

TAPPING INTO YOUR TAP KNOWLEDGE

THE IMPORTANCE OF CHOOSING THE RIGHT TAP



When it comes to precision cutting, selecting the best tool for the job is key. Taps, the tools used for producing internal threads on a workpiece, offer precision, customization, and cost-effectiveness in various machining and manufacturing applications. When using the right tap, the threads are accurately formed and exhibit optimal engagement, resistance to wear, and longevity. There are many different taps differing in material, coating, flute and overall length, and other specifications. To select the perfect tap for your application, below is a description of each specification to ensure maximum efficiency and productivity.

DETERMINING THE APPLICATION

HAND TAP

Hand tapping requires manual control and is best-suited for low-volume or delicate tasks where feel and on-the-fly adjustments are crucial. This method offers flexibility in tight or hard-to-reach spaces but is slower and more physically demanding.



Thread

Neck

Shank

MACHINE TAP

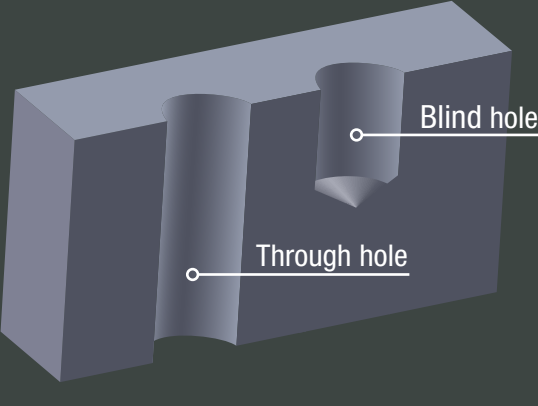
Machine tapping, executed with a drill press or tapping machine, is ideal for high-speed, consistent threading in high-volume, offering greater precision and uniformity while reducing operator fatigue and effortlessly handling tougher materials.



DETERMINING THE TYPE OF HOLE

When choosing what taps are right for you, you'll need to consider the type of hole you're trying to make, whether you'll be hand or machine tapping, and the materials on which you'll be working.

- A blind hole does not go all the way through the material.
- A through hole goes completely through the material.



TAP GEOMETRIES

FOR HAND AND MACHINE TAPPING OF THROUGH AND BLIND HOLES

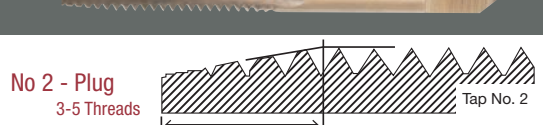
TAPER TAPS

- Gradually increases in diameter with a long pitch chamfer (7-10)
- Eases the start of threading, making it ideal for initiating threads in through holes



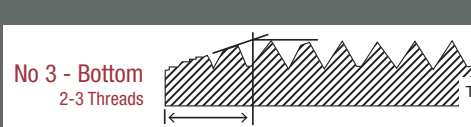
PLUG TAPS

- Moderate taper with an intermediate pitch chamfer (3-5)
- Used for finishing threads, generally used in through holes



BOTTOMING TAPS

- Almost no taper with a short pitch chamfer (1-2)
- Essential for threading to the bottom of blind holes, finishing what taper and plug taps have started



TAP SETS

- Comprehensive solution for creating precise and accurate internal threads from start to finish
- Includes a taper, plug, and bottoming tap



