

Overview:

Tile nippers (photo 1) and other “2-handled” tools (such as pliers, scissors, and caulking guns), are typically held in an open ‘C’ grip, then closed and re-opened. These types of hand tools usually involve closing and opening the handles many times, which can cause the hand to tire easily, particularly if the tool is not the right size for your hand, has a dull cutting edge, and/or is being used to cut a very hard material.



Photo 1 – Tile Nipper

(often about halfway between the open and closed positions) should be the point where your hand produces the most force. This appears to range from about 1.8” to 2” for smaller hands to 2.4” for larger hands. To calculate your strongest grip span, measure your hand while spread wide open from the tip of your thumb to the tip of your little finger in centimeters (cm) (photo 3), divide that number by 5, and add 1.5 cm



Photo 3 – Measure Strongest grip strength

Tips for what to look for:

⇒ **Grip span.** Your grip span is the distance between the thumb and fingers when the tool jaws are open or closed.



Photo 2 – Grip span

For “power tasks,” such as the grip you would need for tile nippers, NIOSH recommends an open grip span of no more than 3-1/2” (3.5”) and a closed span of at least 2” for “average” hands. For a precision task, NIOSH recommends the grip span be no more than 3” open and not less than 1” closed. *

For example, if your open hand size from the tip of the little finger to the tip of the thumb is 18 cm, then your strongest grip would be about 5.1 cm or 2” (Calculation: 18 cm divided by 5 = or 3.6 cm; 3.6 cm + 1.5cm = 5.1cm, which is about 2 inches.

Applying the tips:

When selecting these types of “2-handled” tools, select ones that:

- ⇒ Are closest in size to your grip span.
- ⇒ Have handles that extend past your palm so that the end of the handle does not dig into your hand.
- ⇒ Have cushioned handles to allow a looser grip, insulate from the cold, and distribute force over a larger part of the hand.

The part of the cutting that requires the most force

- ⇒ Have a spring return so you do not have to return the handles to the starting position with your hands; but make sure the spring is not too tight or it will add to the force needed to squeeze the handles together.
- ⇒ Have a locking position if continuous force is required when you use the tool. This will reduce the amount of force you need to apply.
- ⇒ Allow you to minimize the amount of time your wrist is bent when using the tool – an angled handle may help.
- ⇒ Can be used by either hand, so you can switch hands when one hand tires.
- ⇒ Do not have sharp handle edges or finger grooves. *(Unless your fingers align with the grooves, you will end up putting excess pressure on your hand that could cause discomfort and increase the risk for injury.)*
- ⇒ Have sharp cutting edges or tips (if applicable) so that less force is needed to perform a task.

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)
**(Source: NIOSH - Easy Ergonomics: A Guide to Selecting Non-powered Hand Tools)*

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