

Roll Tapping

Hints and tips

Roll forming threads (both internal and external) is a long established method especially in the fastener industry, but curiously under used in general engineering products.

There are many advantages to rolling internal threads and perhaps no disadvantages, so long as the following information is understood:

- 1** The material to be rolled must be ductile, with an elongation factor of 8% or more to allow for the 'cold forming' of the material to the profile required. Contrary to popular belief nearly all 'exotic' and difficult materials can be formed very well indeed, eliminating breakage, chipping and low tool life. We have successfully formed threads in materials as diverse as Tool Steels (even up to hardness HRC50), Stainless, Inco alloys and all the exotic aero and oil industry materials.
- 2** The core size prior to rolling is larger than for cut threads, this is because the extrusion process forms the material both up and down, and the core size returns to an acceptable level. The effective diameter will be identical to a cut thread. However the percentage of thread depth will normally be lower (typically 60% to 70%) than cut threads, which makes the 'go' gauge feel a little slack to those not used to this method. Also, because it is practically impossible to get oversize threads using this method, the taps are made to 'top tolerance', which allows much longer tool life.
- 3** The threads produced by rolling are stronger, as the material is cold-formed improving grain structure and surface hardness, surface finish on the flanks is also improved. There will be a characteristic 'm' shape on the crest of the threads as the material rises up under forming. The tools fail eventually due to friction wear, not chipping, so good lubrication is the key to long tap life; we recommend using neat cutting oil but where this is not possible then increasing the strength of the soluble oil to 10% or more and adding extreme pressure additives often suffices. Tool life can often be many times longer than cut thread taps.
- 4** No swarf is produced, so the depth of thread is not a problem, tapping 3 or more times diameter is perfectly feasible, where breakage would be commonplace using cut thread taps. This process is much more secure than cutting the threads, where trapped swarf on reversal is often an intermittent and random problem.
- 5** Please feel free to discuss this method with us in detail, we are very experienced in roll thread production and will almost certainly be able to help.