



Small Machine Tools and Modeling Applications

By Mark Schutzer

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April 2013

Copies of this presentation can be found at

<http://www.markschutzer.com>

Clinic Overview



Small Machine Tools

- Why this Clinic?
- Introduction to Small Machine tools and Tabletop Machining
- Applications in the Hobby
- Equipment – Lathe and accessories
- Equipment – Mill and accessories

Small Machine Tools



Why this Clinic?

I debated for years before buying my small machine tools because I wondered if I would ever use them enough to justify having them.

What I found is that these tools have far more hobby applications that I ever envisioned, and now that I have the tools I can't imagine doing without them.

In this clinic I will talk about these hobby applications and discuss the tools and all their accessories.

Small Machine Tools



What are they?

- Small Machine tools are lathes and mills that have been scaled down to tabletop dimensions.
- Tools are portable and small enough for the hobby bench.
- Have the features and versatility of that you find in full size machines.
- Affordable to the serious hobbyist.

Tabletop Lathe



Sherline 3.5" Lathe with 24" bed



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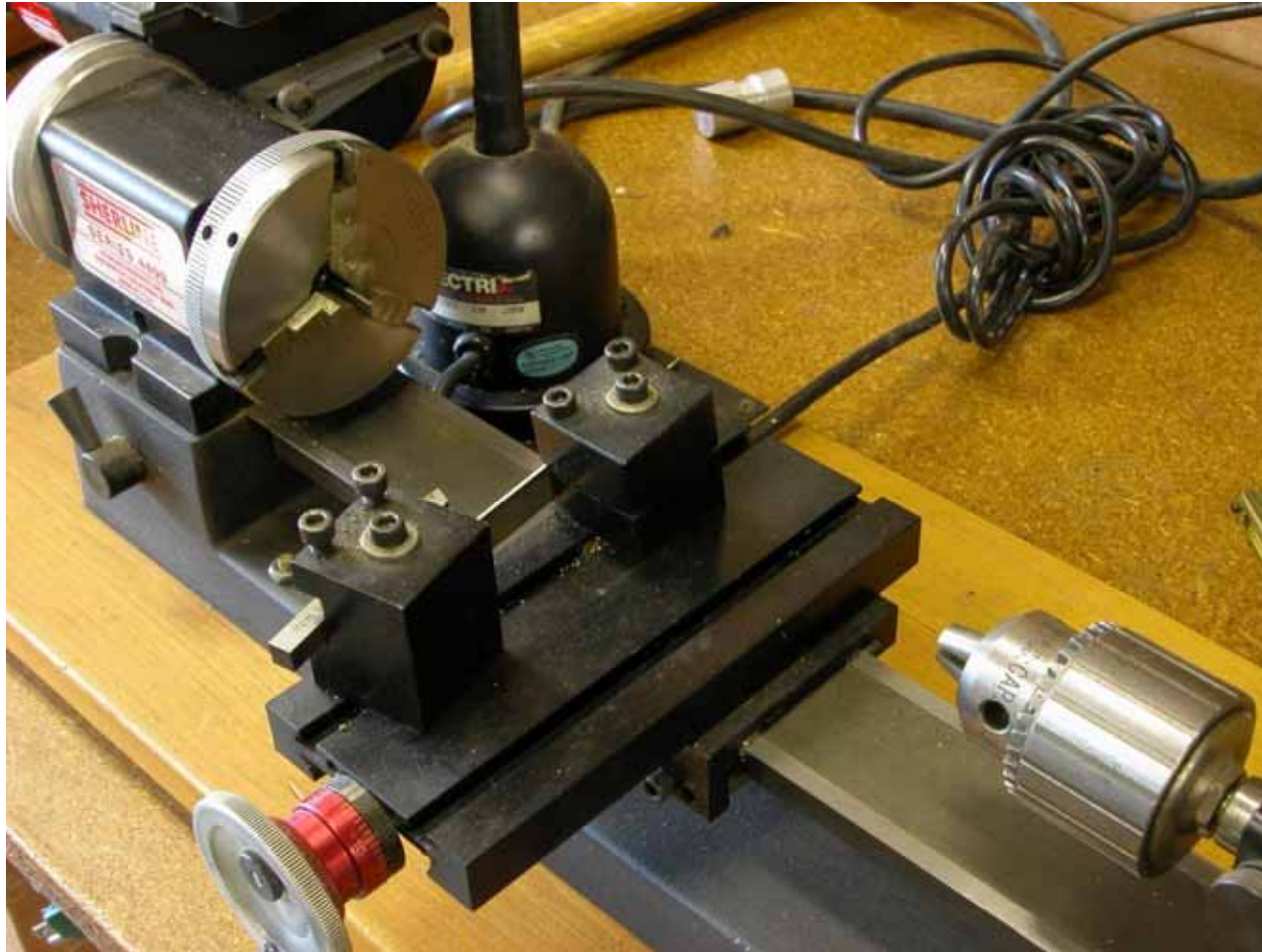
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Tabletop Lathe



