

# Micro-Mark®

340 Snyder Avenue, Berkeley Heights, NJ 07922 • Tech Support: 908-464-1094  
www.micromark.com MMTechService@micromark.com

## OPERATING INSTRUCTIONS FOR #14129 PROPORTIONAL DIVIDER

By setting the dividers at the ratio between the two scales you are using (one scale for the plan, another for the model), you can convert measurements quickly without calculating.

### Quick Instructions:

To set the dividers, you must first determine the ratio of the two scales involved. For example, if your plans are to a scale of 1/96 and your model is to a scale of 1/48, then the ratio is 96 to 48, or 2 to 1. With the dividers closed, loosen the thumb screw and move the pivot until the scribed line on the silvery tab below the black clamp aligns with the "2" on the **Lines** scale. Spread the short legs to the dimension on the smaller scale; the long legs will automatically be set to the proper dimension for the larger scale (or vice-versa). It's that simple.

### A Discussion about Scale:

Scale is the ratio between model size and full size. It can be expressed in many ways...example: by a ratio (1:48), by a fraction (1/48), by a letter (O scale) or by dimensions (1/4"=1'). All these examples are for the same scale.

The various model fraternities express scale in different ways. Miniaturists generally use 1" scale, which means 1" on the model represents 1 foot (12") on the real thing (usually called the prototype). Ships are usually built to a ratio scale, such as 1:65, where .185" on the model would represent 1 foot on the prototype. Model railroads are usually built to a letter scale, such as HO, where 3.5mm on the model represents 1 foot on the prototype.

If the scale of the plan is different than the scale of the model, one must determine the ratio between the two. Obviously, a plan drawn to 1/4"=1' is twice as large as a model built to 1/8"=1'; the ratio between the scales is 2 to 1 and the dividers would be set to "2" on the **Lines** scale.

If the scale designations are mixed, that is, the plan is drawn to a letter scale and the model will be built to a fractional scale, some simple, preliminary calculations will have to be completed in order to set the dividers to the proper ratio.

As an example, a plan drawn to 1" scale will be built as an HO model. 1" scale is 1/12 scale (12" divided by 1" equals 12). HO is 1/87 scale (12" divided by .138"(3.5mm) equals 87). The dividers should be set to 87 divided by 12, or 7.25. Approximate the setting on the **Lines** scale of the dividers; check with a 10-foot dimension with each scale.

### Scale Tables:

For your convenience, we have performed some calculations for you. The table below lists some of the more common scales for your reference.

Letter or Name	Inches per Foot	Millimeters per Foot	Ratio	Fraction
Inch and a Half	1-1/2	38.10	1:8	1/8
One Inch	1	25.40	1:12	1/12
Three Quarter Inch	3/4	19.05	1:16	1/16
F Scale	.591	15.01	1:20.3	1/20.3
G Scale	.533	13.55	1:22.5	1/22.5
Half Inch	1/2	12.70	1:24	1/24
No. 1	3/8	9.53	1:32	1/32
O Scale	1/4	6.35	1:48	1/48
S Scale	3/16	4.76	1:64	1/64
HO Scale	.138	3.50	1:87	1/87
TT Scale	.100	2.54	1:120	1/120
N Scale	.075	1.91	1:160	1/160
Z Scale	.055	1.39	1:220	1/220

### The Circle Scale:

An additional scale on the proportional dividers makes it easy to divide the circumference of a circle into even segments. First, with the dividers closed, loosen the thumb screw and move the pivot until the scribed line aligns with the number on the **Circle** scale which corresponds to the number of segments. Next, set the long legs to the diameter of the circle. The distance between the short legs transferred to the circumference divides the circle into the required number of segments.

### Maintenance:

If carefully handled and used, your dividers need no attention. If you accidentally drop the instrument or otherwise deform the tips, carefully adjust the bottom tips to stick out exactly .630" (16mm) from the body of the instrument, then adjust the short tips so that the overall length from tip to tip is exactly 7.244" (184mm).