Machine-DRO readout kit for Myford 7- series lathes

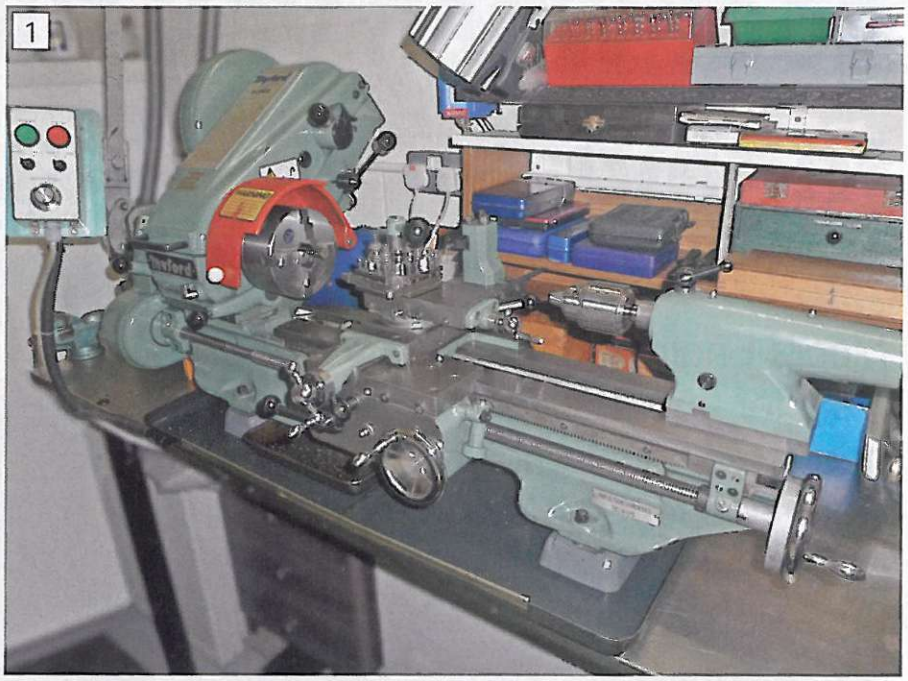
Crankpin reviews this recently released kit, in this first part he looks at fitting the kit.

Allendale (**machine-dro.co.uk**) advertise this kit as a 'bolt on' accessory for Myford 7 and Super 7 lathes, requiring no permanent modifications to the lathe. The comprehensive kit includes all the components necessary to provide 2-axis digital read out on a large display console which provides a range of options from mm/inch, radius or diameter display, tool offsets, taper measure and 200 SDM zero memory.

The prospect of a DRO on the S7 was attractive, since having previously installed a cheap 3-axis system on my mill, the benefits were evident even if its performance problematic. The price of the M-DRO kit was not inconsiderable so in the cramped confines of my workshop, **photo 1**, it would be important to assess both its quality and ease of installation.

The contents of the large container were very well packed and isolated in protected compartments. First task was lay out the numerous bags & boxes as in **photo 2**.

Next, consume coffee whilst reading through the 5 booklets! Anticipating the sort of assembly instructions one gets with flat-packs, it was gratifying to find an A4 booklet with clear colour illustrations and straightforward guidance for installation on a Myford, example as **photo 3**. The other (A5) booklets covered the functions of the "MDC700" display unit.



Initial arrangement of the Myford and other clutter.

Contents of the package.

Somewhat surprisingly, I was expected to drill out a couple of M4 threaded holes and re-thread them M5 in the supplied bracket, in addition to enlarging a few other holes for clearance. Doing so later only took a few minutes but any purchaser will need a set of metric drills, metric hex keys as well as a M5 tap suitable for soft aluminium. (I've since been informed M-DRO will now do this drilling and tapping before dispatch).

