CAED Support Shops

Drill Press

•Review dress code

-Remind students that long hair must be tied back, loose clothing and/or jewelry must be removed

•Intro

Show the following on all three drill presses:

-On/Off Switch

-Demonstrate speed control, emphasize this should only be changed while the machine is running

-Demonstrate how to adjust table height, emphasize the **locking handle must be loose** before cranking the up/down handle

-There is no rack and pinion on the older Powermatic drill press so make sure the table is supported before loosening the lock knob or it will fall

-Show the depth stop nuts

-Explain how the table can be tilted, work must remain **FLAT** to the table

-Demonstrate how to use the chuck key and the importance of removing it before starting machine **NEVER LEAVE THE CHUCK KEY IN THE CHUCK**

•Drilling a Hole

-Explain the use of a sacrificial board, it helps prevent tear out and also prevents drilling into the table, **NEVER DRILL INTO THE TABLE**

-Install a twist drill bit

-Demonstrate setting stop nuts so drill only goes into sacrificial board

-Describe why we keep the material clamped or against the fence and demonstrate clamping a piece to the table

-Demonstrate holding a small piece in a vise or wood clamp

-Explain that for harder materials and/or large holes the work must be clamped to the table

•Drill Bits

-Show and talk about uses/applications of the following drill bits:

-**Twist drills** (for use with Wood and Metal): show small and large examples, good general purpose bit for holes in wood, metal, and plastic

-**Brad point bit** (Wood Only): Show a brad point and twist drill side by side, show the sharp point on the bit, emphasize for wood only. Twist drills tend to tear the wood grain so brad point bits leave a cleaner hole finish

-**Forstner Bit** (Wood Only): Bigger sizes available than brad point bits, leaves a hole with a flat bottom, good for installing European hinges and removing material for recessed pockets

-**Paddle/spade bits** (Wood Only): Hole quality not as good as forstner bits and they tend to flex and follow the grain, but can drill deeper holes, to prevent tear out drill until the point breaks through the back then flip the work over to finish the hole, also frequently back out the bit to remove chips or the bit will get stuck on deeper holes, mainly used in construction for electrical and plumbing penetrations

-**Hole Saw** (Wood and Metal types available): Must drill all the way through the material, it has a center drill bit and an outside cutter (saw) that produces a slug

rather than removing all of the material like a forstner or paddle bit. Available in large sizes, mainly used in construction for electrical and plumbing penetrations
-**Countersink** (Wood and Metal types available): Used to make a screw head flush with the surface. Also have combination countersink/counterbores to set the screw below the surface so it can be covered by a plug/dowel or filler
-**Plug cutter** (Wood Only): Used to make wood plugs that can cover screw holes

•**Demonstrate Practice Piece**

1) Twist Drill

-Drill through with a twist drill, emphasize maintaining pressure on the work to keep it flat against the table and up against the fence
-Explain if a work piece does slip and start to spin maintain downward pressure on the quill with one hand and stop the drill press with the other hand, **DO NOT raise the quill**, the piece will become a projectile
-Have students drill a hole

2) Forstner Bit

-Install a forstner bit and dill a hole all the way through
-Set the depth stop and drill part way through
-Show how the bottom of the hole is flat
-Have students drill a hole

•Remind students to clean-up after themselves immediately after using a tool or area.

-Show them where the brooms, vacuum, etc. are located and what our expectations for clean-up are.
-Remind them particle board, OSB, MDF, Melamine, and finished material goes in the **TRASH**. Wood and Plywood can be recycled.
-Have the students clean up

Ask students the following questions:
-When drilling a small work-piece on the Drill Press you should:
Secure the work piece in a vice or clamp
-What is a chuck key?
It is used to tighten and loosen the drill chuck and needs to be removed before starting the machine

Remind students NEVER leave the chuck key in the chuck and make sure all long hair and loose clothing is tied back and anything that can get caught such as lanyards or headphones are put away

REMEMBER- We are here to help. If you have any questions, ask!