



Potters are in top form!

The bending of metal is a process whereby a force is applied to sheet metal which causes it to bend at an angle and form the desired shape. Sounds simple enough and in principle it is. However, with new designs come new challenges. Bending is carried out using a press brake machine that can either be automatically or manually loaded with programs and tooling to create the desired bend required.

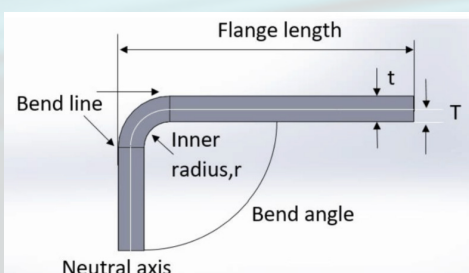
Press brakes are available in a variety of different sizes and lengths depending on the process you require. The press brake contains an upper tool called the punch and lower tool called the die. The sheet is placed between the two and held in place by the backstop. The bend angle is determined by the depth that the punch forces the sheet into the die. This depth is precisely controlled so you can achieve the desired bend. A wide range of tooling is held at Potters to perform a variety of forming requirements.

Some of the following terms are used in sheet metal when bending. Designers need to understand the machine's limits when designing new parts that require metal bending.

The main points to remember are:

- Critical dimensions that need to be considered, these may relate to the matching parts the component will ultimately be fitted to or with.
- The sheet metal thickness is critical when organising what tooling to use, along with the correct bend allowance / K-factor.
- Holes and design features that are too close to the bend line.
- Tool limitations to create the desired radius.

All these points need to be checked against what tooling is available, the machine's mechanical capacity and limitations, in order to establish the tooling that will be used in manufacturing. If you have any queries on your designs please feel free to get in touch for technical advice.



A few helpful hints to consider when designing new sheet metal parts:

- Always try to keep the bend radius consistent, this will reduce tool changes and keep the parts more cost effective.
- A +/- 1 degree tolerance on all bend angles is generally acceptable in the industry.
- Try to make the flange length at least 4 times the material thickness.
- Following on from the point above, the distance from the outside edge of the material to the start of a hole or cutout should be equal to the minimum flange length.
- It is recommended that the minimum inner bend radius should be at least 1 times material thickness. This radius will vary depending on applications and material. When the radius is less than recommended, it can cause problems in some soft material and fracturing in hard material.
- Bend relief should be thought about and included in blank design, when a bend is required close to an edge the material may tear unless bend relief is applied. the depth of the relief should be greater than the radius of the bend. The width of the relief should be the material thickness or greater - This relief detail is often modified at the programming stage at Potters to achieve best results on behalf of our customers.
- Sheet metal parts with holes and apertures etc are fine, countersinks and tapping are all achievable in the blank stage and can then be bent using a normal process. Counterbores and other machined features normally require an additional post process and incur additional expense.

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Pedal to the metal!

The Covid pandemic over the last two years has caused supply chain challenges for all industries. As world trade has started coming back to life through 2021, new unforeseen challenges are constantly arising. The increase in demand has been easily oustripping supply which is resulting in shortages, which in turn is affecting costs and lead times. Some costs that were once historically steady we are now seeing rising, sometimes on a weekly and even daily basis.

Bottlenecks around global production, supply chains, and more recently logistics have caused shortages of raw materials in nearly all industries. Here at Potters this ranges from the obvious purchases we make of metals such as aluminium, steel, zintec and stainless steel, through to all other items from welding consumables, powder, paint, nuts, bolts, threaded inserts and packaging. No area in the Potters supply chain has been unaffected by supply issues and cost increases.

It has always been regular practice at Potters to analyse our costs and place orders to gain the best advantage of market prices so we can stay competitive in the market place. Often holding several months stock in order to hold prices for our customers' benefit. However the last eighteen months particularly, have proved challenging on all fronts with on going price increases from our suppliers, in many cases to levels never seen before. Some raw material costs are now over 200% higher than they were only one year ago.

At Potters we have doubled our efforts on



our own supply chain through constant discussions with our vendors, forward thinking and planning with our customers and to be fair a little concentrated guesswork. We have been able to regularly secure approximately 3~4 months worth of stock on a rolling basis keeping many of the prices we can offer fixed for much longer periods. Providing what stability we can to our customers as a result.

The challenges we are facing now in our supply chain present a constant struggle to manage for our commercial and purchasing teams, as I am sure they do for you too. It is more important than ever that we take the utmost care when discussing and processing any new orders to establish the best method of manufacture and any potential saving we

can offer to our customers. This may involve changes in material thickness, or offering different grades in aluminium or stainless sheet, reducing welding, masking time or moving to less costly plating and finishing processes.

Ultimately, reviewing the various stages of manufacturing with our customers to still provide the quality of product they require but reducing the time and labour that is needed to manufacture their products. This is all part of the service we can provide to help Potters customers stay competitive and flexible in their own market places. Please feel free to get in touch with our commercial team to discuss how we can help you.

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After the Covid outbreak closed down the show in 2021, we will be back at the Southern Manufacturing Show in 2022 and can't wait to see you there!

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- Show review
- Go with the flow
- New talent show

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