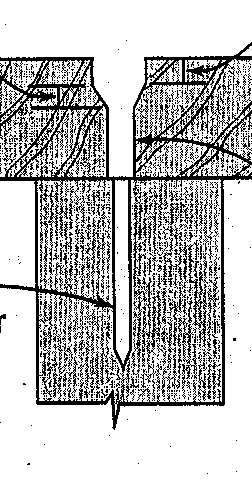
Teaching Notes

4.1 Portable Power Drills, Drivers & Fasteners

Videos of demo: [Part A](https://madisoncollege.yuja.com/V/Video?v=1354886&a=245377310) (22:21)

[Part B](https://madisoncollege.yuja.com/V/Video?v=1354956&a=655956614) (12:21)

1. Hand Drills – Demo
   * Cordless: batteries, charging, 90° & offset attachment
   * Corded – sold by chuck size
   * Impact driver
   * Hammer drill
2. Tooling
   * Twist drill – demo drilling in steps to clear chips from the flutes and using a scratch awl to set a starter hole in stock
   * Bradpoint
   * Forstner bit/multi-spur bit
   * Spade bit – demo drilling from both sides to eliminate tear-out
   * *Adjustable circle cutter*  *- ID only*
   * *Plug cutter - ID only*
   * Countersink
   * Hole saw kit – demo proper setting of drive pins
   * Fuller tapered and combination bits – discuss & demo cleaning
   * Vix bits – discuss & demo cleaning
   * Center finder – demo finding the center with a bored piece overlaying a piece needing a smaller bore
3. Fasteners
   * Fastener cabinet
     + Choosing a screw length (1/3rd: 2/3rds)
   * Apex and driver configurations (square, cross, slot) and sizes (0,1,2,3)
   * Demo finding the largest size of driver that fits in a screw to determine proper size driver
     + Check/change bad drivers out as a group
   * Discuss driving fasteners made of non-ferrous material
4. Misc.
   * Proper method for boring screws – demo bridging; avoiding splitting
     + Pilot hole, clearance hole, counterbore and countersink (see diagram next page)
     + Demo measuring root diameter
   * *(Optional) Demo screw extractors and using a chuck to bite into a screw and remove it if drive is cammed out or broken off*



**Counter Bore**

**Countersink** k

**Clearance Hole**

**Pilot Hole**

