TOOL SELECTION GUIDE

SPEND LESS

BEND MORE

WILA

THE PRESS BRAKE PRODUCTIVITY PEOPLE
STOP PAYING FOR TOOLS YOU DON’T NEED. At WILA, we pride ourselves on offering our customers world class applications support. Our knowledgeable sales staff will work with you to develop a custom tool package, so you can bend everything you need to and avoid paying for tools you don’t need. Learn how to apply our “spend less, bend more” strategy for any tool selection at the link provided above. **GROW YOUR BUSINESS WITH WILA.**

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**CUSTOMIZED TOOL SELECTION FOR VERSATILITY**

**Mike Hancock** | **Mike’s Metal Works, Owner**

“When I started designing this aluminum product, I really didn’t know too much about sheet metal. And that’s where Dave Bishop from WILA helped us so much. That guy is so smart at his job and so easy to talk to, and he walked us through what we needed. He’s the reason why we chose WILA over all the others for tooling”

**LEARN MORE**

wilausa.com/bend-more
“Spend Less, Bend More” is a tool selection strategy used by WILA engineers and salespeople. The concept is simple: select the fewest tools necessary of the highest quality and versatility available to get the job done. Limiting the tooling selection to only what’s necessary and investing in quality ensures the lowest cost of ownership and maximum productivity for any press brake operation.

Stop paying for tools you don’t need

Whether due to lack of technical knowledge, limited time and resources, or simply the desire to turn the most profit on a sale, it’s an all-too-common practice for tool suppliers to quote customers for tools they simply do not need. This is often seen in the form of tool suppliers quoting new customers for generic tool packages (often referred to as starter packages) with little to no understanding of the customer’s bending operations. But we believe tool selection shouldn’t be a one-size-fits-all approach.

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Tooling up for success

Being the only piece of equipment that actually touches the workpiece during the bending process, press brake tooling is an integral component of any successful bending operation. The wrong tooling can eat up profits with long set up times, scrapped parts, and premature wear.

A versatile, precision tool package can not only save money on the initial tool investment, but it can also lead to exponential savings on the production line. By learning how to bend the same parts with fewer tools, operators can reduce their number of setups per day. Fewer tool changeovers mean more green light time and greater profitability. In this guide, we have outlined the steps you should take when making tool selections based on the “spend less, bend more” strategy.
**Use acute angle punches whenever possible**

For air bending applications, use acute angle punches whenever possible for bending materials of .120” (3.0mm) in thickness and less. They are fairly strong, have more than adequate compensation for springback with virtually all material types, and can bend almost any angle you’ll ever need to produce on a press brake. Some can even be used in hemming applications. They are also lower in cost than gooseneck punches, making them less expensive to replace when damaged.

**Use gooseneck punches for return bends and complicated bend sequences**

Use gooseneck punches for bending parts that have return bends and complicated bend sequences. Their large relief areas make them extremely versatile and helps to reduce the need to make punch changes when going from one part to another.

**Vertically loading tools is faster, easier, and less costly**

When the weight allows, all punches should be able to be loaded and unloaded vertically. Sliding punches and dies in and out the end of the machine is costly and time consuming.

PLEASE NOTE: It is not necessary to have a hydraulic clamping system installed on your press brake to utilize punches with Safety-Clicks for vertical loading and unloading.
Tall punches provide versatility
When the machine’s open height allows, always select tall punches (6”/152.4mm and taller) when tooling up a new press brake, as they are always more versatile than short punches. As a general rule, we recommend that you leave approximately 4” (100mm) of space between the punch and die after the clamping system, punch, die, and crowning system, filler block, or die holder (whichever applies) have been installed for part handling.

Hardened tools last longer, improve accuracy
Make sure all punches are hardened on the working surfaces. The deeper the hardened zone the better, as using fewer punches is going to put more wear on the punches that you have. Hardened work surfaces not only extend punch life, they also extend the amount of time in which a punch will remain accurate.

Use an adequate punch tip radius
For maximum tool life, the material thickness should never exceed three times the punch tip radius when bending 11 ga. (.120”/3.0mm) thick material and thinner. When bending 10 ga. (.135”/3.5mm) and thicker, the material thickness should never exceed two times the punch tip radius.

When bending soft aluminiums such as a 5052-H32, the punch tip radius should always be equal to the desired inside bend radius. When bending 12 ga. mild steel or thinner, the inside bend radius must be equal to or greater than the thickness of the material. When bending hardened aluminiums such as 6061-T6, the inside bend radius should be equal to three times the material thickness to avoid cracking.
Acute angle dies provide more versatility without sacrificing accuracy

When possible, use acute angle dies to air bend everything. Today’s advanced CNC controls accurately determine the proper amount of die penetration that is required to bend practically any material to any angle. It is no longer necessary to purchase dies that match the included angles of all your punches. This will eliminate the unnecessary duplication of die openings, reduce the number of die changes that you will have to make, and save you a lot of money.

Hardened dies last longer, improve accuracy

Make sure all dies are hardened on the working surfaces. The deeper the hardened zone the better, as using fewer dies is going to put more wear on the dies that you have. Hardened work surfaces not only extend die life, they also extend the amount of time in which a die will remain accurate.
Choose the right die height for your needs

Most parts can be bent with standard dies that are 2.165” (55mm) tall. Parts that have long down flanges will require taller dies. Dies that are 3.937” (100mm) tall should be selected for these applications and when the press brake has a large amount of open height.

Less dies, more material thickness ranges

Try and use one die for each two to three material thicknesses that you plan to bend. The following table provides some general recommendations for the selection of a versatile range of dies to bend mild steel in the thickness range of 22 ga. to .250”.

<table>
<thead>
<tr>
<th>Material Thickness</th>
<th>“V” Width</th>
<th>Angle</th>
<th>Tons/Ft. Req.</th>
<th>Inside Radius</th>
<th>Min. Flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 - 20 ga.</td>
<td>.236” (6mm)</td>
<td>30°</td>
<td>3.6</td>
<td>.039” (1.0mm)</td>
<td>.165” (4.2mm)</td>
</tr>
<tr>
<td>18 - 16 ga.</td>
<td>.394” (10mm)</td>
<td>30°</td>
<td>6.0</td>
<td>.066” (1.7mm)</td>
<td>.276” (7.0mm)</td>
</tr>
<tr>
<td>14 ga.</td>
<td>.630” (16mm)</td>
<td>30°</td>
<td>5.6</td>
<td>.105 (2.7mm)</td>
<td>.454” (11.5mm)</td>
</tr>
<tr>
<td>12 - 10 ga.</td>
<td>.945” (24mm)</td>
<td>30°</td>
<td>9.5</td>
<td>.157” (4.0mm)</td>
<td>.680” (17.3mm)</td>
</tr>
<tr>
<td>.188” and .250”</td>
<td>1.969” (50mm)</td>
<td>80°</td>
<td>15</td>
<td>.238 (8.3mm)</td>
<td>1.477” (37.5mm)</td>
</tr>
</tbody>
</table>

*Actual results for tonnage required, inside radii, and minimum flange lengths are approximations. Determining actual results may require test bending material used for production at the press brake.
PRESS BRAKE PRODUCTIVITY CATALOG

To view all available WILA products, please reference the Press Brake Productivity Catalog. The Press Brake Productivity Catalog offers a complete listing of all WILA products, including New Standard Premium, New Standard Pro, American Style, and American Style Vintage tooling, clamping, crowning, and bottom tool holders, as well as specialty tooling and accessory products.

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