

Lesson #3: Radial-Arm Saw I.D. and Safety Packet

Objectives

Students will be able to...

- Identify each of the major components of the Radial-Arm Saw and their purpose.
- Describe the use and operation of the Radial-Arm Saw.
- Demonstrate the safe operation of the Radial-Arm Saw.

Common Core Standards

RSIT 11-12.2
RLST 11-12.2
Problem Solving – 5.1 & 5.4
Health and Safety – 6.1, 6.2, 6.3 & 6.10
Cabinetmaking and Wood Products Pathway A4.1, 4.3, A4.4 & A6.1
Responsibility and Flexibility – 7.4
Technical Knowledge and Skills 10.1, 10.2
Demonstration and Application 11.1
Residential and Commercial Construction Pathway D2.1

Materials

Radial-Arm Saw I.D. and Safety packet
Radial-Arm Saw

Lesson Sequence

- Complete the *Radial Arm Saw Component I.D.* portion with students gathered around the saw. As you name the parts of the saw, not only discuss what their function is, but also demonstrate how they function. If possible, include anecdotes about personal experiences or other's experiences with the saw. (30 minutes)
- When done with the I.D. lecture/discussion, return to the classroom and continue with answering the safety questions as a class (15-20 minutes).

Assessment

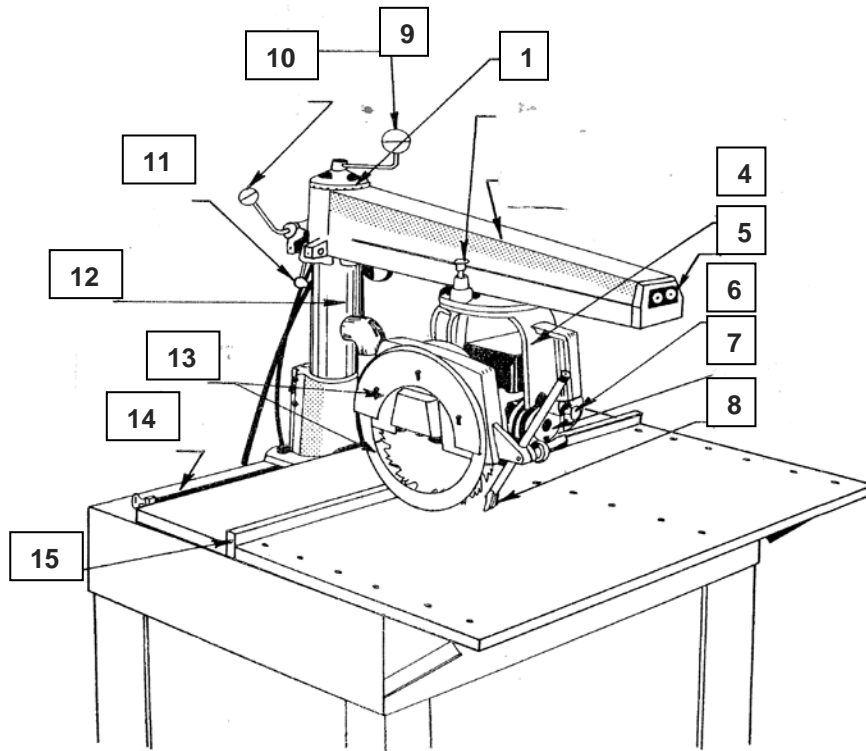
Check for student understanding during whole class instruction through questioning and randomly calling on students.

Accommodations/Modifications

One on One Support
Check for Understanding
Visuals
Partner Students Up as Needed

Radial-Arm Saw I.D. and Safety packet

Part 1: Identify the numbered parts on the saw illustrated below.



- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____
- 6. _____
- 7. _____
- 8. _____

- 9. _____
- 10. _____
- 11. _____
- 12. _____
- 13. _____
- 14. _____
- 15. _____

Part 2: Safe Operational Procedures

1. Changing the saw blade:

- a. Shut off main power switch or disconnect from wall plug.
- b. Select the proper type blade for job.
- c. Remove the saw guard, the arbor nut, and arbor collars. Remember the arbor has left-hand threads. Remove the blade.
- d. Before replacing new blade, check the inside collar. It should be replaced on the arbor with the recessed side out.
- e. Place the saw blade on the arbor so the teeth on the bottom of the blade or nearest the table point back or toward the elevating column. Generally, blades are marked "this side out."
- f. Place the outside collar on the arbor with the recessed face against the saw blade.
- g. Tighten the arbor nut using the same wrenches used in removing.
- h. Before replacing the guard, check the squareness of the saw blade and table by resting a framing square against the face of the blade and tabletop. If out of adjustment, consult the operator's manual for the saw.
- i. Assemble the guard kickback and elbow.
- j. Replace the guard and lock in place.
- k. While the saw is still disconnected from electricity, rotate the saw blade by hand to see that it runs clear and free.

