ROUTER SAFETY

The router is one of the most useful and versatile tools in the woodshop. But because it spins the sharp carbide tipped cutters at a very high speed, it can be quite hazardous, unless you follow safety practices each and every time you use it!

1. Always use the router safely.
    a. Wear a dust mask
    b. Use eye protection
    c. Use hearing protection
    d. Don't wear loose clothing
        i. Tighten sleeves
        ii. No ties or lanyards etc.
        iii. Tie back long hair or wear a hat
    e. Don't wear gloves, except maybe when changing cutter bits
    f. Don't use the router when tired or distracted
    g. Hook up dust collection wherever possible
    h. Be sure the tool is properly grounded
    i. Read the manual, especially the safety instructions
2. Unplug the router, hand held or table mounted, before, and while, making any adjustments and while changing cutter bits.
    a. Make sure the router's on-off switch is in the off position before plugging it back in.
    b. Be sure the collet and any attachments are tight before plugging it back in.
3. Chucking the cutter bit
    a. Inspect the bit for any damage or visible dullness
    b. Insert bit all the way into the collet, then back it out 1/16"
        i. If it's bottomed out, it could become loose during routing
        ii. Always have at least ¾ of the shank's length in the collet
    c. Don't over tighten the collet's locking nut, just firmly tighten
    d. Only use cutting bits designed for routing,
        i. Never use carving burrs, grinding points, drill bits, etc
    e. Use the correctly sized collet for the bit being used
4. Free hand routing
    a. Keep the stock secure
        i. Clamp the stock to the workbench unless it's large enough or heavy enough that it won't move
        ii. Best to use a friction mat on the workbench to assist in keeping the stock immoveable

iii. If the stock is too small to clamp down, use bench dogs with the end vise

b. Hold the router with both hands
    i. Don't use one hand to hold the stock
c. Wait for the router to come to full speed before putting it in touch with the wood
d. Take multiple small cuts especially when cutting on harder woods
    i. Less chance of kick back
    ii. Less chance of splintering and/or tear out
    iii. For depth cutting, reduce the bit's cutting depth, then increase it slightly multiple times, until desired depth is reached
e. Use larger bits (1" or more) on the table router, not with hand held routing

5. Table routing
    a. Cover the area just above the cutter head with a guard that covers the area immediately above the bit
    b. Wait for the router to come to full speed before putting it in touch with the wood
    c. Except with very large stock, always use a push stick or push block to move the wood through the cutter head
    d. With smaller stock, always clamp the stock
        i. Use a small parts holder, never try to hold it with your hands
        ii. Or a sled or other sliding carrier
        iii. Or, route a larger piece, then cut it down to final size
    e. Use a feather board to keep the work pressed against the fence
    f. Take multiple small cuts when using larger bits, or on harder woods
    g. Never pass the stock between the cutting bit and the fence
        i. Stock could get caught by the bit and hurl it
    h. The wood needs to move across something solid – either the fence or a bearing at the top of the bit
        i. Even with the bearing, keep the fence near the bit
        ii. Keep fence open for dust control
    i. Don't wear gloves
        i. If they get caught up in the bit, your hands will be pulled into that bit and you will be making a visit to the emergency room

j. Take multiple small cuts especially when cutting on harder woods
    i. Less chance of kick back
    ii. Less chance of splintering and/or tear out
k. For larger bits, adjust the speed of the router
    i. For 1”- 2” bits, approximately 18,000 RPM
    ii. For 2” – 2 ½” bits, approximately 16,000 RPM
    iii. Check your router’s manual for specific speed recommendations
    iv. Best to use a more powerful router than the “standard” router
    v. Collet extensions can break – best not to use them

6. General rules
    a. Start and stop the cut safely
        i. Never start up the router with the bit in contact with the work piece
            1. You can lose control of the router while working freehand
            2. The work piece may be flung who knows where when routing on the router table
            3. The router bit’s shank could be bent
            4. Or, worst case, the router could be damaged
        ii. At the end of the cut, be sure the bit is clear of the work before turning the router off
        iii. With a hand held router, be sure the bit has stopped spinning before setting the router down
    b. Route in the right direction
        i. Always feed the stock against the rotation of the bit
            1. The bit turns clockwise when looking down from the top of the router
            2. The bit, therefore, turns counterclockwise when mounted on a router table
        ii. Therefore, when routing freehand, move the router from left to right
        iii. And, when routing on the table, the stock should be moved from right to left
        iv. Routing in the direction of the cutters rotation is known as “climb cutting”, is dangerous, and could cause you to lose control of the router, or the work piece.
    c. Never force the router

i. If excessive feed pressure is needed, or burns the wood
    1. Make a lighter cut
    2. Either sharpen it, or replace it, as the bit may be dull
ii. If there is excessive noise or vibration, stop the router
    1. Inspect it and the bit for damage
    2. Make sure the collet is tight
    3. Make sure the router is firmly attached to the table