

Magnetic Scale User Manual



HOW TO MOUNT DM-A /S MAGNETIC SCALE

TECHNICAL SPECIFICATIONS

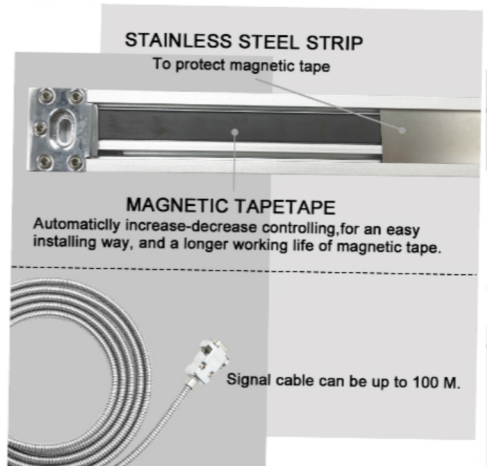
Resolution	0.025mm,0.01mm,5um,0.5um
Output	TTL/RS422
Waterproof and seal rating	IP67
Accuracy	±10um,15um,30,um
Length of the magnetic scale	Maximum 32 Meters
Magnetic gap	1+1mm,2+2mm,5+5mm
Working temperature	-10to 80°C

INSTALLATION CONDITIONS

- The place where the scale is to be installed should be thoroughly cleaned from oil, dust, coolant, and burrs etc.
- Appropriate reader head mounting brackets will need to be designed to fix the reader head making sure that the reader head can freely move along the magnetic scale.
- Mount the scale so that the magnetic strip on the extrusion will be to the top side of the extrusion

INSTALLATION

The magnetic scale (open extrusion) measures the movement precisely and accurately. To ensure the specified accuracy, installation of the magnetic scale (open extrusion) must be done correctly as described in this manual. Please read this manual carefully before use of the products.



Magnetic scale installation:

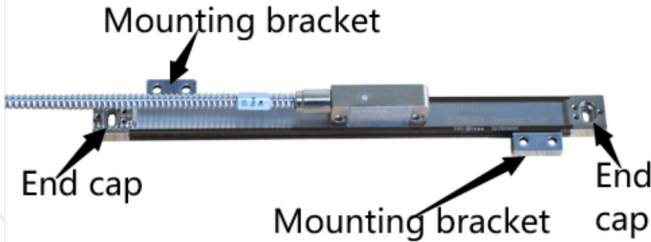
- Select the mounting surface for the scale on the machine insuring that the reader head also can be mounted in such a way to be able to travel along the length of the scale. The surface should be as flat as possible and run parallel with the axis. Whilst there is adjustment on the brackets this is limited and still may require packing.

2. Drill and Tap Holes:

- a. Select the mounting brackets required and confirm the location of threaded holes needed to hold the brackets to the machine. The brackets should be attached so that the scale is supported every 800mm. Insure that the connecting brackets are also mounted so that they are in a position to connect the extruded lengths.
- b. Drill and tap M5 threaded holes on the machine surface to suit each of the brackets.

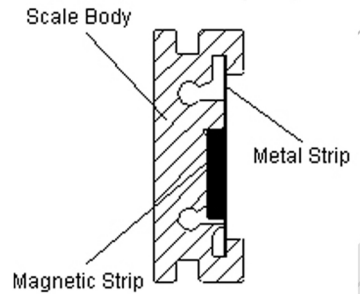
3. Mount the Scale:

- a. Install the scale in the mounting brackets on the machine surface.
- b. Once the scale is installed in the mounting plates on the machine surface, using a dial indicator adjust the scale so that it sits in the correct location, square and inline with the axis. Adjustment screws are mounted in each of the brackets.



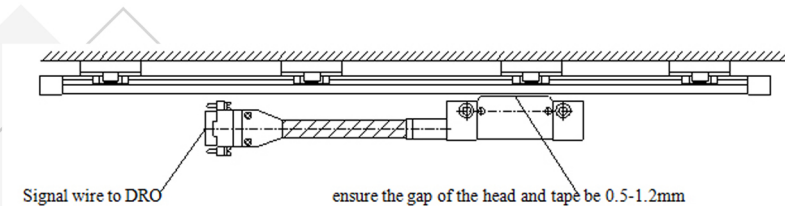
c. Once the aluminium extrusion has been secured to the mounting blocks, and is aligned, clean the aluminium so that it is dry and free from dirt and oils. Lay the magnetic tape (sticky face down) in the groove in the extrusion, carefully removing the backing paper as magnetic strip is attached to the extrusion. The strip must sit evenly in the groove provided.

d. Once the magnetic strip is in place, slide the metal protective strip into the grooves provided so that it covers the magnetic strip.
(e) Attach the end caps to the two ends of the scale so that the metal cover strip is secured..



