

Bygrave Slide Rule – Manual dexterity aspects. Bill Ritchie’s observations on using a real Bygrave.

Whilst there is much past documentation on NavList and elsewhere on Bygrave Slide Rule history, methods, scales, users, etc., I am unaware of any reference to the manual dexterity aspects of using the instrument. Accordingly, I submit the following record of my conclusions on the best ways I have found to handle the specific Bygrave Mark IIA that I purchased in Autumn 2022 from long-standing NavList contributor Francis Upchurch. Other instruments may have different characteristics. I am right-handed – lefties should reverse sense accordingly. I held the instrument horizontally, or nearly so, except where stated.

STEP 1A. Setting 0 on the lower scale was easy as a metal stop on the lower hand grip butts against a bevelled metal base to the body. (Such bevel also keeps the pointer exactly on the scale line for the first 360° of clockwise rotation.)

STEP 1B. Setting other initial lower scale values against the ‘S’ pointer was best achieved by holding only the body with the left hand and moving the lower scale with the right hand on the lower hand grip. The upper scale moves accordingly, but this is of no consequence *at this stage*.

STEP 2. Setting an upper scale value against the “L” pointer, *without changing the lower scale value*, was best achieved by holding the lower grip (hence the lower scale) still using the ‘palm’¹ of the right hand against slight pressure from the ring and little fingers and, simultaneously, holding the body still with the index and middle fingers. Then the upper scale was rotated/raised using the upper hand grip with the left hand. (This is easier to achieve than to describe). However, if the set lower scale value is greater than, say 80°, the distance is too great and the right hand must grip the middle tube itself, albeit over the legend area below the lower scale². I presume that the extended depth of the lower grip was provided to allow better grip with the ‘palm’.

STEP 3. Setting a new lower scale value against the “S” pointer, *without changing the set ratio between lower and upper scales*, was best achieved by holding only the body with the left hand and moving the lower scale using the lower hand grip. My instrument showed no tendency whatsoever for the ratio of the scales to be disturbed using this method, though such tendency has been mentioned by others³.

STEP 4. The calculation result was then read against the upper scale pointer. However, my example showed a tendency for the body to move (hence changing the values against both pointers) if the instrument was held near vertically or knocked. I developed the habit of always rechecking the lower pointer value after having read the upper pointer value.

SETTING/READING SCALES.

My elderly eyesight limits my discrimination to about 0.5mm at 300mm. When I wanted to make small horizontal scale adjustments, the friction between the tubes caused movement in jerks of 1mm or more. I developed the method of moving beyond and then back, sometimes more than once, until the desired setting (within my discrimination) was achieved.

1. Not the central palm, but the fleshy raised part at the base of the thumb (Thenar eminence).

2. Whilst I cannot find the text at present, I recall reading that Sir Francis Chichester had to hold the instrument vertically in his Gipsy Moth on occasions when the extended length exceeded the limited space available.

3. <https://www.rechenschieber.org/PositionLineSlideRules.pdf> Page 9.