Sherline 3.5" Lathe with 24" bed



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Tabletop Mill



Sherline Mill and digital readout



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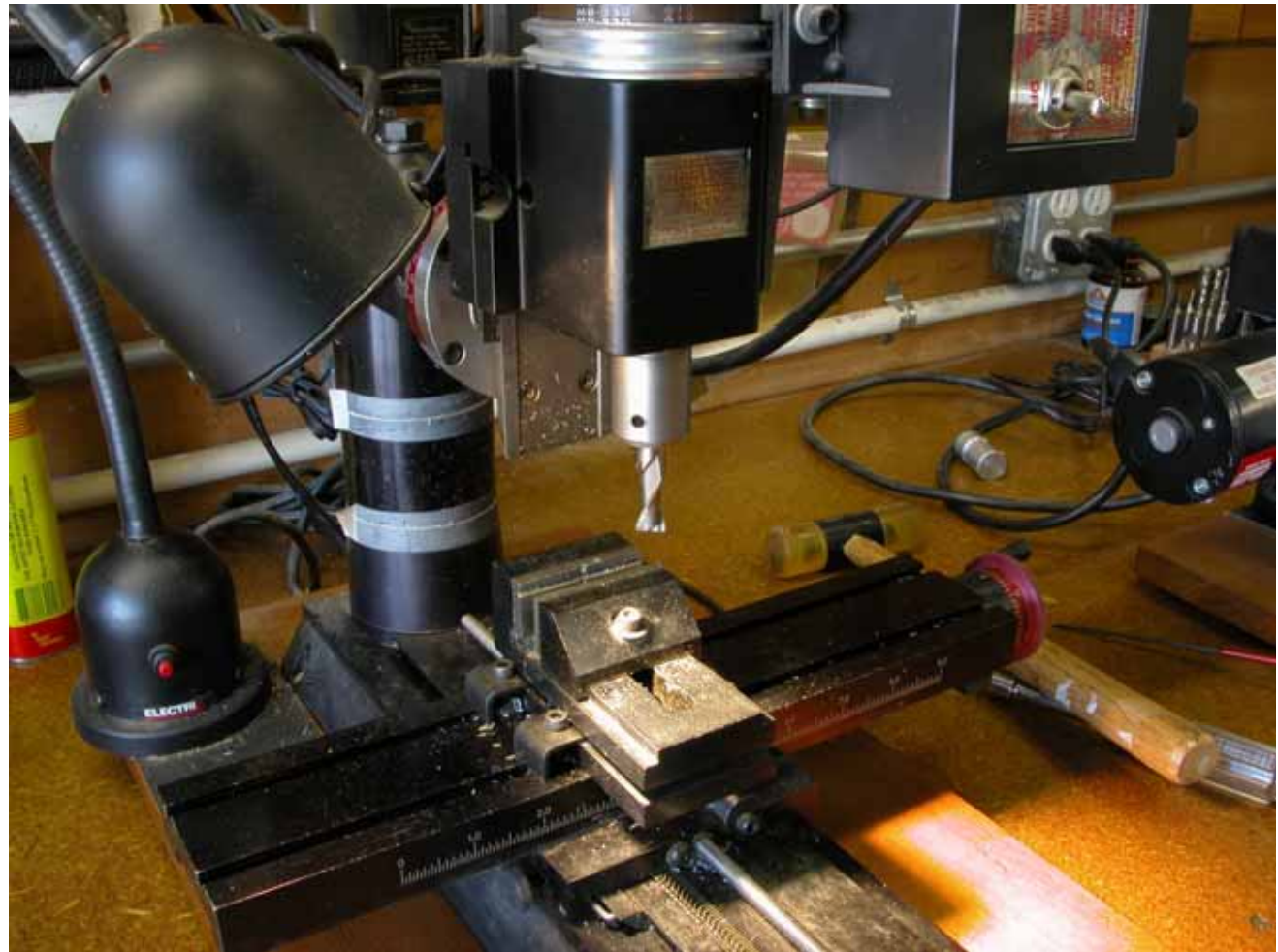
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Tabletop Mill



