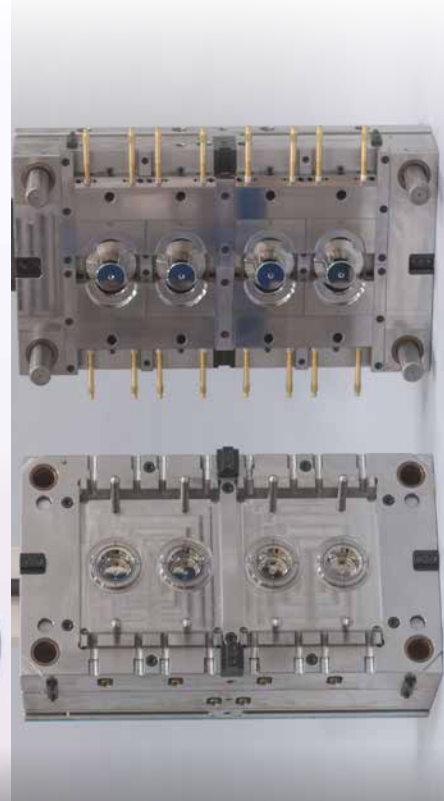
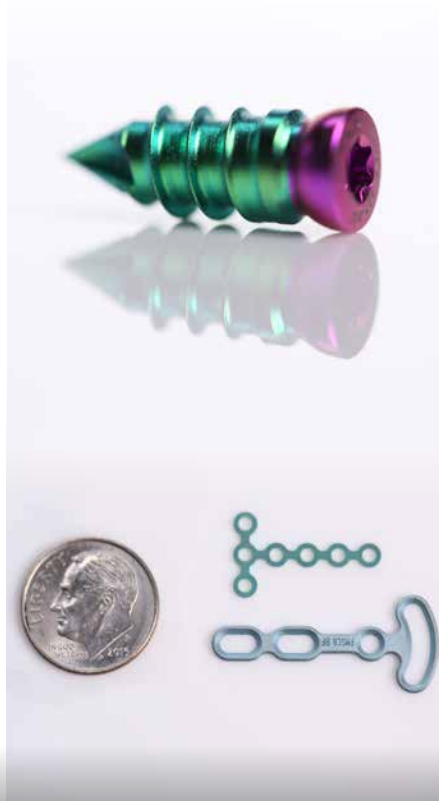
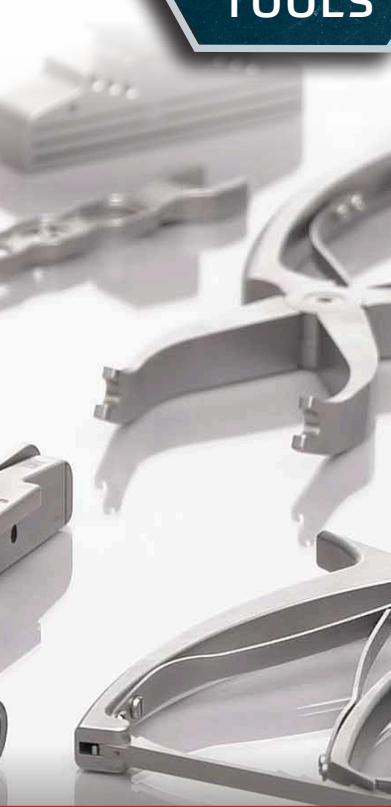


