



BUILDING INDUSTRY TECHNOLOGY ACADEMY

A program promoted by the
California Homebuilding Foundation



UNIT SEVEN: POWER TOOLS-MITER SAW

YEAR ONE

UNIT SEVEN: POWER TOOLS – MITER SAW

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Lesson #1: Miter Saw I.D. and Safety Packet

Objectives

Students will be able to...

- Identify each of the major components of the Miter saw, and their purpose.
- Describe the uses of the Miter saw.
- Demonstrate the safe operation of the Miter Saws.

Common Core Standards

RSIT 11-12.2
RLST 11-12.3
Demonstration and Application 11.1 & 11.2
Health and Safety 6.2 & 6.10
Responsibility and Flexibility 7.4
Cabinetmaking and Wood Products A 4.1, A4.3, A4.4, & A 6.1
Residential and Commercial Pathway D2.1, D2.3, D3.1, & D 5.2

Materials

Miter Saw PowerPoint
<https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3A13499066-8bdd-4c9e-ab8c-0d168761f94a>
Miter Saw I.D. and Safety Packet
Miter Saw

Lesson Sequence

- Introduce a Miter Saw using the *Miter Saw Power Point*.
- Review the I.D. portion of the *Miter Saw I.D and Safety* packet using a Miter Saw.
- Review the safety portion of the packet as a class.

Assessment

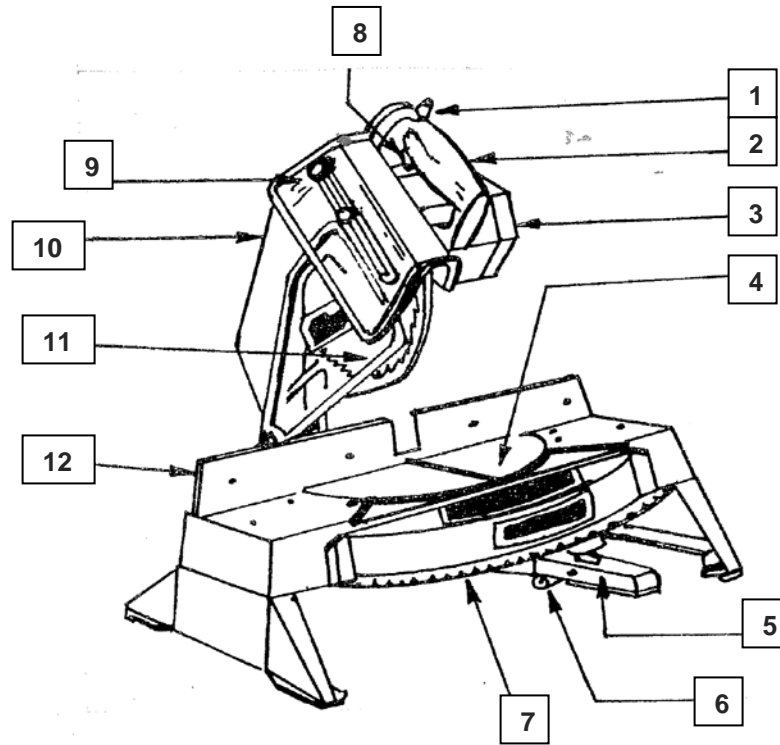
Check for understanding using questioning. Be sure to call on random students.

Accommodations/Modifications

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

Power Miter Saw Identification and Safety

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



1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

Part 2: Safe Operational Procedures

1. **Study** the operation, maintenance, and safety manual for the specific saw to be operated.

2. **Changing the saw blade:**
 - a. Disconnect saw from the power source
 - b. Select a crosscut or combination blade.
 - c. Remove the saw guard, the arbor nut, and arbor collar. Remember the arbor has left-hand threads. Remove the blade.
 - d. Place the blade on the arbor so the teeth toward the operator point downward.
 - e. Place the outside collar on the arbor. Be sure the recessed face of both collars is against the saw blade.
 - f. Tighten the arbor nut using the wrench furnished with the saw.
 - g. Replace the guard. If it is the retractable type guard, make sure it moves freely before reconnecting the power source.