Sherline Mill



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Applications



Applications

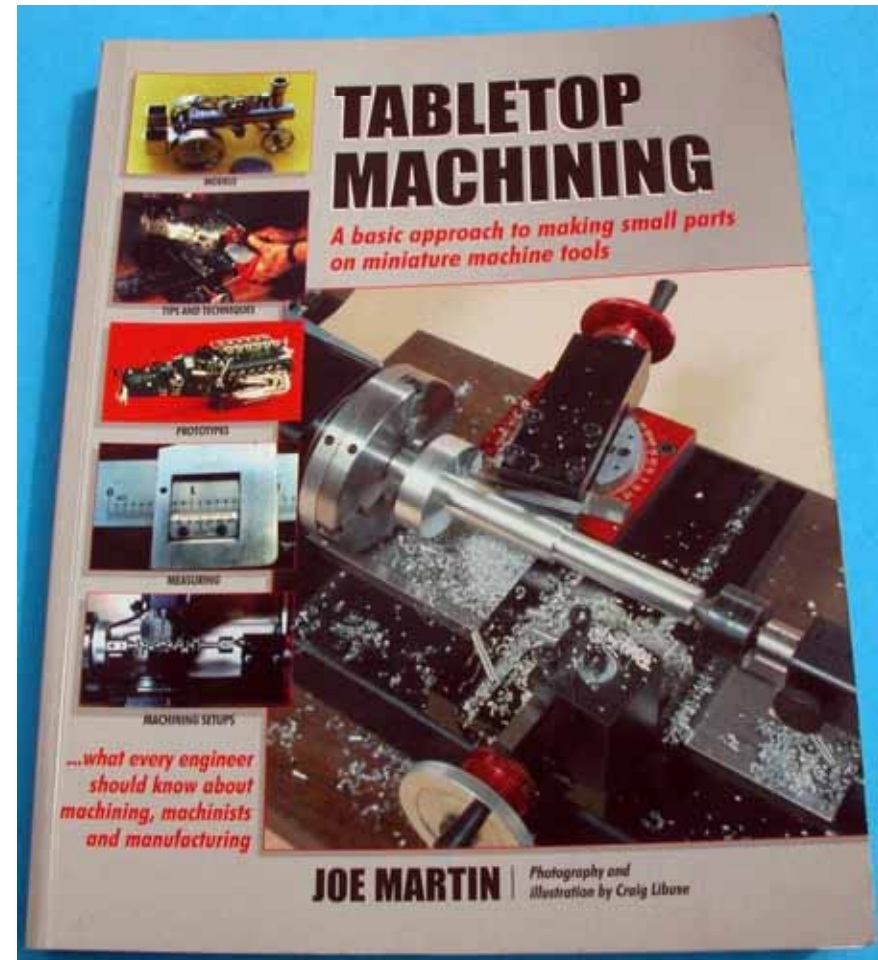
- Steam Engines
- Tooling and Fixtures
- Locomotive Rebuilding
- Custom stuff
- DCC installations