**MEDICAL
TOOLS**



ARCH[®] **Cutting Tools**

Savings through design
Fitting geometries to your materials

Specials Spotlight: Condyle Cutter



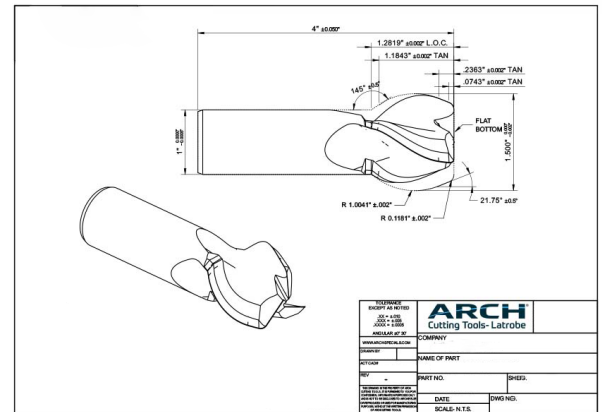
This tool is commonly made to cut as a single blade with a straight flute. With this style of cutting tool, a straight flute design creates a lot of cutting forces upon engagement, which causes chatter and lines in the part. With ARCH® Cutting Tools helical 3 flute design, we gain low cutting forces, high shear, high finishes, high feed, and longer tool life.

Material Machined

| ISO | MATERIAL |
|----------|---|
| O | Other: Non-ISO. Thermoplastics, thermosets, GFRP (Glass Fiber Reinforced Polymers-Plastics), CFRP (Carbon Fiber Reinforced Plastic), carbon fiber composites, aramid fiber reinforced plastic, hard rubber, graphite. |

ARCH® Specials

See page 306 of The Collection
To see more on Specials



Customer Requirements:

- 3 flute helical
- Surface finish
- Longer life
- Faster feeds
- Plastic material



Specials Spotlight: Ball Nose



KEO
See page 88 of The Collection
To see more of our Ball Nose End Mills



Material Machined

| ISO | MATERIAL |
|----------|--|
| O | Composite metal with highly engineered interconnected pore structure |

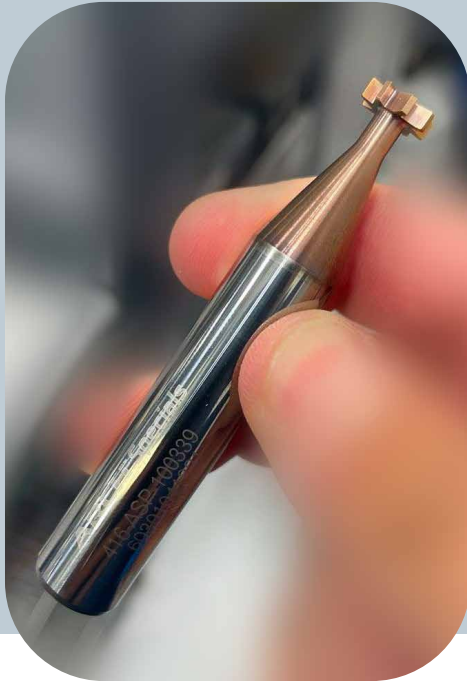
Customer Requirements:

- Application specific geometries
- Reconditioning capable
- Double ended for cost and storage

Cutting geometries engineered to application and 2 finished ends on 1 pc of carbide to reduce cutting tools cost and storage. The product can be reconditioned and recoated to add additional cost savings.



Specials Spotlight: Key Cutter



ARCH® Cutting Tools Medical Implant customer was having problems with the incumbent tool. Utilizing ARCH expedite program HOTSHP! The customer received coated tools in 48 hours, keeping their parts moving through the plant.

Material Machined

| ISO | MATERIAL |
|----------|--|
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L |

HOTSHOP! by **ARCH**

See page 184 of The Collection
To see more on HOTSHP!



Customer Requirements:

- Custom engineered solution
- Extremely quick turnaround
- Coated
- 416SS

Specials Spotlight: Tapered Ballnose End Mill



Material Machined

| ISO | MATERIAL |
|----------|---------------------------------------|
| O | Cobalt Chrome & Titanium based alloys |

ARCH® Cutting Tools created a re-manufacturing program for a large medical company that results in over \$200k in cost avoidance for the end-user annually for five years running. Utilizing our state-of-the-art 7 axis cutter grinders along with world-class inspection equipment, the tooling performs as well as new tooling.