2. Crosscutting:

- a. Select a crosscut or combination blade.
- b. Have all guards in proper place and make sure they are free to operate.
- c. Push the saw to the rear of the table. Tighten the rip lock to keep the saw from running forward when it is turned on.
- d. Adjust height of blade by turning the elevating handle until the teeth just touch the tabletop.
- e. Adjust saw at right angle to fence and perpendicular to the table.
- f. Place the material to be cut on table with the straightest edge tight against the fence and with the mark in line with the saw blade.
- g. Be sure the saw blade is not engaging the material. Start the saw and release the rip lock.
- h. Hold wood with left hand and saw with right hand, standing slightly to the left of the like of the saw blade.
- i. Pull saw toward operator, feeding slow enough that the saw does not grab.
- j. Return the saw to the rear of the table. Lock in place until ready to make another cut.

3. Ripping:

- a. Select ripping or combination blade.
- b. Turn saw parallel to fence by releasing the swivel lock and turning the saw yoke. Lock in position with rip lock at proper width of cut.
- c. Adjust safety guard to approximately 1/8" above the board and the anti-kickback device at 60° when touching material to be ripped.
- d. Adjust height of saw with elevating handle so that teeth just touch table.
- e. Feed material from opposite end of anti-kickback device or into the bottom of the saw blade, which is turning toward the operator.
- f. Use a push stick when near blade to keep hands away from blade.
- g. Get an assistant to help with long material or use a roller support.

4. Miter cuts:

- a. Select a crosscut or combination blade.
- b. Set the motor yoke and the lock in the same position as for crosscutting. Release the arm clamp and the miter latch.
- c. Swing the radial arm to the desired angle as indicated on the miter scale. Most saws have a notch or hole at 30o, 45o, 60o, etc. so that the miter latch can be re-engaged at these angles. If there is no such notch, the arm can be clamped at any angle.
- d. Re-engage the miter latch and tighten the arm clamp.
- e. Make the cut in the same manner as described for crosscutting.

5. Bevel cuts:

- a. Select a crosscut or combination blade.
- b. Lock the radial arm and the motor yoke in the same position as for crosscutting.
- c. Raise the saw until the motor can be tilted to the desired bevel. Release the bevel clamp and the locating pin.
- d. Tilt the saw end of the motor downward to the desired bevel as indicated on the bevel scale.
- e. Re-engage the locating pin and tighten the bevel clamp.
- f. Make the cut in the same manner as described for crosscutting.
- g. Bevel rips can be made in a similar manner except the saw yoke is turned and locked in place as in ripping. Follow same procedures as discussed in straight ripping.
- h. A bevel-miter (compound angle cut) is a combination bevel and miter cut.