CHOOSING THE RIGHT TAPS

	Hand Taps		Spiral Point Tap	Spiral Flute Tap	Pipe Taps
APPLICATION	Wrench (manual)		Machine	Machine	For tapping into pipes and fittings
DESCRIPTION	Hand taps have 3 standard chamfer geometries including taper, plug, and bottoming. They have straight flutes and are the most popular and versatile styles of taps in general machine tapping operations.		An additional grind on the tip of the tap propels the chips ahead causing less load and clogging in the flutes. The combination of forward chip ejection and reduced cutting torque allows for faster and more efficient tapping in through hole applications. • Excels in creating clean, straight threads thanks to additional grind on the tip of the tap • Leads to less load and clogging in the flutes	The design of spiral flute taps is conducive to improved chip flow. The flutes pull the chips out of the workpiece, which reduces the chances of tap breakage in blind hole applications. The helical flutes also allow for better coolant flow to the cutting area, helping to dissipate heat and prolong tool life. • Features helical flutes that evacuate the chips upwards • Allow for better coolant flow to the cutting area, dissipating heat and prolonging tool life • Conducive to improved chip flow	Pipe taps are specialized tools designed for cutting internal threads in pipes and fittings, featuring tapered threads that conform to standard pipe sizes and provide tight, leak-proof connections. • Chips propelled ahead leading to less load and clogging in the flutes thanks to additional grind on the tip of the tap • Designed to cut precise threads in pipes and fittings • Essential in oil, gas, and water supply systems
CHIP REMOVAL	Manual chip breakage		Chips break automatically – Evacuates chips down	Chips break automatically – Pulls chips out	Manual chip breakage
TYPE OF HOLE	Through	Blind	Through	Blind	Through
GEOMETRIES	Taper, Plug	Taper, Plug, Bottoming	Plug	Bottoming	Plug

TECH TIP!

When using hand taps, turn the tap wrench clockwise for one full revolution, then, turn counter-clockwise in order to break the chip as you go!

TECH TIP!

Using the correct wrench size for hand taps helps prevent thread damage, tap breakage, and ensures accurate, high-quality threading results.

SELECTING THE TAP BASED ON THE MATERIAL

The next step is assessing the material you'll be working on. Once you know the material, you'll be able to match it with the appropriate tap material and coating.

STEEL

- Generally softer
- Allows for a wider range of tap materials

STAINLESS STEEL

- Harder and more abrasive
- Requires taps with higher durability and specific coatings to reduce wear and friction

NON-FERROUS METALS

- Softer and more ductile than ferrous metals
- Requires taps designed to prevent the buildup of material on the cutting edges, which can ruin the finish

TAP MATERIALS:

M2-HSS :

- **Toughness and Durability:** Balanced for cutting through softer, less abrasive steel
- **Heat Resistance:** Handles the lower heat generated by steel, preserving tap integrity
- **Cost-Effective:** Offers a practical, efficient solution for steel without the need for special coatings
- **Material Compatibility:** Matches steel's properties, ensuring clean, precise threading

CARBON STEEL:

- **Best for Mild Steel:** Suited for softer, non-abrasive materials like mild steel, offering good thread quality in less demanding applications
- **Best suited** for repairing damaged threads and cleaning rusty or dirty threads

TAP MATERIALS:

M4-HSS :

- **Superior Toughness:** Resists breakage under the high stress of machining stainless steel
- **Enhanced Wear Resistance:** Maintains sharpness, extending tool life
- **High Heat Tolerance:** Stays effective even with the heat generated by stainless steel's resistance
- **Optimal Hardness:** Effectively cuts through stainless steel without dulling quickly

WHAT ARE THE DIFFERENT TYPES OF TAP COATING AND SURFACE TREATMENTS?

- **Bright Finish:** Uncoated and without finish, these taps minimize friction and enhance chip flow, making them ideal for softer metals and plastics, as well as wood.
- **Black Oxide Surface Treatment:** This provides a thin protective layer that reduces friction and heat damage, all while increasing tool life.
- **Titanium Carbonitride (TiCN):** With superior hardness and higher temperature resistance, this coating is ideal for hard materials such as stainless steel and alloys. It significantly improves wear resistance and reduces friction, extending tool life.
- **Bronze Surface Treatment:** Gives taps enhanced lubricity and corrosion resistance, increasing tool life, and reducing chip build-up, while optimizing them for user on harder metals and stainless steel.

FOR OPTIMAL RESULTS...

TAPCUT™



1. VOC-free thread cutting lubricant that produces clean and accurate threads.
2. Applicable with threading, hand tapping, and machine tapping.
3. Increases the life of your tools by up to 5 times.