See page 88 of The Collection
To see more of our Carbide End Mills



Customer Requirements:

- Precision tolerance +/- 0.0005 on the radius.
- 100% inspection with electronic documentation provided
- Re-establish rake angle and taper angle.
- TIR less than 0.0002



Specials Spotlight: Bone Reamer



An ARCH® Cutting Tools medical instrument customer utilizes our 400+ years of spindle knowledge for quick turn research & development projects. Below is just one example of how we can use our speed to help our partners win in the validation process.

Material Machined

| ISO | MATERIAL |
|----------|---------------------------------|
| O | Proprietary Instrument Material |



See page 35 of The Collection To see more of our Patriot High Performance® End Mills



Customer Requirements:

- Validation process
- Quick turnaround
- Proprietary material

Specials Spotlight: Multi-Step Counterbore



Material Machined

| ISO | MATERIAL |
|----------|--|
| S | HR SUPER ALLOYS Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41 |
| | TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S |

ARCH® Cutting Tools design team was brought in for a cost savings project on a large volume titanium project, which resulted in six tools being streamlined into two. This custom-engineered solution has resulted in over \$110k cost savings in 8 short months. Additionally, it removed two manually deburring operations.



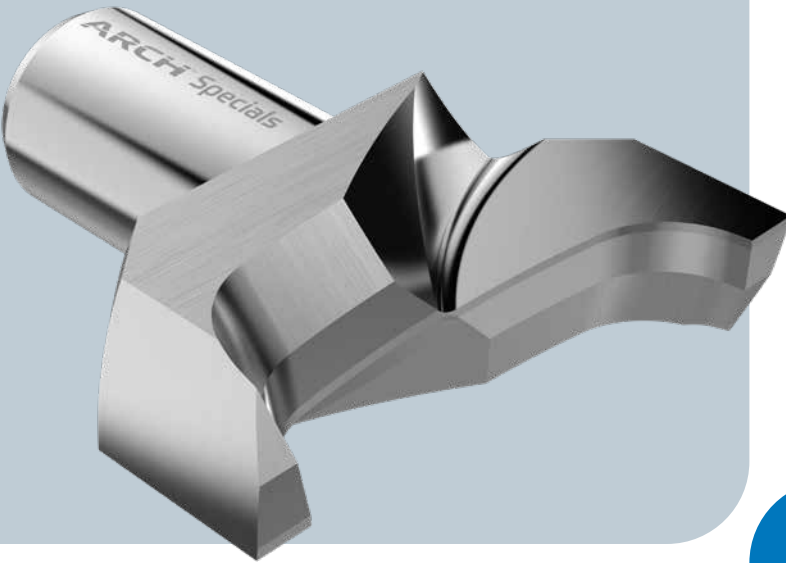
See page 88 of The Collection
To see more of our Carbide End Mills



Customer Requirements:

- Combine six tooling operations
- Cost Savings
- Remove manual deburring operations

Specials Spotlight: Carbide Trepan Cutter

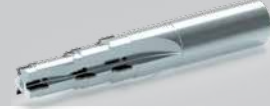


This 2fl Trepan tool was designed to cover a large, contoured surface area, where the finish requirements were critical. This tool was ground with high polish and had an engineered honed that achieved the required finish and tool life to achieve the high finish.

This tool was a tricky request for a finisher - only removing around .02 stock per side. It is designed to plunge down on the bottom of the cell hole then go into a .03 interpolation to finish the dome and 5/8 radius in one shot.

ARCH Specials

See page 306 of The Collection
To see more of our Special capabilities



Customer Requirements:

- Complex form
- Tight tolerances
- Surface finish
- Large solid carbide body
- Quick turnaround

Material Machined

| ISO | MATERIAL |
|----------|---|
| N | NON-FERROUS Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic |



Specials Spotlight: Carbide Slitting Saws



See page 256 of The Collection
To see more of our Slitting and
Jeweler Saws



Material Machined

| ISO | MATERIAL |
|----------|---|
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH |



Customer Requirements:

- Process reduction for productivity
- Carbide for long tool life

This slitting saw has improved the process of creating guide slots in a surgical knee cutting block. Because this cutting block helps improve the surgical process for every knee replacement patient, and is customized for each patient, reducing the overall machining time is critical. Most medical companies EDM the guide slots, which takes 6-8 hours. With a carbide saw, the process takes 1-2 hours.



