
Overview:

Jointers (photo 1), beaders, slickers, rakers (photo 2), and plaster tools (such as ornamental leaf and square tools – photo 3) are different tools and used for different purposes, but there are common features that influence the way they are held.

These tools tend to have narrow flat or rounded metal handle areas or handles that require a precision or “pinch grip” using the thumb and finger tips, or a modified power grip with some pinching. Using a pinch grip requires much more force and is more tiring than using a power grip. In addition, the handles or handle areas tend to be short, which can put pressure on the palm of the hand and/or add pressure to the joints of the fingers. When used in a modified power grip, the handles tend to be too small for most hands. Narrow or sharp edges and seams can lead to cuts and skin irritation. These tools are also typically made completely out of metal, which conducts cold and contributes to a worker’s discomfort when using the tools.



Photo 1 - Jointers



Photo 2 - Skate Wheel Raker



Photo 3 - Ornamental Leaf & Square

Tips for what to look for:

⇒ **Grip & palm size.** The grip size (the area you will be holding) should be between 1 and 2 inches around (a diameter of 0.3 inches to 0.6 inches) when using a pinch grip. If possible, the tool should extend beyond the size of your palm. Tools with a cushioned, non-slip handle or grip area may help by reducing the pressure on the joints of your fingers, the grip strength needed (in other words keep your grip light) and, as a result, fatigue and risk of injury.

⇒ **Alternatives.** Different tools or versions of these tools can reduce the amount of stress on your hand and wrist, such as jointers with distinct handles or using a sled runner instead of a jointer. If you opt for an alternative design or tool, it is important to consider the following:

- ◇ The handle should match or closely match your hand grip size and be longer than your palm size.
- ◇ The handle should extend far enough past your palm so that it does not dig into your hand, allows you to work without scraping your knuckles, and does not interfere with your work.
- ◇ Cushioned non-slip handles may decrease the amount of grip strength required.

Applying the tips:

Opting for an alternative design or tool, using a tool that comes with a cushioned grip, or modifying the tool are options for reducing the force needed and the risk for injury.

⇒ You may be able to **modify your tool's grip area** to reduce the risk for injury:

- ◇ **Depending on how you hold the tool**, adding padding to the handle or grip area may be an option to increase the size of the grip. Wearing gloves may also help create a cushion and increase the size of the handle or handle area. Depending on the materials and products you are working with a specific type of glove may be recommended or required to avoid skin disorders, such as burns and dermatitis. *Note: some workers have reported a reduced sense of touch and needing a stronger grip to hold on to tools when wearing gloves. Using a hand tool with a non-slip grip area or adding an anti-slip material may help.*

Some of these tools come equipped with padded handles or handle areas, which reduce the grip strength needed and risk for fatigue and injury.

⇒ **Alternatives**, for example, jointers **designed** with distinct handles, allow you to use the tool with a modified power grip, which is much less tiring.

In some instances a sled runner (photo 4) may be an **alternative** to using a jointer to finish mortar joints. Use of a sled runner will allow you to use a power grip, which can reduce discomfort, fatigue, and risk of the hand or wrist injuries associated with using a precision grip. The downside is that sled runners are heavier, bulkier to carry and, unlike two-ended jointers, cannot be used to cut off excess mortar and the blade is all one size.



Photo 4 - Sled Runners

⇒ If you use a different tool, such as a sled runner, it is important to consider the following:

- ◇ The grip should match or be close to your grip size.
- ◇ Since the handle is positioned over the blade, you also need to make sure that the grip size leaves enough clearance between the handle and the blade for your knuckles, while still having a comfortable grip. Handles that are curved or slightly tapered under the middle of the handle may help.
- ◇ A cushioned handle may reduce pressure on your palm.
- ◇ If the tool's handle or grip area is too large and made out of wood, you might be able to sand it down to a smaller grip size. But be careful, sanding too much off could affect the strength of the handle and increase the chance of it breaking.

⇒ **If you already have a hand/arm injury or condition such as tendonitis, arthritis, or carpal tunnel**

syndrome, it is particularly important to try to reduce the grip force as much as possible. Cushioned non-slip handles or handle areas, and/or use of alternative tools or ones with distinct handles can reduce the grip force needed. Selecting a tool that keeps your wrist as straight as possible is also important.

Example:

Worker Hand Measurements = hand size (length) of about 7-1/2" (or 7.5"), with a grip diameter of about 1-1/2" (or 1.5"), and a grip size of about 4-7/10" (or 4.7") inches, and a palm size of 3".

Choices:

1/2" & 5/8" convex jointer; flat grip area – 3/4" width on each side, all metal, grip area length 2", total tool length 11", and weight 5.2 oz.

OR

1/2 " & 5/8" convex jointer that is split into two tools with distinct handles, grip at widest point 3-7/8", a 4-1/2" handle length, total tool length 9-1/4", and weight 4.3 oz.

What the worker in this example should consider:

- ⇒ The plus side of using a jointer with a distinct handle is that it allows the user to use a power grip, which can reduce discomfort, fatigue, and risk of hand or wrist injury associated with using a precision grip.
- ⇒ While the handle's grip is smaller than the worker's grip size in this example, it could be modified by adding a cushion (with a tool padding kit), which would also help reduce the amount of strength needed, fatigue and risk for injury. The downside is that the worker will now have to switch tools and their tool bag will be slightly heavier due to the added weight of the handles.

To learn more, visit www.choosehandsafety.org for information on how to determine your hand-size, use this information when selecting tools, examples of hand tools., and other ways to protect your hands.

Photos: Tools supplied for photos courtesy of the Masonry r2p Partnership (BAC, ICE and IMI).

Research for this Fact Sheet was funded by CPWR – The Center for Construction Research and Training, using grant U60 OH009762 from the National Institute of Occupational Safety and Health (NIOSH). The contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH.

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