### JOINTER GUIDE

### Safety Rules

- 1. Wear proper personal protection equipment (safety glasses, hearing protection, respiratory protection)
- 2. Keep loose clothing, hair, and jewelry away from the machine
- 3. Do not bypass any safety devices
- 4. Keep hands clear of the feed area
- 5. Ensure the workpiece is appropriate material and size
- 6. Inspect workpiece thoroughly before using jointer
- 7. Plane/joint only one piece at a time
- 8. Let the jointer come up to speed before starting the cut
- 9. Let the jointer come to a complete stop before leaving the tool
- 10. If something is broken or breaks, notify one of the woodshop leads at (woodshop@sparkmakerspace.org).

## Jointer Summary

- 1. Tool Location in Shop
- 2. Parts of the jointer (refer to diagram)
- 3. Uses for Tool
- 4. Kickback Prevention
- 5. Before Use
  - a. Check workpiece for jointer suitability
    - i. Natural wood only
    - ii. Min thickness: 1/2"
    - iii. Min width: 1"
    - iv. Min length: 10"
    - v. Maximum width: 6"
  - b. Set start depth (<sup>1</sup>/<sub>8</sub>" max)
- 6. During Use
  - a. Start jointer with workpiece clear of cutting head
  - b. Keep hands clear cutting area
  - c. Use assistant or feed roller for large stock
  - d. Make repeated light cuts
- 7. Cleanup

### Machine Parts



- A) Outfeed table set at same high as cutter. Should not be adjusted without consulting with the Woodshop Leads.
- B) Infeed table starting position for workpiece. Can be adjusted in height to change depth of cut
- C) Cutter guard covers rotary knife cutters when no workpiece is being fed through the machine. Users should keep hands and fingers clear of this area.
- D) Fence guide for workpiece. Adjustable for width and angle
- E) Fence clamp level loosened to allow adjustment of the fence, and should be tightened before using the jointer.
- F) Infeed table adjustment handwheel used to adjust position of infeed table, and resulting depth of cut.
- G) Infeed table lock (not shown) threaded knob on back of jointer; used to prevent table from shifting during operation. This must be loosened before adjusting table height.
- H) Infeed table position indicator questionably accurate on the Spark jointer, this indicator shows intended depth of cut.
- I) Power controls used to turn jointer on or off
- J) Outfeed table adjustment handwheel allows adjustment of outfeed table during jointer calibration. DO NOT ALTER THE POSITION OF THIS HANDWHEEL WITHOUT A WOODSHOP LEAD BEING PRESENT.

## Instructions for Use

## Uses for Tool:

- 1. Good for:
  - a. Correcting cupping, warping, twisting, or bending in lumber
  - b. Squaring rough stock
  - c. Solid, natural wood
- 2. Bad for:
  - a. Engineered lumber (Plywood/laminates/particle board/MDF)
  - b. Wood with nails, staples, rocks, sand, etc. (NO PALLET LUMBER)
  - c. End grain
  - d. Significantly warped boards
  - e. Green (wet, undried) lumber
  - f. Small parts
  - g. Metals
  - h. Ceramics/Glass/Tiles
  - i. Composites (fiberglass or carbon fiber)

## **Kickback Prevention**

- "Kickback" occurs during the operation when the workpiece is ejected from the machine at a high rate of speed. Kickback is commonly caused by poor workpiece selection, unsafe feeding techniques, or improper machine setup/maintenance. Kickback injuries typically occur as follows:
  - a. Operator/bystanders are struck by the workpiece, resulting in impact injuries (i.e., blindness, broken bones, bruises, death)
  - b. Operator's hands are pulled into the blade, resulting in amputation or severe lacerations.
- 2. To prevent kickback:
  - a. Ensure the workpiece is appropriate before using in jointer
  - b. Feed gently but firmly; do not force the tool
  - c. Do not attempt to take a deep cut; several shallower passes are preferred
  - d. Plane parallel to the grain (or slightly offset) only
  - e. Support long workpieces into and out of the jointer
- 3. Standing offset to the machine will reduce the chances of injury should kickback occur

## Before Use

- 1. Wear personal protective equipment.
  - a. Safety glasses
    - i. Face shields may be worn for greater comfort, but safety glasses must be worn underneath
    - ii. Do not attempt to view inside the jointer during operation, even with safety glasses
  - b. Dust masks or respirators are strongly encouraged
  - c. Gloves shall not be worn while operating the jointer
  - d. Hearing protection is recommended
  - e. Tie long hair back
  - f. Roll loose sleeves above the elbow
  - g. Remove all jewelry
- 2. Inspect the workpiece for suitability
  - a. Workpiece should be greater than 1/2" thick, wider than 1", and at least 10" long
  - b. Materials should be limited to natural wood
    - i. No laminates, plywood, MDF, particle board, OSB, etc.
  - c. Workpiece should be clear of foreign objects such as nails, screws, fasteners, dirt, rocks, sand, debris, or any other non-wood material.
    - i. If planing a glued assembly, scrape all surface glue off the workpiece before feeding to reduce wear on jointer knives/cutters
    - ii. Loose knots should be removed before being fed through the jointer. If loose knots can not be removed, an alternate cut method should be found.
  - d. Green, pressure treated, or any other "wet" workpiece should be avoided.
  - e. Care should be taken with cut orientation and feeding. Cut must be made in the most stable orientation (concave side down).