After acquiring my new S7 twenty years ago, improving the saddle locking mechanism was the first priority. It was now apparent from the illustrations that the modification would no longer fit beneath the new cross slide magnetic strip holder. A return to the original hexagon bolt

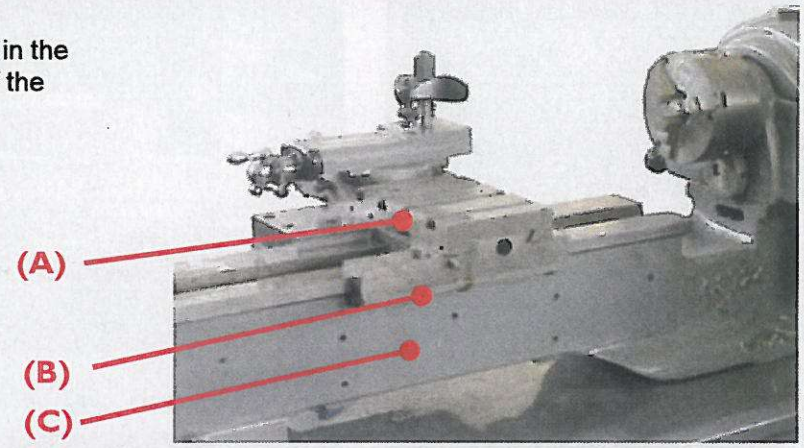
3 tep 1:

Please ensure the machine is cleaned down in the following areas prior to starting installation of the DRO kit:

The tail-stock side of the cross slide (A);

The saddle/rear saddle strip (B);

The taper turning area (C)



Example of a guidance note.

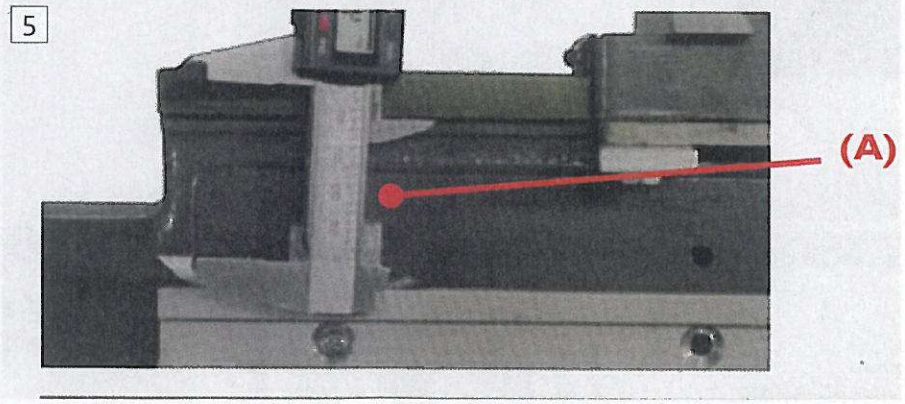
would be required! The new cross slide encoder requires 75mm extra clearance beyond the cross slide when fully wound in. Checking for this and the modified but now redundant saddle clamp can be seen in **photo 4**.

Like most model engineers with limited workshop space, my lathe and its bench are against a wall and accessing the back of the lathe entails reaching over. Therefore a few minutes spent removing the tailstock, chuck and top slide proved worthwhile for an ageing back. Following the advice to ensure key areas of the Myford were cleaned and degreased, I began with white spirits followed by a proprietary aqueous degreaser. After that a start was made on assembling the many parts which had to be mounted on existing holes at the back of the Myford. The numbered sequence of instructions referred me to the content of the requisite labelled plastic bag and progress was fast. Fitting the components to the rear of the Myford was the first step in assembly. One procedure to cause some delay was the need to ensure the long magnetic strip holder was mounted accurately below the bottom of the bed shear. The relevant picture showed this being achieved with a digital vernier in **photo 5** but it took quite a while to do in practice and three hands would have been advantageous! With hindsight, it would be time well spent to first make two identical pieces of say ½"D x 1⅞" long, steel rod to be balanced on each end of the bar. Then by simply pulling up and holding the bar tight against the bottom of the shear with one hand, the other hand could tighten the cap head screws.

