



**"AMERICAN MADE
ENGLISH WHEEL"**

WHEELING MACHINES

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METALSHAPING

101



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Metal SHAPING is making compound curves out of flat metal.

- Three dimensions X, Y, Z
- Bowls
- Nose and rear of GMC are compound curves



Metal FORMING is bending or folding flat metal

- Two dimensions X & Y
- Simple Rolls
- Sides and roof of GMCs are simple rolls



There are three basic shapes in the entire universe:

- Compound curves
- Simple rolls
- Flat

EVERYTHING is made up of these shapes and ANYTHING can be made from combining individual shapes into a more complex surface by welding, riveting, gluing, whatever.

Flat is easy...just cut it off the sheet

Simple rolls are easy to, bend them over a pipe, around a column, or use a slip roll.

Compound curves lie at the intersection of skill and art. Making compound curves is what makes shaping metal a challenge and separates the men from the boys.

There are three things you can do to shape metal.

1. You can stretch it
2. You can shrink it.
3. You can smooth it

You can also cut and weld it but that is fabrication not shaping. Welding is a required skill for a shaper and there is nothing wrong with fabrication...it's just a different thing.

SOME KEY FACTS!

- 1- Metal FLOWS under pressure. And it FLOWS in the path of least resistance.
- 2- It doesn't matter how you do it...metal only sees PSI at the contact patch and flows accordingly.
- 3- How you apply that PSI is the skill in getting the flat metal to become the shape you want.
- 4- Shape vs arrangement
 - Shape is the surface area of the panel
 - Arrangement is how that surface area is presented

Compound curves can be made three ways:

1. All Shrink
2. All Stretch
3. Some Shrink and some Stretch

Which approach you take is driven by where you want the metal to end up. You start with some number of CUBIC inches and an XY surface area. You end up with the same amount of cubic inches and a different surface area.

Stretching is easy.....

Shrinking is hard

- Machines
- Hand tools
- Hammer forms