MODEL H7819 24-PIECE HSS DRILL AND TAP SET
INSTRUCTION SHEET

⚠CAUTION

To reduce the risk of personal injury or property damage when using taps and drill bits, take the following precautions:

- **Always wear safety glasses when using a tap or drill bit.**
- **Use the correct size drill bit for each tap. Attempting to cut threads in an incorrectly sized hole can cause the tap to snap and eject steel splinters.**
- **Be sure to use the correct lubricant when drilling and cutting threads.**
- **Always keep drill bits and taps sharpened to ensure that drill bits cut properly sized holes and that tap threads do not bind and cause the tap to break.**
- **Use a tap T-handle to whenever possible to avoid breaking a tap due to poor alignment control.**
- **Never allow children to play with drill bits or taps.**

Inventory Qty

- Taper Tap #8-32 3
  —Drill Bit #29 1
- Taper Tap #10-24 3
  —Drill Bit #25 1
- Taper Tap ¼"-20 3
  —Drill Bit #7 1
- Bottoming Tap 5⁄16"-18 3
  —Drill Bit F 1
- Bottoming Tap ⅜"-16 3
  —Drill Bit 5⁄16" 1
- Bottoming Tap ½"-13 3
  —Drill Bit 27⁄64" 1

General Operation

1. Verify that the threads to be cut are inch threads instead of metric threads, and set the drill depth stop for the workpiece hole depth.

2. Using a center punch, mark the location to be drilled and threaded.

Note: *If there has been a hole already drilled and it is almost as large as the hole you need to drill, you most likely will have to size the hole by other means such as a reamer. Typically using a drill bit to size-up holes will ruin the drill bit.*

3. Drill a pilot hole if required, otherwise drill the required sized hole for the tap to be used.

4. While keeping the tap in alignment with the hole, carefully start the tap and cut your threads. Use thread cutting lubricant if required (**Figure 2**). Clean out the hole often to prevent the tap from binding.

If you have any questions with your new drill and tap set, call our Tech Support at: (570) 546-9663.

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General Drilling

Using the Drill Bit Speed Chart

Always follow the manufacturer's speed recommendations if provided with your drill bits, cutters, or hole saws. Exceeding the recommended speeds may be dangerous to the operator.

The chart shown in **Figure 1** is only intended as a guide. The optimum speed will always depend on various factors, including tool diameter, drilling pressure, material hardness, material quality, and desired finish.

Often, when drilling materials other than wood, some type of lubrication is necessary.

Lubrication Suggestions

Wood .....None
Plastics/Fiberglass..... Soapy Water
Brass ..... Water-Based Lubricant
Aluminum.....Paraffin-Based Lubricant
Mild Steel.....Oil-Based Lubricant

⚠CAUTION

Larger bits turning at slower speeds tend to grab the workpiece aggressively. This can result in the operator's hand being pulled into the bit or the workpiece being thrown with great force. Always clamp the workpiece to the table to prevent injuries.

Twist/Brad Point Drill Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/16" – 3/16"	3000	2500	2500	2500	3000	2500
13/64" – 3/8"	2000	1500	2000	1250	2500	1250
25/64" – 5/8"	1500	750	1500	750	1500	600
11/16" – 1"	750	500	1000	400	1000	350

Spade/Forstner Bits	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/4" – 1/2"	2000	1500				
9/16" – 1"	1500	1250				
1-1/8" – 1-7/8"	1000	750				
2–3"	500	350				

Hole Saws	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
1/2" – 7/8"	500	500	600	600	600	500
1" – 1-7/8"	400	400	500	500	500	400
2" – 2-7/8"	300	300	400	400	400	300
3" – 3-7/8"	200	200	300	300	300	200
4" – 5"	100	100	200	200	200	100

Rosette Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
Carbide Insert Type	350	250				
One-Piece Type	1800	500				

Tenon/Plug Cutters	Soft Wood	Hard Wood	Plastic	Brass	Aluminum	Mild Steel
3/8" – 1/2"	1200	1000				
5/8" – 1"	800	600				

Figure 1. Drill bit speed chart.

General Tapping

Tapping Speed and Lubricant Chart

Always follow the manufacturer's speed recommendations. Exceeding the recommended speeds may be dangerous to the operator.

The chart shown in **Figure 2** is only intended as a guide. The optimum speed will always depend on various factors, including tap diameter, threading pressure, material hardness, material quality, and desired finish. Often, when tapping materials different types of lubrication are required as shown below.

⚠WARNING

Cutting lubricants can be a potent and extremely poisonous solution to humans and animals. Use personal protective equipment when handling coolant to prevent infections or poisoning.

If using a tapping machine with the Model H7819 tap set, you can use the formula and table to find a close spindle speed and suggested lubricant.

$$\text{Spindle RPM} = \frac{\text{Feed Speed (SFM)}}{(0.26 \times \text{Tap Diameter})}$$

Material to be Tapped	Feed Speed (SFM)	Tapping Lubricants
Plastics/Fiberglass	50-70	Dry, Freezing Spray, Liquid Soap
Aluminum	70-90	Soluble Oil
Aluminum Alloys	50-70	Soluble Oil, Light Base Oil, Lard Oil
Brass	60-100	Neat Cutting Oils
Bronze	30-40	
Copper	60-80	
Gun Grade Metal	50-60	Soluble Oil, Light Base Oil, Lard Oil
Grey Cast Iron	30-60	Dry
Malleable Iron	20-40	Soluble Oil, Paraffin-Based Lubricant
Magnesium Alloy	50-70	
Nimonic Alloy	10-12	High Pressure Cutting Oil
Alloy Cast Iron	15-30	Cutting Oils (Sulfur-Based)
Mild Steel	30-50	
Carbon Steel up to 4%	20-40	
Carbon Steel up to 7%	20-30	
Carbon Steel 7% and Higher	15-25	
Steel Alloys 60T	15-25	
Steel Alloys 60T and Higher	10-15	
Stainless Steel	10-20	
Tool Steels	15-25	

Figure 2. Tapping speed and lubricant chart.