First Project



First Project – Tap Handle

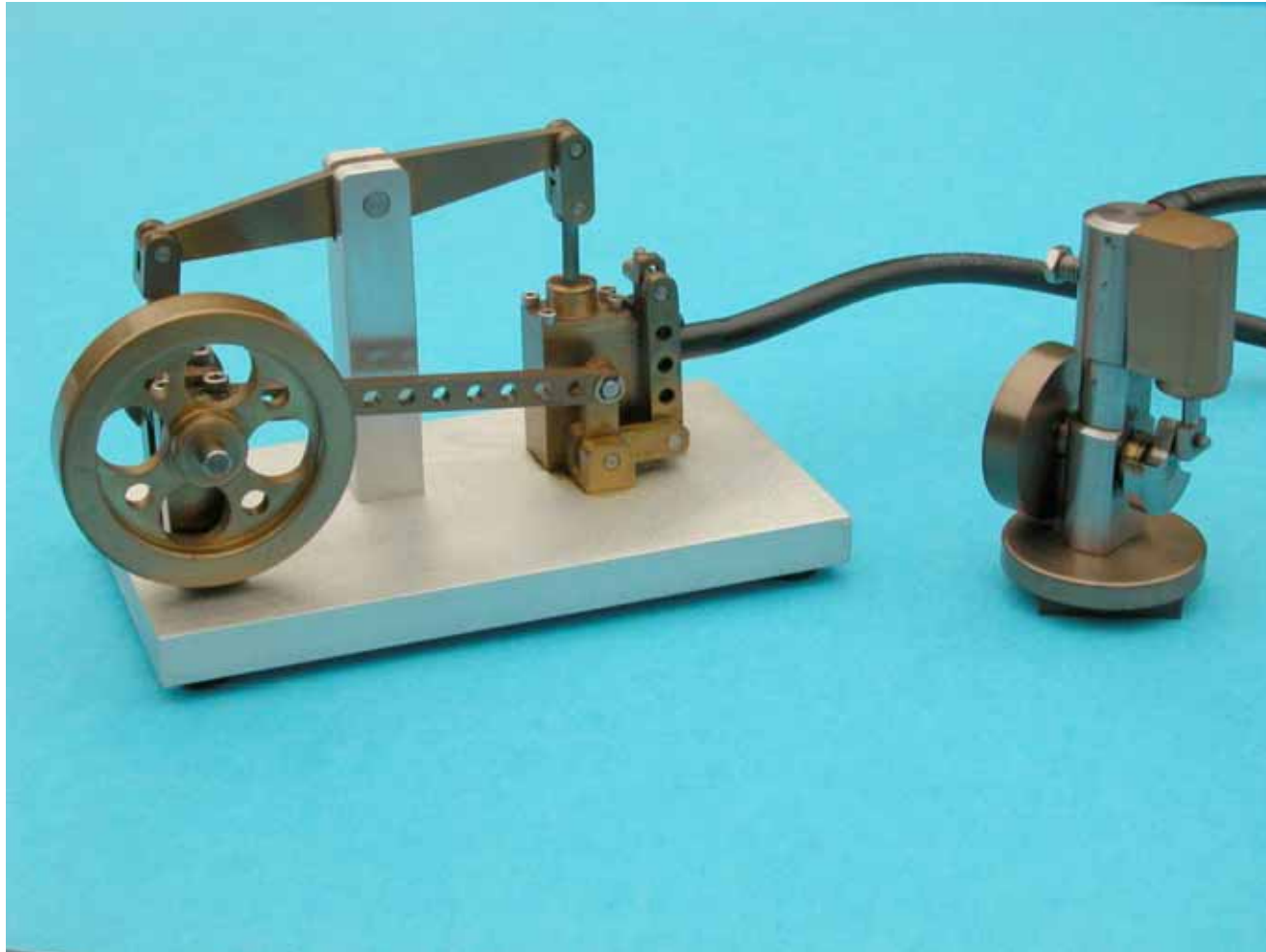
- Plans and instructions in illustrated book
- No prior experience needed