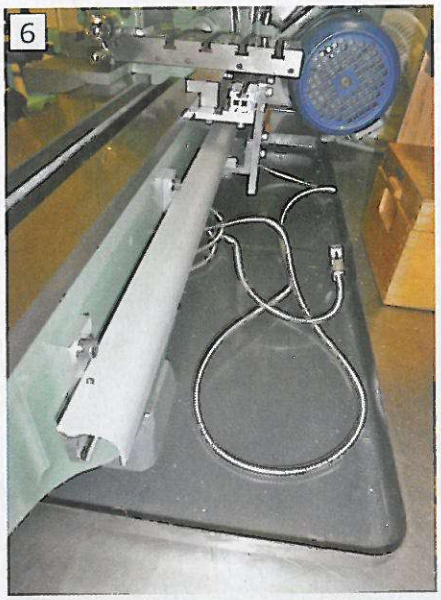
The remaining items such as the bracket which required drilling out to 4.2mm and threading M5 were fitted to the rear of the lathe quickly and without any problems thanks to the unambiguous printed guidance, **photo 6**.

At this stage, about 2 hours into the job, it was clear that M-DRO had devoted effort into ensuring the kit had been well tested for fit on a Myford lathe and the components were of high quality. Other than the issue with ensuring the long encoder strip was parallel, the only other uncertainty had been the recommendation to use "several sheets of paper or card measuring a thickness of 0.25–0.5mm". This is to ensure the gap between the reading head face and magnetic tape was constant along the length; paper or card being non-abrasive against the stainless steel protective cover, **photo 7**. Folded paper seemed an imprecise feeler gauge and finding a piece of clean card of suitable thickness took a time. Keep that piece of card somewhere safe though because it will be needed again for the cross-slide encoder strip.

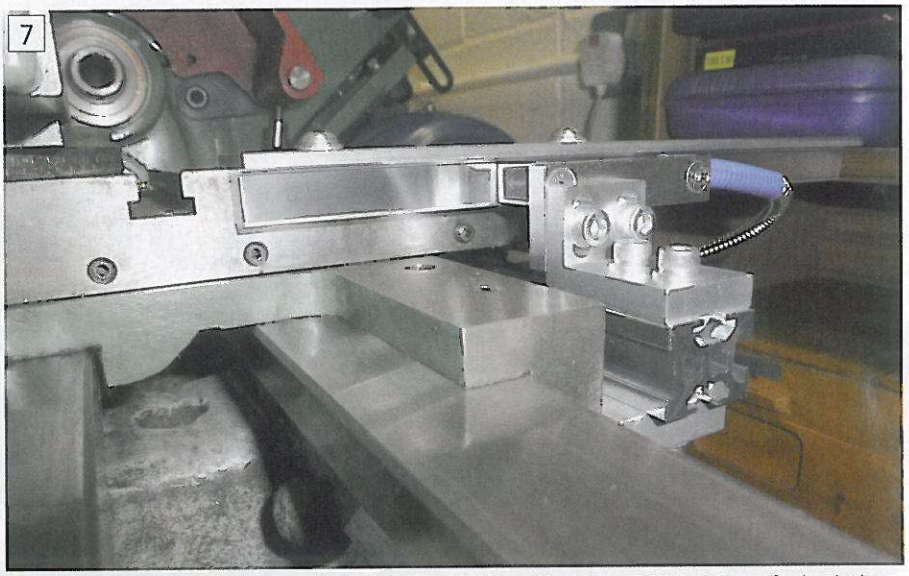
Checking for clearance beyond cross slide.



Suggested method for ensuring guide is parallel to bed.



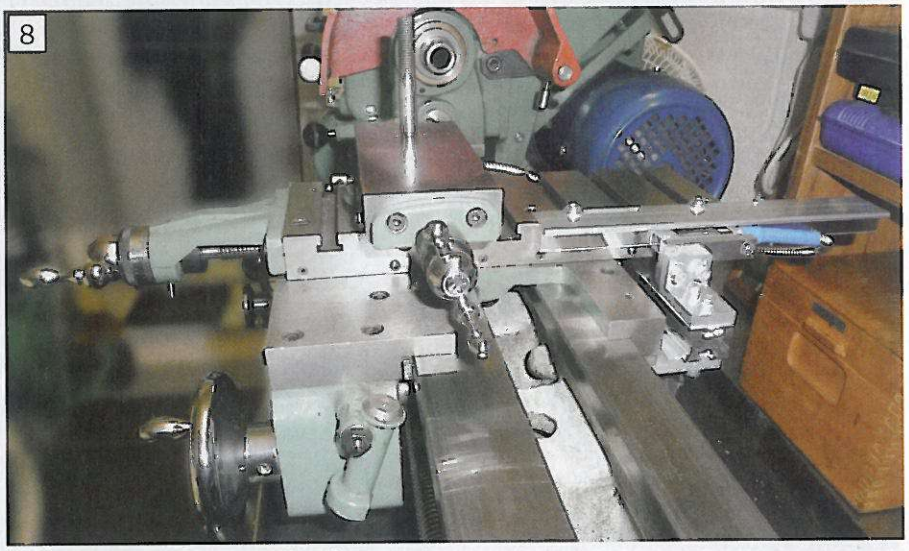
Carriage encoder, strip and cover fitted.