The Reader Head Installation

1. Select the appropriate reader head mounting surface. Mount the reader head securely on a suitable mounting surface that will hold the reader head rigid and secure, parallel with the magnetic strip
- b. Insure that the gap between the reader head and the tape is between 0.5~1.2mm for the full length of the scale
- c. Connect the signal line of the reader head to the corresponding location on the DRO making sure that the cable is clear of any moving parts

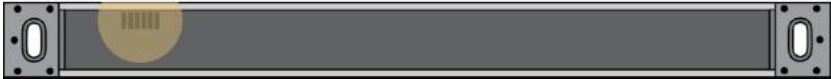


How to Cut Magnetic Scales

One of the major advantages of magnetic scales is the ability to cut them to exactly the length you need.

This document explains in detail how to shorten magnetic scales. One thing to note, however: If the scale lengths in your kit will work well “as is” then there is no reason to cut them, scales don’t “need” to be cut.

The first step in shortening scales is to prep the scale. Locate the “hash marks” on the stainless steel scale insert:



Using a permanent marker, transcribe these hash marks to the “shoulder” on the same side of the scale. Accuracy is not important, all we’re doing is marking the scale to aid in later scale re-assembly.



The second step in cutting scales is to determine at what point we’re going to make our cut. There are two measurements you need to be concerned with - Machine Travel and Max Length.

Machine Travel

This is the maximum travel of your machine, to which we always need to add another 4 inches. This value is the *minimum* or *shortest point* at which you can cut your scale.

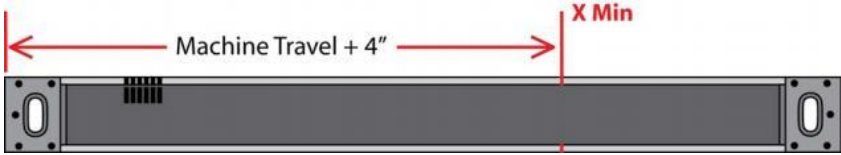
WARNING: Cutting your scale to “Machine Travel + 4 inches” results in the shortest length scale possible. Some situations legitimately require obtaining the shortest length scale possible, but most do not. Be careful to not cut your scale too short!

Max Length

Cutting a scale using the “Max Length” value results in the longest possible length scale that will still fit on your machine. Most likely, this length would be your longest mounting surface, or the longest length that would conveniently fit within an allotted space. For example, on the cross slide of a lathe, the distance would be the ‘width’ of the cross slide mounting surface. For a lathes’ carriage, it would be the longest scale that would conveniently fit on the back side of the bed, without interfering with the splash guard and/or motor housing. For a milling machine, the length of the table would typically dictate max length.

Marking “ Machine Travel”

Remember, this value is the *shortest length* at which you can cut your scale. Mark this point starting from the *hash end* of the scale. Don’t bother marking the stainless steel strip as it will soon be removed. Instead, mark the shoulders of the scale as shown below:



Marking “ Max Length”

Mark the “Max Length” value starting from the *hash end* of the scale. As before, don’t bother marking the stainless steel strip as it will soon be removed. Mark the shoulders of the scale as shown below in green:



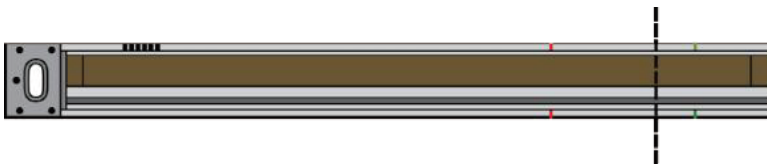
Next, we need to prep the scale. Remove the two 2.5mm cap screws holding the end cap *opposite* from the hash end of the scale:



Slide the stainless steel protective strip out, and this is what remains:



So where do you actually make your cut? Anywhere between the two sets of marks, but we recommend erring towards the green or “Max Length” marks, as a longer scale makes mounting the readhead easier:



The scale after the cut:



Next, slide the stainless steel strip into the scale while aligning the “hash marks” made earlier. Mark the strip where it needs to be cut:



Slide it out, trim it, and slide it back in:

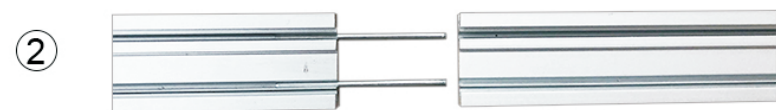
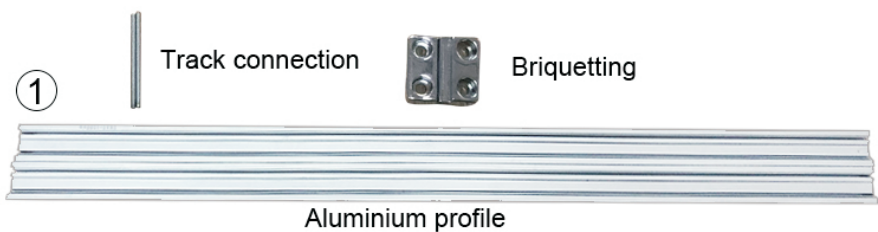


Next, fasten the end cap back to the end of the scale. Note the end cap cap screw hole is a groove that runs the entire length of the scale. In other words, you don't have to drill a hole for the cap screws (It's already there):



And congratulations – you've now created a custom length magnetic scale!





Convenient adhesive installation.