G8748—Hand Tapping Machine
This machine provides stability, precision and sensitivity to the hand tapping process. The cast iron construction of the base and over arm gives a rigid setup that resists tool breakage. Precision ground surfaces on the base and hardened spindle means perpendicular perfection; no more off-axis tapped holes. The counter balanced spindle allows far more sensitivity than an ordinary tap handle. Other features include: quick setting work holder, 9 tap holders that snap-lock into spindle, rack for tap holders, adjustable height collar and off-set handles for quick return. Can be bolted down to use as a tapping station! Includes collet sizes: #6, #8, #10, ¼", 5⁄16", 7⁄16", 3⁄8", ½" and 5⁄8".

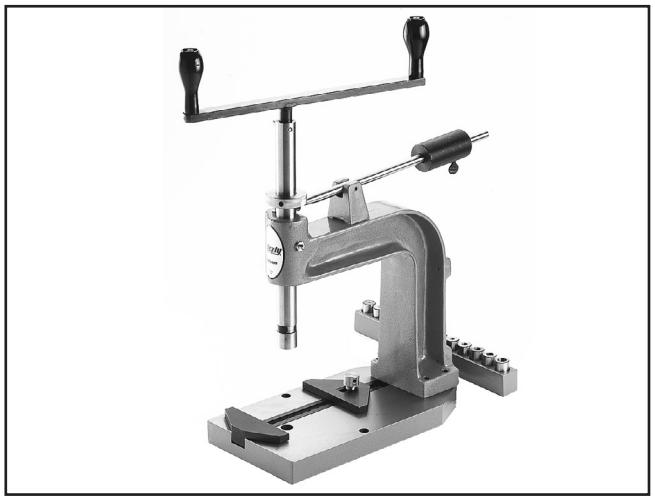

Figure 3. G8748 Hand Tapping Machine.

T10057—Tapping Attachment
Turn your drill press into a tapping machine. An internal adjustable clutch mechanism lets you tap 3⁄16" to ½" and M5 to M12 threads. Uses an MT #2 arbor. Maximum speed is 700 RPM.

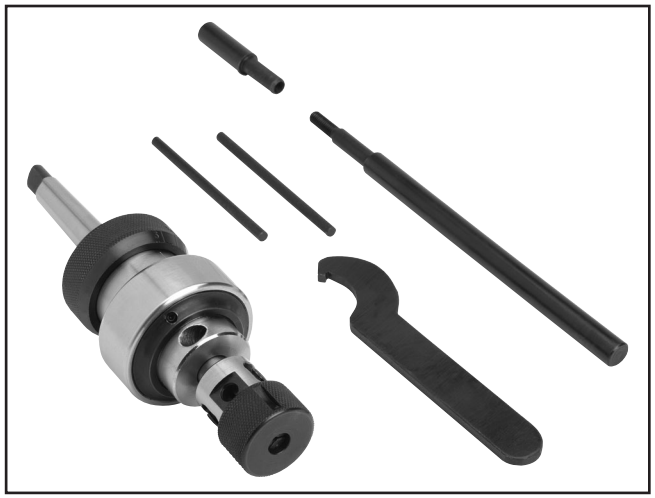

Figure 4. T10057 Tapping Attachment.

H1412—4 oz. Cutting & Tapping Fluid
H1413—16 oz. Cutting & Tapping Fluid
H1414—1 Gallon Cutting & Tapping Fluid
This cutting and tapping fluid is non-ozone depleting and is safe for ferrous and non-ferrous metals with an engineered formula that clings to the cutting tool and provides phenomenal lubrication during cutting and tapping.

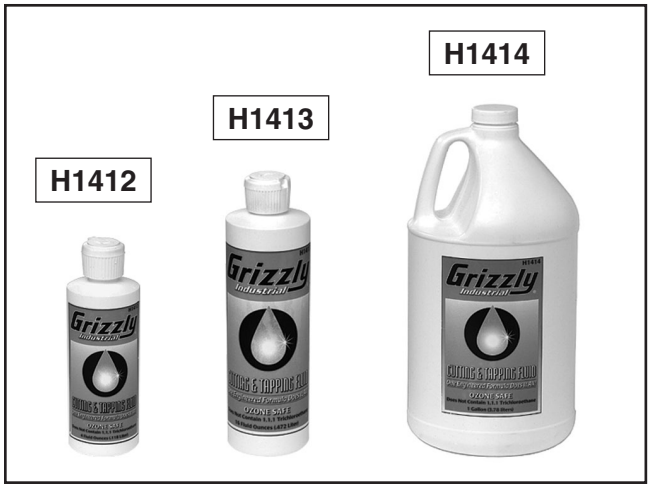

Figure 5. Grizzly® Cutting & Tapping Fluid.

H5781—Optical Punch Set
This unique tool is indispensable when doing critical layout work. Just look down the magnifying lens and align the cross hairs with the mark on your workpiece. Replace the magnifier with the supplied punch and give it a tap. Includes a bull's eye and cross hair lens, a 150° and 60° center punch and wooden case.

Figure 6. H5781 Optical Punch Set.