Lesson #2: Scroll Saw Identification and Safety

Objectives

Students will be able to...

- Identify the components on a scroll saw.
- Demonstrate the safe operation of scroll saw.

Common Core Standards

RSIT 11-12.2
RLST 11-12.3
Demonstration and Application 11.1
Health and Safety 6.0
Technical Knowledge and Skills 10.0
Cabinetmaking and Wood Products Pathway A4.1, 4.3, 4.4
Residential and Commercial Construction Pathway D2.1, D3.1

Materials

Scroll Saw Identification and Safety Worksheet
YouTube Video https://www.youtube.com/watch?v=tUf6ZFBZuKU

Lesson Sequence

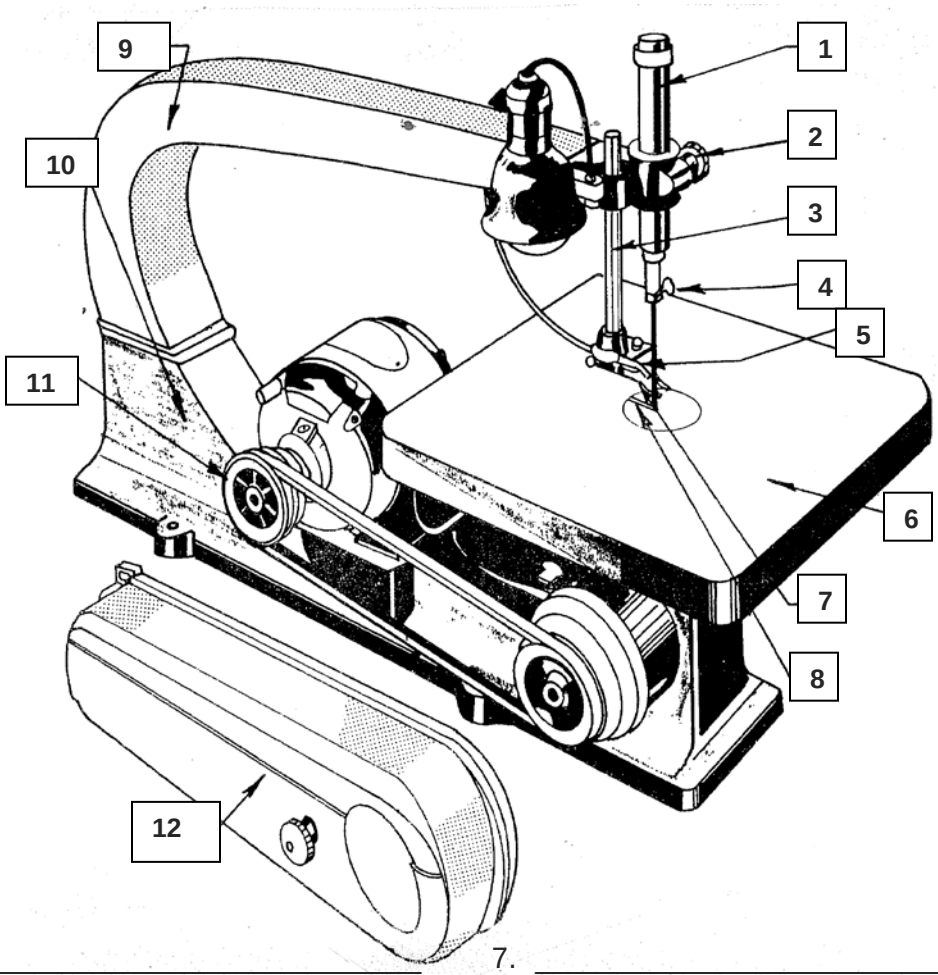
- Complete the ***Scroll Saw Identification and Safety Worksheet*** with students gathered around the scroll saw. As the parts of the scroll saw, not only discuss what their function is, but also demonstrate how they function. (20 minutes)
- Come back into the classroom and watch the ***You tube video*** https://www.youtube.com/watch?v=tUf6ZFBZuKU answer any questions students may have (10 minutes).
- Have students complete the safety questions in the ***Scroll Saw Identification and Safety Worksheet.*** (15-20 minutes)

Assessment
Monitor student understanding through questioning. Call on random students to answer questions. Roam around the classroom to monitor student safety answers.