Shows the gap which has to gauged with a piece of card between 0.25 & 0.5mm for both the carriage and cross slide.

Fitting components to the cross slide

M-DRO's introduction to this section states:- "The cross slide magnetic tape carrier simply locates against the cross slide and can easily be removed. The profile will overhang the rear on the cross slide. The Super 7 overhang is approximately 75mm, the standard ML7 has a shorter cross slide and the overhang is approximately 68mm to cover full range of travel. If the overhang is not convenient then it can be reduced by cutting the length of the support profile and magnetic tape. A loss of reading may occur when travelling the cross slide to it furthest outward position." As before, I had checked that there was sufficient clearance for a 75mm overhang (just!) and although it was not envisaged that any working with the cross slide wound fully in would be done, it was decided to use the supplied carrier 'as is'. Assembly was straightforward and accomplished without incident, taking less than an hour, **photo 8**. No cover plate was supplied and exposure of the encoder head to swarf, cast iron dust etc suggests that one will have to be made, a simple enough job.



Cross slide encoder and strip fitted.

The completed cross slide is shown in **photo 9**.

Now was the time for a long-anticipated switch-on. The display unit was connected up to the 2 encoder cables and the 240v supply cable, **photo 10**.

Traversing the carriage and turning the cross slide feed screw produced welcomed readings of X and Y axis movement.

Forgot to reinstall the original Myford saddle clamp before fitting the encoder unit, fortunately there was just sufficient room!

First switch on.

Rear of MDC700 display unit.

MDC700 unit mounted.

Cabling covered and fitting completed.

Mounting the display unit

A substantial mounting bracket and fitments are included with the kit and obviously its positioning will be governed by personal preferences and constraints. The rear of the unit, with leads is shown in **photo 11**.

The booklet MDC700 SET UP states that an earth connection should be made from the unit to the machine. This is not supplied. I ran an insulated copper wire down to the lathe motor fan shield. There was no evidence of any problems with electrical interference. My S7 has a 3ph motor and VFD powered from the same 2-gang 240v socket as the display. Static readings on the display were unaffected by any motor control changes such as "jog".

Photograph 12 shows the display unit on its bracket bolted to a wood platform affixed to the wall. The protective covering is still in place on the LED screen.

In the interests of both safety and appearance, the cables were encased in a length of that corrugated, longitudinally-split, plastic tubing and fastened back to the wall with a pipe clip. The final appearance is shown in **photo 13**.

One question arose – would the new cross slide bracket prevent use of a Myford Vertical (swivelling) Slide? In fact there is just sufficient room and the bracket could anyway be cut away slightly without loss of strength to permit the Vertical Slide to be clamped in the centre of the cross slide.

In conclusion, any initial scepticism about the cost of the M-DRO kit was dispelled on remembering the words "Quality is remembered long after the price is forgotten". The quality of both materials used and information provided show care has gone into design and execution of the M-DRO Myford kit.

The assembly and installation of the kit was a satisfying process and devoid of the expected frustrations which often accompany fitting non-original extras to a machine tool.

I did though soon realise that my own neglect of maintaining the cross slide meant that a quick comparison of the S7's micrometer dial and M-DRO output was not possible. The cross slide movement was just too stiff and jerky despite advice to keep the movement tight. Chastened to dismantle the cross slide and readjust with very obvious improvement, I was then informed that M-DRO had developed a new, optional modification. This places the magnetic strip underneath the cross slide but does require machining a shallow slot for it. The result is a clear cross slide surface and much neater arrangement, **photo 14**. This installation, together with a report of the DRO performance on the lathe is to follow in Part 2. ■

The new cross slide modification.