2223 | 1.4 | 21.7 | 6113 | 3.9 | 13.3 | 6669 | 4.2 | 12.6 | 2223 | 1.4 | 21.7 | |
| 0,3750 | 675 | 5603 | 3.6 | 14.5 | 3311 | 2.2 | 18.8 | 1783 | 1.2 | 26.0 | 2037 | 1.2 | 23.2 | 5603 | 3.6 | 14.5 | 6112 | 4.0 | 13.8 | 2037 | 1.3 | 23.2 | |
| 0,4062 | 625 | 5172 | 3.5 | 15.0 | 3056 | 2.1 | 19.6 | 1646 | 1.1 | 27.3 | 1881 | 1.3 | 25.7 | 5172 | 3.5 | 15.0 | 5643 | 3.8 | 214.2 | 1881 | 1.3 | 25.7 | |
| 0,4375 | 600 | 4802 | 3.3 | 17.0 | 2838 | 1.9 | 21.9 | 1528 | 1.0 | 29.4 | 1746 | 1.2 | 27.8 | 4802 | 3.3 | 17.0 | 5239 | 3.6 | 16.1 | 1746 | 1.2 | 27.8 | |
| 0,4687 | 550 | 4483 | 3.1 | 18.2 | 2649 | 1.9 | 23.5 | 1426 | 1.0 | 31.5 | 1630 | 1.1 | 29.8 | 4483 | 3.1 | 18.2 | 4890 | 3.4 | 17.3 | 1630 | 1.1 | 29.8 | |
| 0,5000 | 525 | 4202 | 2.9 | 19.3 | 2483 | 1.7 | 25.1 | 1337 | 0.9 | 33.7 | 1528 | 1.1 | 31.8 | 4202 | 2.9 | 19.3 | 4584 | 3.2 | 18.5 | 1528 | 1.1 | 31.8 | |
| 0,5312 | 500 | 3955 | 2.9 | 20.6 | 2337 | 1.7 | 26.7 | 1258 | 0.9 | 35.8 | 1438 | 1.0 | 33.8 | 3955 | 2.9 | 20.6 | 4315 | 3.1 | 19.6 | 1438 | 1.0 | 33.8 | |
| 0,5625 | 500 | 3735 | 2.7 | 21.9 | 2207 | 1.6 | 28.3 | 1188 | 0.9 | 37.9 | 1358 | 1.0 | 35.8 | 3735 | 2.7 | 21.9 | 4075 | 3.0 | 20.8 | 1358 | 1.0 | 35.8 | |
| 0,5937 | 475 | 3539 | 2.7 | 23.2 | 2091 | 1.6 | 30.0 | 1126 | 0.8 | 40.2 | 1287 | 1.0 | 38.0 | 3539 | 2.7 | 23.2 | 3861 | 2.9 | 22.1 | 1287 | 1.0 | 38.0 | |
| 0,6250 | 475 | 3362 | 2.5 | 24.6 | 1986 | 1.5 | 31.8 | 1070 | 0.8 | 42.6 | 1222 | 0.9 | 40.2 | 3362 | 2.5 | 24.6 | 3667 | 2.8 | 23.4 | 1222 | 0.9 | 40.2 | |
| 0,6562 | 425 | 3202 | 2.5 | 25.8 | 1892 | 1.5 | 37.8 | 1019 | 0.8 | 44.5 | 1164 | 0.9 | 42.2 | 3202 | 2.5 | 25.8 | 3493 | 2.7 | 24.5 | 1164 | 0.9 | 42.2 | |
| 0,6875 | 425 | 3056 | 2.4 | 27.0 | 1806 | 1.4 | 39.0 | 972 | 0.8 | 46.5 | 1111 | 0.9 | 44.2 | 3056 | 2.4 | 27.0 | 3334 | 2.6 | 25.7 | 1111 | 0.9 | 44.2 | |
| 0,7187 | 400 | 2923 | 2.3 | 28.2 | 1727 | 1.4 | 41.5 | 930 | 0.7 | 48.7 | 1063 | 0.9 | 46.2 | 2923 | 2.3 | 28.2 | 3189 | 2.6 | 26.8 | 1063 | 0.9 | 46.2 | |
| 0,7500 | 400 | 2801 | 2.2 | 29.5 | 1655 | 1.3 | 42.7 | 891 | 0.7 | 51.0 | 1019 | 0.8 | 48.2 | 2801 | 2.2 | 29.5 | 3056 | 2.4 | 28.0 | 1019 | 0.8 | 48.2 | |
| 0,8750 | 350 | 2401 | 2.2 | 34.4 | 1419 | 1.3 | 44.5 | 764 | 0.7 | 59.5 | 873 | 0.8 | 56.2 | 2401 | 2.2 | 34.4 | 2619 | 2.4 | 32.7 | 873 | 0.8 | 56.2 | |
| 1,0000 | 310 | 2101 | 2.1 | 39.0 | 1242 | 1.2 | 50.9 | 669 | 0.7 | 68.0 | 764 | 0.8 | 64.0 | 2101 | 2.1 | 39.3 | 2292 | 2.3 | 37.0 | 764 | 0.8 | 64.0 | |
| 1,2500 | 270 | 1681 | 1.7 | 49.0 | 993 | 1.0 | 63.0 | 535 | 0.5 | 84.0 | 611 | 0.6 | 80.0 | 1681 | 1.7 | 50.0 | 1834 | 1.8 | 46.0 | 611 | 0.6 | 80.0 | |
| 1,5000 | 230 | 1401 | 1.4 | 59.0 | 828 | 0.8 | 77.0 | 446 | 0.4 | 102 | 509 | 0.5 | 91.0 | 1401 | 1.4 | 59.0 | 1528 | 1.5 | 56.0 | 509 | 0.5 | 97.0 | |

| Dia | FPR | Dia | FPR |
|--------|---------|--------|---------|
| 0.055- | 0.00005 | 0.500- | 0.00070 |
| 0.078- | 0.00010 | 0.750- | 0.00080 |
| 0.156- | 0.00030 | 1.000- | 0.00100 |
| 0.200- | 0.00040 | 1.250- | 0.00100 |
| 0.250- | 0.00050 | 1.500- | 0.00100 |

$$\text{RPM} = 3.82 \times \text{SFM}/\text{Diameter}$$

$$\text{SFM} = \text{RPM} \times \text{Diameter}/3.82$$

$$\text{FPR} = \text{IPM}/\text{RPM}$$

$$\text{IPM} = \text{FPR} \times \text{RPM}$$

D = Drill Diameter (inch)

IPM = Inches Per Minute IPR x RPM = IPM

IPR = Inches Per Revolution IPM/RPM = IPR

RPM = Revolutions Per Minute (SFM x 3.82)/D = RPM

SFM = Surface Feet Per Minute D x RPM x .26 = SFM

D = Drill Diameter (mm)

FPM = mm Per Minute FPR x RPM = FPM

FPR = Feed Per Revolution FPM/RPM = FPR

RPM = Revolutions Per Minute (SMM x 318.5)/D = RPM

SMM = Surface Meter Per Minute (3.14 x D x RPM)/1000 = SMM