# Wall Thickness On A Drawn Sensor Housing Is Not One Number

On a drawn part the wall is a gradient, not a constant. How to specify and inspect wall thickness so a single figure cannot pass at mid-height and fail 5 mm above the base.



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Most of the sensor housing drawings we receive carry a note like "wall 1.0 mm". That note cannot be inspected, because on a drawn part the wall is a gradient, not a constant.

## WHERE THE THICKNESS GOES

A housing starts as a flat blank and is pulled over a punch. The flange shrinks, so the material that was in it ends up in the wall - which is why the open rim thickens. The material stretched over the punch nose thins. The straight wall in between usually sits close to the blank thickness.

That is the whole reason a single figure fails: the part can pass a measurement taken at mid-height and fail one taken 5 mm above the bottom face, against the same drawing.

## WHAT IS ACHIEVABLE

For the materials we run most, drawn walls sit between roughly 0.8 mm and 3.0 mm - copper, brass and pure iron at the lower end, carbon steel and stainless from about 1.0 mm. Walls can be taken thinner by ironing, which reduces thickness deliberately between punch and die, typically by 10 to 30 percent per pass depending on the material.

Three things decide whether the wall you need is reachable: the draw ratio, the material's work-hardening behaviour, and the corner radius.

## HOW TO SPECIFY IT

Give the wall as a nominal with a tolerance, and state the measuring position - distance above the bottom face, for example. Say whether the figure applies before or after plating. Where the bottom radius thins, give a separate minimum. And if you are ironing, remember that ironing sets wall and surface finish in the same operation, so both belong on the drawing together.

None of this is exotic. It is just the part of the drawing that decides whether the tool runs cleanly or fights you for the life of the programme.

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