**Process
Improvement**

Tool Spotlight: Patriot High Performance[®] Solid Carbide Drill



Machining Capabilities

| ISO | MATERIAL |
|----------|---|
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L |
| K | GRAY IRONS Class 20, 30, 40, 50, 60, G3000, G3500 |
| | DUCTILE IRONS D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12 |
| N | NON-FERROUS Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic |
| H | TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 |
| S | HR SUPER ALLOYS Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41 |
| | TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S |
| O | Other: Non-ISO. Thermoplastics, Thermosets, GFRP (Glass Fiber Reinforced Polymers-Plastics), CFRP (Carbon Fiber Reinforced Plastic), carbon fiber composites, aramid fiber reinforced plastic, hard rubber, graphite. |



See page 106 of The Collection to see more of our Patriot HighPerformance[®] Solid Drills



Tool Highlights:

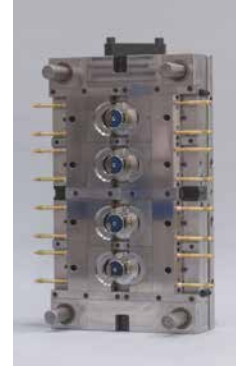
- Precision through coolant
- Low friction coating
- Excellent chip evacuation
- Low thrust force design
- 140° point angle
- Long tool life
- Close hole tolerances

Incorporating a wide range of drill lengths and diameters, ARCH[®] Cutting Tools Patriot High Performance portfolio of solid carbide drills excels across the broad spectrum of all ISO class workpiece materials, from general steels, cast irons, HSRA, and many more. With diameters as small as 0.8 mm (0.0314 inches) and up to 20.0mm (0.7874 inches), single or double margin offering based on cutting diameter. Our range covers a comprehensive application base, providing a universal geometry suitable for most applications across all industry segments that focus on hole quality.

Spotlight: Patriot High Performance® End Mills



See page 35 of The Collection to see more of our Patriot High Performance® End Mills



Machining Capabilities

| ISO | MATERIAL |
|----------|---|
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L |
| K | GRAY IRONS Class 20, 30, 40, 50, 60, G3000, G3500 |
| | DUCTILE IRONS D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12 |
| N | NON-FERROUS Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic |
| H | TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 |
| S | HR SUPER ALLOYS Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41 |
| | TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S |
| O | Other: Non-ISO. Thermoplastics, thermosets, GFRP (Glass Fiber Reinforced Polymers-Plastics), CFRP (Carbon Fiber Reinforced Plastic), carbon fiber composites, aramid fiber reinforced plastic, hard rubber, graphite. |



Tool Highlights:

- 0.125" - 1.00" diameters
- Roughing, profiling, slotting, and finishing applications
- High performance coating
- Increased material removal rates
- Long tool life

Originally optimized to tackle difficult to machine applications such as in Titanium & pre-hardened steels, this High Performance End Mill has excelled in a wide array of exotic, alloyed and ferrous part materials. The Patriot family of high-performance end mills is designed with advanced proprietary geometry. There is a thin film coating that consistently delivers increased tool life, superior part finish and aggressive metal removal rates. This is all accomplished within a machining environment that generates extreme working temperatures.

Spotlight: Patriot High Performance[®]
Indexable Drills PD1



Machining
Capabilities

| ISO | MATERIAL |
|----------|---|
| P | CARBON STEELS 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 |
| | ALLOY STEELS 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH |
| M | STAINLESS STEELS (FREE MACHINING) 303, 416, 420F, 430F, 440F |
| | STAINLESS STEELS (DIFFICULT) 304, 304L, 316, 316L |
| K | GRAY IRONS Class 20, 30, 40, 50, 60, G3000, G3500 |
| | DUCTILE IRONS D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12 |
| N | NON-FERROUS Aluminum, Aluminum cast, Brass, Copper, Bronze, Non Metallic |
| H | TOOL STEELS A2, D2, H13, L2, M2, P20, S7, T15, W2 |
| S | HR SUPER ALLOYS Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41 |
| | TITANIUM 6AL-4V, ASTM 1, 2, 3, 6AL-2S |
| O | Other: Non-ISO. Thermoplastics, Thermosets, GFRP (Glass Fiber Reinforced Polymers-Plastics), CFRP (Carbon Fiber Reinforced Plastic), carbon fiber composites, aramid fiber reinforced plastic, hard rubber, graphite. |