Learning Projects



Learning Projects – Scratch built working steam engines



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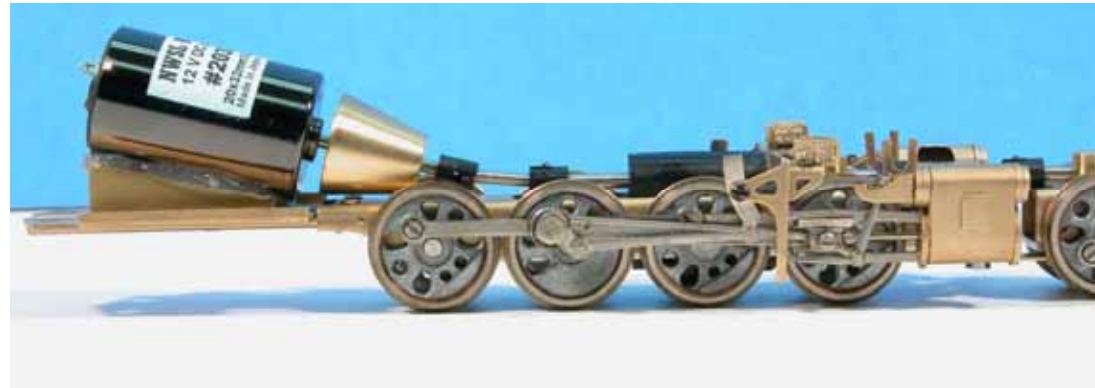
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Modeling Applications