3. **Miter cuts:**
 - a. Select a sharp crosscut or combination blade.
 - b. The saw should be in the raised position and resting on the spring.
 - c. Select the proper angle of cut by moving the spring-loaded miter arm. Most saws have a stop at 90° and 45° left and right. Lock the miter arm in position for the desired cut with the lock nut.
 - d. Place the stock in the saw with the flat or square edges against the table and the fence.
 - e. Hold the material against the fence with one hand with the mark under the saw blade. Fingers or hands should never be within 3 inches of the path of the blade. Use a C-clamp to hold small pieces. Sandpaper glued to the fence will prevent the stock from shifting.
 - f. Start the motor before making contact with the material. Slowly lower the saw into the stock with hand positioned on the saw handle.
 - g. After completing the cut, return the saw to the raised position. Allow the motor to stop before removing stock from the table.

4. **Compound angle cuts:**
 - a. To cut a compound angle, first prepare a filler block to attach to the fence with screws.
 - b. The angle at the front of the filler block will determine the bevel angle and the tool control setting will determine the miter angle.

Part 3: General Safety Practices

1. Wear industrial quality eye protection and proper clothing when operating this saw.
2. Obtain permission from the instructor before operating the power miter saw.
3. Be sure the blade guard is in place and working properly.
4. Operate the miter saw only where adequate light is available.
5. Be sure the stock is firmly supported. Do not attempt to hold the stock away from the fence.
6. Always keep fingers more than 3 inches from the path of the blade.
7. The stock must be in contact with the fence near the blade to prevent pinching the blade.
8. Clean all scrap material and sawdust away from the work area before starting the saw.
9. Do not leave the work area until the saw blade has stopped.
10. When the job is completed, clean the saw and work area.

Part 4: Completion questions

1. The _____ must be removed to change the blade.
2. The arbor nut has _____ hand threads.
3. The teeth of the blade near the operator are pointed in a _____ position.
4. After use, the spring returns the saw to the _____ position.
5. When making a cut, the saw should be lowered _____ into the workpiece.
6. The motor should _____ before removing stock from the table or leaving the work area.
7. To cut a compound angle, a _____ block must be used.
8. Fingers should never be closer than _____ inches to the path of the blade.
9. A _____ or _____ blade should be used for straight and miter cuts.
10. The _____ is adjusted across the index or degree scale for making angle cuts.

Power Miter Saw Identification and Safety – *Answer Key*

Part 1:

1. Brake button
2. Handle
3. Motor
4. Table
5. Miter arm
6. Lock lever
7. Degree scale
8. Trigger switch
9. Blade guard
10. Saw arm
11. Blade
12. Fence

Part 4:

1. Saw guard, the arbor nut, and arbor collar
2. Left
3. Downward
4. Upward
5. Slowly
6. Stop
7. Filler
8. 3
9. Crosscut or combination
10. Miter gauge

Lesson #2: Miter Saw Safety & Operation Video

Objectives

Students will be able to...

- Identify each of the major components of the Miter saw, and their purpose.
- Describe the uses of the Miter saw.
- Demonstrate the safe operation of the Miter Saws.

Common Core Standards

RSIT 11-12.2

RLST 11-12.3

Demonstration and Application 11.1 & 11.2

Health and Safety 6.2 & 6.10

Responsibility and Flexibility 7.4

Cabinetmaking and Wood Products A 4.1, A4.3, A4.4, & A 6.1

Residential and Commercial Pathway D2.1, D2.3, D3.1, & D 5.2

Materials

YouTube Video <https://www.youtube.com/watch?v=kFs-30mFU1A>

YouTube Video <https://www.youtube.com/watch?v=O7h6QRhbBRE>

Safety Questions

Lesson Sequence

Watch the *YouTube Video* <https://www.youtube.com/watch?v=kFs-30mFU1A> answer any questions students may have (12 minutes).

Watch *YouTube Video* <https://www.youtube.com/watch?v=O7h6QRhbBRE> answer any questions students may have (12 minutes).

Have students work together to practice the miter saw *Safety Questions* for safety test tomorrow.

Assessment

Check for understanding through questioning. Roam the room and answer any questions students may have while preparing for the safety test tomorrow.

Accommodations/Modifications

One on One Support
Check for Understanding
Partner Students Up

Lesson #3: Miter Saw Safety Test

Objectives

Students will be able to...

- Identify each of the major components of the Miter saw, and their purpose.
- Describe the uses of the Miter saw.
- Demonstrate the safe operation of the Miter saw.