Part 3: General Safety Practices

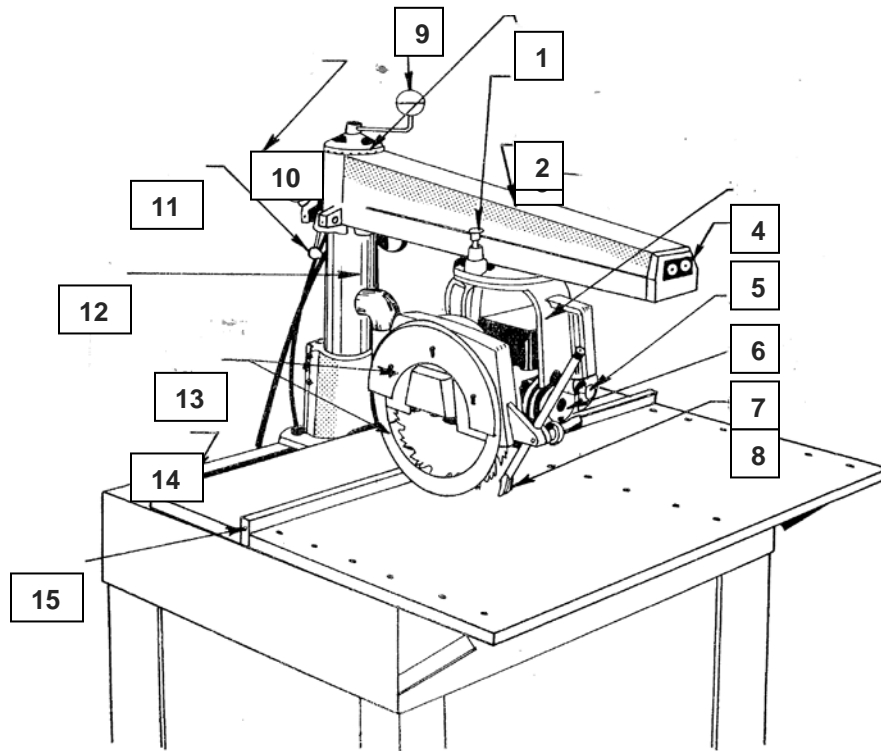
1. Wear eye protection, hearing protection, and proper clothing at all times when operating this machine.
2. Do not operate saw without permission from the instructor.
3. Be sure blade is sharp, sound, and of the proper type.
4. All adjustments should be tight and all guards in place.
5. Never leave tools, scraps, or other materials on saw table. Keep area around saw clear.
6. Do not leave machine while it is running.
7. Be sure machine is grounded properly.
8. Be sure material is free of knots, nails, or other foreign matter.
9. Do not adjust machine while it is running.
10. Tighten rip lock before starting the saw.
11. Pull saw slowly through material. Return saw to rear of table after sawing and before removing stock.
12. When ripping, make sure that the blade is rotating upward toward the operator. Feed the stock from the end opposite the anti-kickback device. Always use a push stick when ripping.
13. Do not stop blade by pushing stock against the blade.
14. Do not saw material freehand without a guide.

Part 4: Completion questions

1. _____ or _____ types of blades may be used for crosscutting.
2. A _____ blade or feeding the saw to _____ may result in the saw grabbing the material.
3. The depth of cut into the table is adjusted by turning the _____.
4. Material should be fed opposite from the _____ when ripping.
5. The saw blade should be placed on the arbor so the teeth on the _____
6. of the blade point back toward the elevating column.
7. Be sure all _____ are tight before the saw is turned on.
8. Return the saw to the _____ of the table after making a crosscut.
9. A _____ angle cut is a combination bevel and miter cut.
10. When the saw is perpendicular to the table, the bevel gauge should read _____ degrees.
11. To crosscut a board at other than a 90° angle across the board, the _____ must be released.

Radial Arm Saw Identification and Safety - Answer Key

Part 1: Identify the numbered parts on the saw illustrated below.



- | | |
|--------------------------|--|
| 1. <u>miter scale</u> | 9. <u>elevating handle</u> |
| 2. <u>swivel latch</u> | 10. <u>arm clamp handle</u> |
| 3. <u>cantilever arm</u> | 11. <u>miter latch</u> |
| 4. <u>yoke</u> | 12. <u>circular column</u> |
| 5. <u>on-off switch</u> | 13. <u>self-adjusting blade guards</u> |
| 6. <u>bevel latch</u> | 14. <u>metal base</u> |
| 7. <u>bevel scale</u> | 15. <u>fence</u> |
| 8. <u>kickback guard</u> | |

BUILDING INDUSTRY TECHNOLOGY ACADEMY: YEAR ONE CURRICULUM

Part 4: Completion questions

1. _____ **combination** _____ or _____ **crosscut** _____ types of blades may be used for crosscutting.
2. A _____ **dull** _____ blade or feeding the saw to _____ **fast** _____ may result in the saw grabbing the material.
3. The depth of cut into the table is adjusted by turning the _____ **elevating handle** _____.
4. Material should be fed opposite from the _____ **anti-kickback device** _____ when ripping.
5. The saw blade should be placed on the arbor so the teeth on the _____ **bottom** _____ of the blade point back toward the elevating column.
6. Be sure all _____ **adjustments** _____ are tight before the saw is turned on.
7. Return the saw to the _____ **rear** _____ of the table after making a cross cut.
8. A _____ **bevel-miter (or) compound miter** _____ angle cut is a combination bevel and miter cut.
9. When the saw is perpendicular to the table, the bevel gauge should read _____ **0** _____ degrees.
10. To crosscut a board at other than a 90o angle across the board, the _____ **miter latch** _____ must be released.