See page 129 of The Collection to see more of our Patriot High Performance[®] Indexable Drills PD1



Tool Highlights:

- 0.562" (15mm) - 2.125" (54mm)
- 2-ported precision through coolant
- Facing, boring, O.D. and I.D. turning capabilities
- High quality tool steel bodies

ARCH[®] Cutting Tools Patriot High Performance[®] PD1 portfolio of indexable drills excels across a broad spectrum of ISO class workpiece materials. From general steels, cast irons, HSRA, and many more, when there is a high demand to reduce cost per feature in hole making applications. With diameters from 0.5625" (15mm) to 2.125" (54mm) offered in both imperial and metric sizes. Our range covers a comprehensive application base providing universal insert geometries and grades, suitable for most applications across all industry segments that focus on hole quality.



See page 88 of The Collection
To see more of our Carbide End Mills



See page 40 of The Collection
To see more of our Patriot High
Performance® End Mills

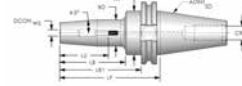
ARCH Specials

See page 306 of The Collection
To see more of our Special capabilities





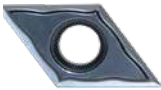
See page 321 of The Collection To see more of our Patriot High Performance® Tool Holders



Tool holding utilized across all machining applications



See page 367 of The Collection To see more of our Turning Inserts



Inserts used for cutting the threading for the wheel component



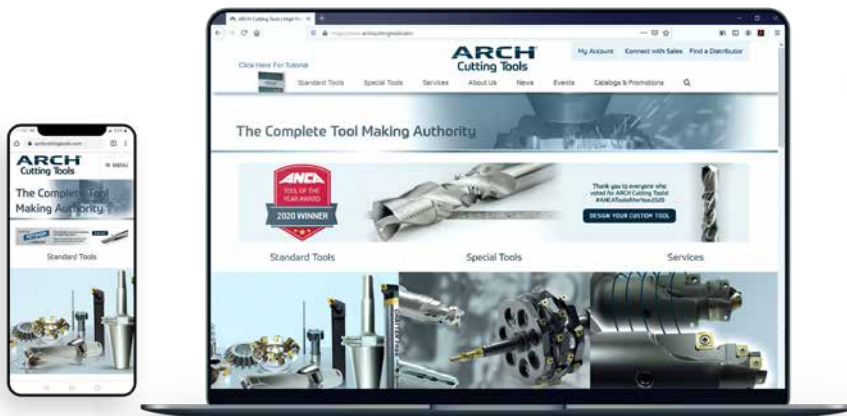
See page 106 of The Collection To see more of our Patriot High Performance® Solid Drills



Drilled holes for wheel bearings



Locations across the USA, 20+ application engineers, all working for you. Contact us today!



Browse archcuttingtools.com -
Find out more on our website

- Check inventory
- Contact our experts
- More info about us
- Keep up on news and events
- Request catalogs

Can't find what you need in our standard stocked inventory? We can create your custom tooling solution within ARCH's 350,000 square feet of manufacturing space. Here to serve you is ARCH Specials:

Standard Tools:

ARCHCTSales@archgp.com

888-390-2050

Special Tools:

ARCHCTSpecials@archgp.com

844-321-ARCH



ARCH[®]

Cutting Tools

Milling

Turning

Holemaking

Toolholding

Specials

Services

THE COMPLETE TOOL MAKING AUTHORITY[®]