## At the Jointer

- 1. Material Handling
  - a. Joint only one piece at a time. Do not attempt to run multiple workpieces through the jointer simultaneously.
  - b. Support long workpieces on both infeed and outfeed sides, either by hand or with roller stands.
    - i. Uneven loading will result in uneven cutting and increased wear on the machine
- 2. The maximum material removal on a single pass is approximately 1/8"
  - a. Wide materials will require a reduced cutting depth
  - b. Hard woods will require a reduced cutting depth
  - c. Depth can be adjusted by:
    - i. Loosening the infeed table lock
    - ii. Turning the infeed table adjustment handwheel until the indicator shows the correct depth of cut
    - iii. Gently tightening the infeed table lock
- 3. The fence angle can be set between 45 and 135 degrees.
  - a. Most jointing operations will have the fence set to 90 degrees.
  - b. Fence angle can be adjusted by:
    - i. loosening the fence lock handle,
    - ii. rolling the fence into location,
    - iii. and tightening the fence lock handle again.
- For best surface finish, joint with the grain direction of the wood. The diagram to the right has been taken from the Grizzly Model 725 Manual, and demonstrates the correct grain orientation.
  - a. Do not joint cross- or end-grain; the workpiece can be destroyed and cause injury to the user.



## **General Operation**

- 1. Ensure workpiece is acceptable for planing
- 2. Adjust the depth of cut, up to 1/8", as required to clean the chosen edge
  - a. Harder woods will require a reduced depth of cut.
  - b. It is often preferable to make several light passes instead of fewer heavy passes.
- 3. Set the fence at the angle required.
  - a. Most operations will use a 90 deg fence position.
- 4. Allow the jointer to reach full operating speed before feeding the workpiece into the cutting area.
- 5. If a piece is bent or cupped, cuts should be made to the concave face.

- a. Attempts to cut the convex face will result in uneven cuts as the workpiece will shift during cutting operations.
- 6. Feed the workpiece into the cutting area, holding it firmly against the fence and maintaining control of the workpiece to prevent kickback.
  - a. Excess speed will overwork the jointer motor. If the motor pitch changes significantly while feeding, reduce feed rate
  - b. Excess feed rate may result in a rippled surface on the workpiece
- 7. As the front of the workpiece passes out of the cutting zone, maintain pressure to hold it against the fence and the outfeed table.
  - a. Small or thin pieces will require the use of push blocks.
- Feed the workpiece completely; do not move a workpiece backwards while cutting.
- 9. Shut down the jointer when done

## Specific Jointer Operations

- 1. The jointer is usually used for the following three operations:
  - a. Surface planing
  - b. Edge jointing
  - c. Bevel cutting
- To square stock (starting from rough, cupped, bent, or warped stock), four steps are usually required. The illustrations are taken from the Grizzly G0725 Jointer manual.
  - a. First, one face is planed on the jointer until flat(concave face down)
  - b. The opposing face is now planed with a surface planer, with the previously cleaned face against the work table.
  - c. The concave edge of the workpiece is then edge jointed.
  - d. The final edge is cut on the table saw, using the previously finished edge against the fence.



- e. Use of the planer and table saw is required to ensure that all faces are parallel.
- 3. Surface Planing:
  - a. Inspect stock for suitability
  - b. Set infeed table height for correct depth of cut
    - i. For surface planning, shallow passes are required.

- ii. Passes less than 1/16" will minimize chances of kickback
- c. Set fence to 90 degrees
- d. Start jointer
- e. Place workpiece firmly against the fence and infeed table, concave side down
- f. Feed workpiece across the cutting head, keeping it firmly against the fence and tables
  - i. Feed workpiece to completion
  - ii. Use pushblocks to keep hands free of cutting area
- g. Repeat passes until face is flat
- 4. Edge Jointing
  - a. Inspect stock for suitability
  - b. Set infeed table height for correct depth of cut
    - i. For surface planning, shallow passes are required.
    - ii. Passes less than 1/8" will minimize chances of kickback
  - c. Set fence to 90 degrees
  - d. Start jointer
  - e. Place workpiece firmly against the fence and infeed table, concave side down
  - f. Feed workpiece across the cutting head, keeping it firmly against the fence and tables
    - i. Feed workpiece to completion
    - ii. Use pushblocks to keep hands free of cutting area
  - g. Repeat passes until edge is flat
- 5. Bevel Cutting
  - a. Inspect stock for suitability
  - b. Set infeed table height for correct depth of cut
    - i. For surface planning, shallow passes are required.
    - ii. Passes should be between 1/16" and 1/8", depending on the hardness of the lumber
  - c. Set fence to desired bevel angle
  - d. Start jointer
  - e. Place workpiece firmly against the fence and infeed table, concave side down
  - f. Feed the workpiece across the cutting head, using the leading hand to press the workpiece against the table and fence. Feed the workpiece with the trailing hand.
    - i. Push blocks may be required for one or both hands
    - ii. Feed workpiece to completion
  - g. Repeat passes until edge is flat



After Use

- 1. Return the jointer to baseline configuration.
- 2. Clean up shavings and sawdust from around the tool.

#### **Baseline Configuration Identification**

- 1. Depth set to zero
- 2. Fence set to 90 degrees
- 3. Area cleaned

# Jointer Competencies

## **Trained User Competencies**

Setup

- Set fence angle
- Set fence position
- Set cut depth

Operation

- Material feed
- Depth adjustment

Changes and Adjustments

• None

Maintenance and Care

• Cleanup of jointer and surrounding space

## **Advanced User Competencies**

Setup

• None

Operation

• None

Changes and Adjustments

• None

Maintenance and Care

• Table clean and wax