Accommodations / Modifications
One on One Support Check for Understanding Partner Students Up as Needed Extra Time as Needed

Scroll Saw Identification and Safety

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



1. _____ 7. _____

2. _____ 8. _____

3. _____ 9. _____

4. _____ 10. _____

5. _____ 11. _____

6. _____ 12. _____

Part 2: Safe Operational Procedures

1. Select blade according to type of job. There are two general types of blades.
    a. Jeweler's blade - is held in both the upper and lower chuck and is used for fine work.
    b. Sabre blade - is held only by the lower chuck and is for heavier cutting.
2. Regarding teeth per inch, blades vary from 7 teeth for rough cutting to 32 teeth recommended for cutting metal or other hard materials. Blades having 15 teeth per inch are recommended for general purpose cutting.
3. Insert blade with the teeth pointing down so that cutting is on the downward stroke, thus holding the wood against the table.
4. After inserting blade, tighten chuck properly and then adjust blade tension with tension sleeve, keeping the blade taut.
5. Determine proper speed according to job. Changing the belt on the cone pulleys can regulate the cutting strokes per minute or by adjusting variable speed drive if saw is equipped with a multi-speed drive. Be sure guard is replaced before operating saw. Note blade and speed selection chart below:

Material to be cut	Speed	Thickness to be cut			
		Up to 1/16"	1/16" –1/4"	1/4" - 1/2"	1/2"– 2"
		Number of teeth per inch on blade			
Hardwood	1000-1750	20	16	15	10
Softwood	1750	20	18	15	8
Plywood	1300-1750	20	18	15	10
Plastics	650-900	20	18	15	12
Steel	650	32	20	--	--
Aluminum	650-900	20	20	15	--

6. Blade alignment is very important for safe and efficient operation. When viewed from the side, the blade should move straight up and down when the saw is running.
7. Adjust the hold-down pressure foot so that the spring tension holds the work tight to the table. Turn saw one revolution by hand to double check all adjustments.
8. Note size of throat opening (space between blade and support arm) in respect to size of piece to be cut.
9. Before beginning cut, check wood piece for nails, paint, grit, or other foreign material that could dull the blade or possibly break blade.

10. With table clear of all chips, small pieces, or other materials, start the machine and feed the wood into the blade forward and evenly with a slight downward pressure. Saw cuts should be on the waste side of the line. The line should be barely visible on wood after cutting.
11. The jib saw can be used for inside cuts.
    a. Drill small holes in the waste stock at points of abrupt changes of direction on curves.
    b. Insert the blade through the drilled hole and secure in chuck as discussed earlier.
    c. Proceed with cut as with an outside cut.
    d. When finished with cut, stop machine, raise upper guide, and remove blade from upper chuck to free the work piece.
12. Do not force the work into blade or attempt to turn too sharply. If blade should break, turn the saw off and allow the blade to come to a complete stop before removing work or replacing blade.
13. Bevel cuts can be made if the saw is equipped with a tilt table.
14. If saw is equipped with a light and dust blower, be sure both are working properly before operating the saw.

Part 3: General Safety Practices

1. Wear eye protection and proper clothing when operating this saw.
2. Do not operate saw without instructor's permission.
3. Use only sharp blades.
4. Select correct speed and type of blade for work to be done.
5. Keep work area clear and uncluttered.
6. Al guards should be in place at all times when operating the saw.
7. Make all adjustments before starting machine.
8. Pressure should be held on work by the hold-down foot.
9. Keep hands and fingers out of line of the blade.
10. Do not force material into the saw or attempt to turn too short a radius.

Part 4: Completion Questions

1. The saw should be operated at approximately _____ RPM with a blade having _____ teeth per inch when cutting a piece of ¾" pine lumber.

2. If saw cuts are rough and ragged, the speed should be _____.

3. When using the _____ type blade, both chucks are used.

4. The work is held snug to the table by the _____-_____.

5. For general purpose sawing, a blade having _____ teeth per inch is recommended.

6. The blade should be inserted so that sawing is completed on the _____ stroke.

7. When using the saber saw blade, only the _____ chuck is used.

8. Proper blade tension is accomplished by adjusting the _____.

9. To increase speed if the saw is designed with a 4-step motor and drive pulley, the belt should be moved to a _____ position on the motor and a _____position on the drive cone pulley.

10. Saw cuts should be made on the _____side of the line.

Scroll Saw Identification and Safety *- Answer Key*

Part 1:

1. Tension sleeve
2. Upper head
3. Guidepost
4. Upper chuck
5. Blower
6. Table
7. Hold down
8. Table inserts
9. Over arm
10. Base
11. 4-step pulley
12. Belt and pulley guard

Part 4:

1. 1000-1750; 10
2. Lowered
3. Jewelers
4. Hold down pressure foot
5. 15
6. Downward
7. Lower
8. Tension sleeve
9. Clockwise; tighten
10. waste