



## Inch vs. Metric Calibrations on Sherline Tools

### Choosing a System of Measurement

All Sherline tools are available calibrated in either inch or metric divisions. The system you choose to work in will most likely be determined by your cultural background, training, or requirements of the work you do. The system we were raised with usually remains the most comfortable, but there are also some other considerations when choosing a system that you may not have considered.

While we offer both inch and metric machines, there is an advantage to working with the inch system. Here's why. When working in metal, .001" (one thousandth of an inch) is a tolerance that can be achieved with cutting tools, and .0001" (one ten thousandth of an inch) is a tolerance that can be achieved by grinding. The numbers don't come out quite so neatly in the metric system. 1mm equals .03937", .1mm equals .0039" and .01mm equals .0004". The tolerance of  $\pm .1\text{mm}$  (.004") is too coarse for most work, and  $\pm .01\text{mm}$  (.0004") is too fine. Therefore, you end up with tolerances too tight or too loose because the draftsman often calls out a tolerance of  $\pm .1\text{mm}$  when it should be  $\pm .25\text{mm}$ .

The inch system was developed by craftsmen who took into consideration the materials they were working with as they developed their system. Did you ever watch a seamstress measure cloth from her nose to her fingertips? That human dimension is normally about 36" or a "yard of cloth." It would take a basketball player with arms over 3" longer to measure meters that way. If you have been using the inch system all your life, we wouldn't consider buying a metric machine unless the requirements of your work force you to do so. You will have enough new terms to learn without having to learn a new measuring system at the same time.

### Differences between Inch and Metric Sherline Tools

The difference between inch and metric models of the lathe and mill are not just the handwheel markings, but include the leadscrews, nuts, inserts, handwheels, and tailstock spindle. (It is important to remember that a "nut" can be a complicated machined part, not just a simple hex nut. The tailstock spindle is an example of this.)

The handwheel on the inch models moves the slide .050" per revolution and has 50 graduations of .001". The metric model moves the slide 1mm (.03937") per revolution and the handwheel is graduated into 100 divisions. Even though the metric handwheels have finer graduations, this doesn't necessarily make them more accurately, as you don't have to stop exactly on an engraved line. You can interpolate between lines.

### Coordinate Your Equipment with Your Measuring Tools

We recommend using the system you are most familiar with and for which you have the measuring tools. Don't buy a metric tool and plan to use an inch micrometer with it. Converting dimensions is a constant headache and a source of errors.

If most of the drawings you will be working with are dimensioned in metric measurements, it might be wise to buy a metric tool, even if you have to buy all new measuring tools to use with it.

### Converting a Sherline Machine from One System to the Other

Parts are available to change any Sherline tool from inch to metric or vice versa. On the reverse of this page is a list of the parts you will need to make a conversion. On the lathe, each tailstock spindle has been ground to fit its extruded body, and their diameters will vary. Also, the newer style tailstock with the brass gib is superior in accuracy to the older style split tailstock. Therefore, we no longer offer just the tailstock spindle, as it would require custom grinding to fit it to your particular tailstock extrusion. A new complete tailstock should be purchased.

As you can see from the parts list on the next page, quite a few parts need to be changed to make a conversion. The time spent deciding which system to use before purchasing a machine is "time well spent" if it eliminates making a change later on.

Thank you,  
Sherline Products

## Sherline Parts Conversion List

### Lathes—Individual Components

Manual		CNC		DESCRIPTION
Inch P/N	Metric P/N	Inch P/N	Metric P/N	
40200	41200	67054	67025	Leadscrew (Model 4000/4100 and 4500/4530)
44200	44230	67026	67027	24" Leadscrew (Model 4400/4410)
40170	41170			Saddle Nut
44210	44220			Slide Screw
40890	41890			Slide Screw Insert
40220	41220			Feed Screw
4111A	4111M			Complete brass gib style tailstock (with handwheel)
40050	41050			1-5/8" plain Crossslide Handwheel (1 req.) (4000/4100 lathe)
40080	41040			1-5/8" plain Leadscrew and Spindle feed Screw Handwheels (2 req., 4000/4100)
3428	3429			2" Adjustable Zero Handwheel, complete (Crossslide, 4400/4410 and 4500/453)
3455	3459			2.5" Adjustable Zero Handwheel, complete (Long leadscrew Axis, 4400/4410 and 4500/4530)

### Vertical Milling Machines—Individual Components

Manual		CNC		DESCRIPTION
Inch P/N	Metric P/N	Inch P/N	Inch P/N	
50170	51170	50171	51171	Leadscrew, X-Axis (Model 5000, 5400, and 2000)
50160	51160	50161	51161	Leadscrew, Y-Axis (Model 5000)
54160	54170	54161	54171	Leadscrew, Y-Axis (Model 5400)
56160	56150	56161	56171	Leadscrew, Y-Axis (Model 2000)
45010	45160	67028	67029	Leadscrew, Z-Axis (Model 5000 and 5400)
45011	45161	67030	67031	Leadscrew, Z-Axis (Model 2000)
56190	56191	56192	56193	Leadscrew, Z-Axis (Model 5800)
40080	41040			1-5/8" plain Handwheel, X-Axis (Model 5000)
40050	41050			1-5/8" plain Handwheel, Y-Axis (Model 5000)
3400	3410			2.5" Oversize Plain Handwheel, Z-Axis (Model 5000)
50130	51130			Backlash Nut, X-Axis
40890	41890			Nut, X-Axis
50140	51140			Backlash Nut, Y-Axis
50200	51200			Nut, Y-Axis
40170	41170			Saddle Nut, Z-Axis
3420	3430			2" Adjustable Zero Handwheel, complete (Y-Axis)
3428	3429			2" Adjustable Zero Handwheel, complete (X-Axis)
3455	3459			2.5" Adjustable Zero Handwheel, complete (Z-Axis)

## Complete Conversion Kits

### Lathes—Conversion Kits

Manual		CNC		DESCRIPTION
P/N	P/N	P/N	P/N	
33100	33101	4100	4100	4100 Lathe (M) to 4000 (I) Conversion
33200	33201	4000	4100	4000 Lathe (I) to 4100 (M) Conversion
33150	33151	4410	4400	4410 Lathe (M) to 4400 (I) Conversion
33250	33251	4400	4410	4400 Lathe (I) to 4410 (M) Conversion
33120	n/a	4530	4400	4530 Lathe (M) to 4400 (I) Conversion
33210	n/a	4500	4400	4500 Lathe (M) to 4400 (I) Conversion

### Vertical Milling Machines—Conversion Kits

Manual		CNC		DESCRIPTION
P/N	P/N	P/N	P/N	
33300	33301	5100	5000	5100 Mill (M) to 5000 (I) Conversion
33400	33401	5000	5100	5000 Mill (I) to 5100 (M) Conversion
33350	33351	5410	5400	5410 Mill (M) to 5400 (I) Conversion
33450	33451	5400	5410	5400 Mill (I) to 5410 (M) Conversion*
33550	33551	2010	2000	2010 Mill (M) to 2000 (I) Conversion*
33500	33501	2000	2010	2000 Mill (I) to 2010 (M) Conversion*
		33581	33589	5810 Mill (M) to 5800 (I) Conversion*
		33580	33588	5800 Mill (I) to 5810 (M) Conversion*

\* Does not include engraved base or table.