Common Core Standards

RSIT 11-12.2

RLST 11-12.3

Demonstration and Application 11.1 & 11.2

Health and Safety 6.2 & 6.10

Responsibility and Flexibility 7.4

Cabinetmaking and Wood Products A 4.1, A4.3, A4.4, & A 6.1

Residential and Commercial Pathway D2.1, D2.3, D3.1, & D 5.2

Materials

Miter Saw Safety Test

Miter Saw

Lesson Sequence

- Have students grab some safety glasses and enter the shop for a safety and operations demonstration on the *Miter saw*.
- Return to classroom and hand out *Miter Saw Safety Exam*. No one starts a project until all the required safety tests are passed.
- Collect the tests when the students are done and re-distribute them to their classmates for grading. Have the students write "corrected by" and print their name somewhere on the front side of the test and circle it. Read and discuss each question with the correct answer. Take this opportunity to again reinforce/solidify operational safety in the student's minds. When finished, have the students write the number correct out of 15 on the front of the sheet and turn them in.

- Return tests that have any incorrect answers to their original owners. Have these students 'correct' each wrong answer by writing out the question (with the correct answer) on the back of the test 2 times. Students will retake the test tomorrow.

Assessment

Students must pass the miter saw safety test before being able to use a miter saw in the shop.

Accommodations/Modifications

One on One Support
Visuals
Check for Understanding
Test Read Aloud

Miter Saw Safety Test

Away	Motion	Down	Miter Scale	Fence
Clamp	Rapidly	Binding	Arms	Downward
Disconnected	Outward	Blade	Compound	Stroke
Miter Arm	Vertical	Lurching	Diameter	Upward
Side	Support	Crosscut		

1. Prior to changing the saw blade on the miter saw the power must be _____.
2. The best type of saw blade to use on the miter saw is known as the _____.
3. Before starting the miter saw, make sure the teeth on the saw blade are pointing_____.
4. The miter saw should be started resting in the upward position in order to avoid _____.
5. Common cuts such as at 90 and 45 degrees are easily found with notches located on the _____.
6. To achieve an angle such as 45 degrees you must unlock and rotate the_____.
7. Prior to making cuts with the miter saw place material firmly against the table and_____.
8. Keep your hands at least 4" away from the path created by the blade's _____.
9. When cutting small pieces of material you must secure it to the table of the saw using a_____.
10. A very dangerous situation occurs if the saw is lowered into the material_____.

11. The motor on the miter saw must reach full speed prior to cutting in order to avoid _____.
12. Never hold the material to be cut on the miter saw by crossing your _____.
13. Do not remove material until the blade has completely stopped in the _____ position.
14. Prior to making a cut using the slide feature of the miter saw, the handle must be pulled _____.
15. The direction of the saw stroke for the sliding miter saw in relationship to your body is _____.
16. Avoid cutting through knots and heavy pitch in order to keep the saw from _____.
17. When cutting long material such as 2x4 you must make sure that it is resting on a _____.
18. A miter saw that has the ability to make both a miter and bevel cut is known as a _____.
19. The maximum thickness of the material to be cut is determined by the blades _____.
20. Inaccurate cuts will occur when scraps or sawdust are trapped between the material and the _____.

Miter Saw Safety Test – Answer Key

1. Prior to changing the saw blade on the miter saw the power must be **disconnected**.
2. The best type of saw blade to use on the miter saw is known as the **crosscut**.
3. Before starting the miter saw, make sure the teeth on the saw blade are pointing **down**.
4. The miter saw should be started resting in the upward position in order to avoid **lurching**.
5. Common cuts such as at 90 and 45 degrees are easily found with notches located on the **miter scale**.
6. To achieve an angle such as 45 degrees you must unlock and rotate the **miter arm**.
7. Prior to making cuts with the miter saw place material firmly against the table and **fence**.
8. Keep your hands at least 4" away from the path created by the blade's **motion**.
9. When cutting small pieces of material, you must secure it to the table of the saw using a clamp.
10. A very dangerous situation occurs if the saw is lowered into the material **rapidly**.
11. The motor on the miter saw must reach full speed prior to cutting in order to avoid **binding**.
12. Never hold the material to be cut on the miter saw by crossing your **arms**.
13. Do not remove material until the blade has completely stopped in the **downward** position.
14. Prior to making a cut using the slide feature of the miter saw, the handle must be pulled **outward**.
15. The direction of the saw stroke for the sliding miter saw in relationship to your body is **away**.
16. Avoid cutting through knots and heavy pitch in order to keep the saw from.
17. When cutting long material such as 2x4 you must make sure that it is resting on a **support**.
18. A miter saw that has the ability to make both a miter and bevel cut is known as a **compound**.
19. The maximum thickness of the material to be cut is determined by the blades **diameter**.
20. Inaccurate cuts will occur when scraps or sawdust are trapped between the material and the **blade**