

HOME

MADE PRE

When you are setting-up work or marking out, do you sometimes sigh "oh for a pair of eyes"? In this ingenious feature 'Bluey' comes to the rescue with an easily made pair of aids for your workshop. You'll find this optical centre-punch and centre-finder indispensable and they'll cost a fraction of what you'd pay for commercial items.



shown as an included angle of sixty degrees, which is the angle I prefer. Technically speaking, the angle should really be ninety degrees to sit better in the punch marks. Ninety degrees being normally used for initial marking out and the mark then opened out with a punch at ninety degrees. However, all this is a matter for the individual.

The support body

The support body was machined from a piece of 1in diameter aluminium but could just as easily be mild steel or brass if these are more convenient. The central hole should be bored or reamed to a good fit as there must be no slop on the punch when it is inserted. A groove is machined in the end and this accepts an O-ring which stands just proud of the actual body and so prevents the thing from sliding around whilst being lined up.

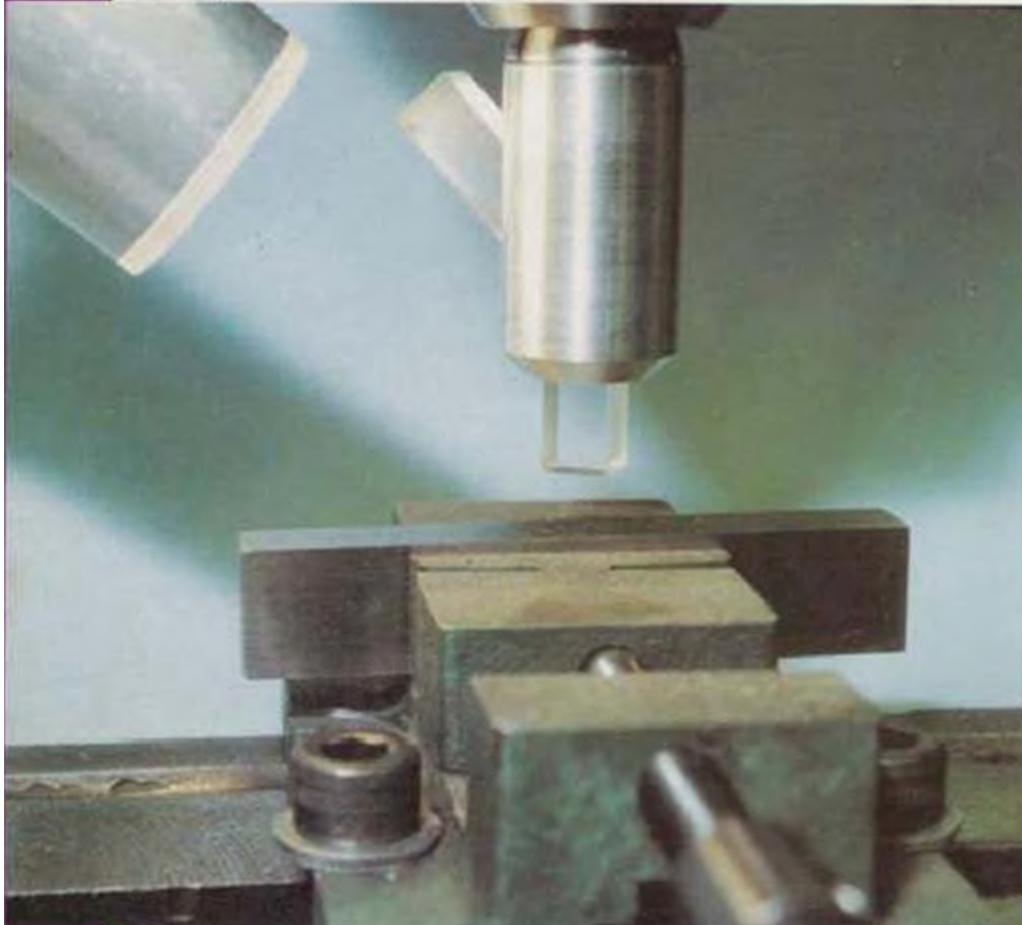
The insert

The original optical insert was made from perspex and actually machined from a piece of sheet material, no other being available. Also, originally it was parallel: there was no magnification and not as much illumination as one might have wished for. So, whilst visiting the 1990 Model Engineer Exhibition, I purchased a piece of 20mm diameter acrylic rod from College Engineering Supplies, I then made a new insert with a domed top which gave more light at the base and also provided a degree of magnification. Acrylic is not quite so easy to machine as perspex as there is a tendency for it to string. However, both are quite reasonable to work with.

Polishing

The insert must be highly polished and this was done with Solvel Autosol which can be obtained from most car accessory shops. It is rubbed on with a cotton cloth and then buffed hard to give a good finish. I should point out that it is essential that the original machining must also be to a fine finish to prevent excessive polishing being required. I also polished the support body by the same method.

Very fine marks (cross hairs) must be made across the bottom of the insert and these line up at the place where the centre punch mark is to be made. These can be done in the lathe using a sharp pointed tool which is drawn across the face, the lathe then rotated through ninety degrees and the operation repeated.



The completed optical centre-finder in the milling machine, in actual use it would be brought closer to the work than shown in order to line it up accurately.

Centre punching is a tricky business although in theory there is nothing to it. What should happen is that the centre punch should be used at the junction of two scribed lines and should be drawn along one until the intersection is felt and then at that point, tapped with a hammer. I am sure most of us follow this excellent advice only to find that the punch has slipped out of position before being hit and we then have to start laying it at an angle and trying to retrieve the position. (It is rather like sawing the legs of a chair to make it shorter - we keep going a bit more and a bit more until the whole thing becomes quite a mess.) The result is often an elongated punch mark more or less on the spot required but because of its shape, a drill, and particularly a small diameter one, is likely to wander some way from where we really want it to be.

The optical centre punch

I had seen advertised an optical centre punch and at an exhibition actually saw one. I must say that I was quite impressed.

However, buying things that can be made is not my way and so next day I was into the workshop and a start was made on scheming out an optical punch for myself. Although made from odds and ends which happened to be around my own workshop there is nothing required that is not very easily obtainable.

The actual punch is 3/8ths in diameter and, whilst my own was already around in the workshop and was pressed into use, there is nothing difficult about making one from silver steel, hardening and tempering it to a straw colour. The actual sizes shown suited me, but there is no need to comply with them if convenient materials are to hand. The point on the centre punch is