Driveline rebuilding

- Motor mount
- Custom Flywheel
- Driveline Bearings
- Frame Milling

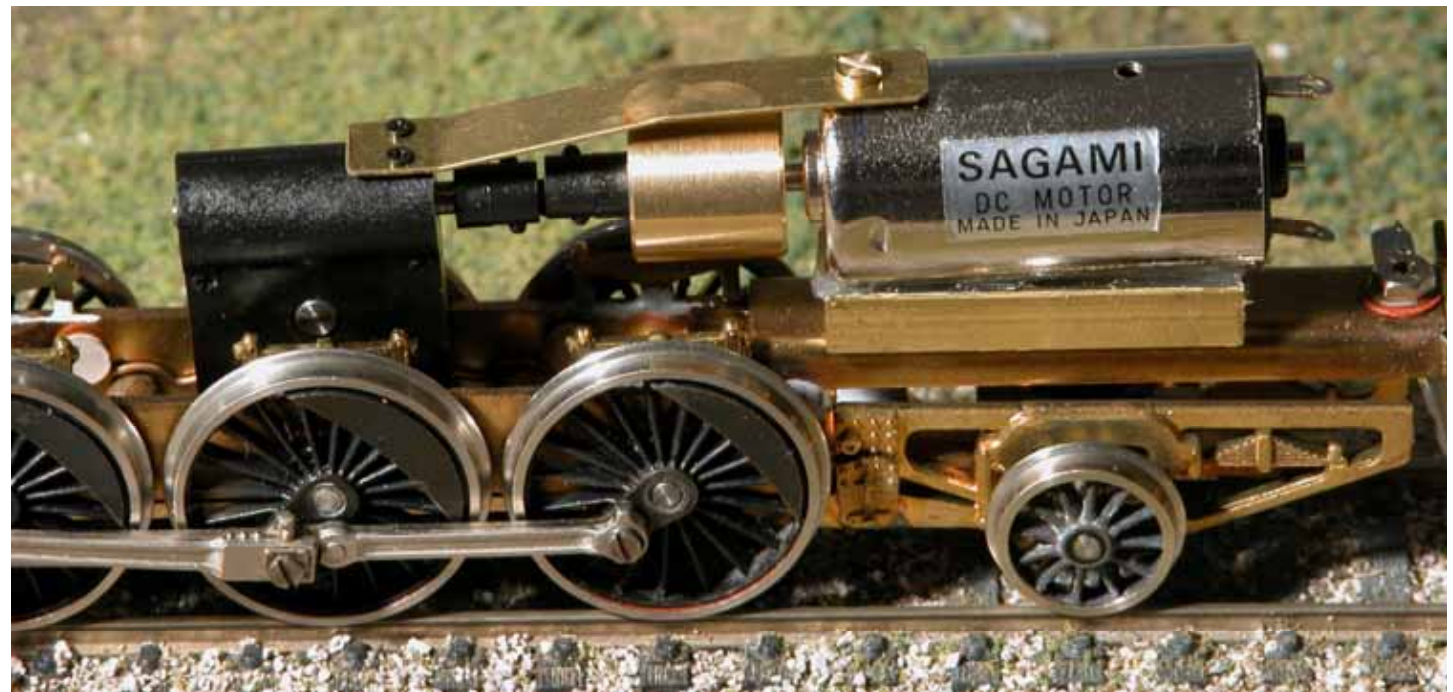


Modeling Applications



Driveline rebuilding

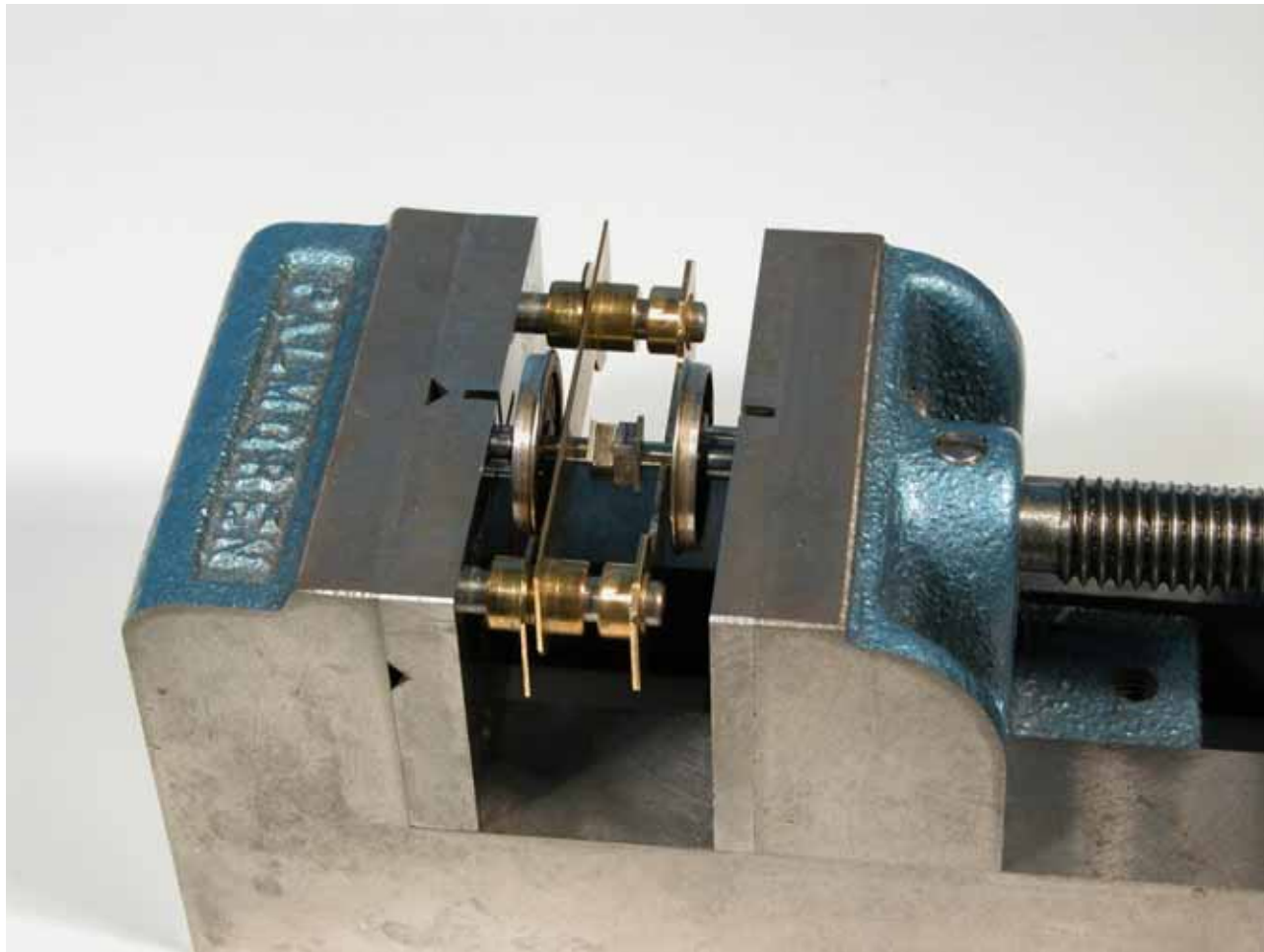
- Motor mount
- Custom Flywheel
- Custom shouldered screw for torque arm
- Gearbox Machining for torque arm



Modeling Applications



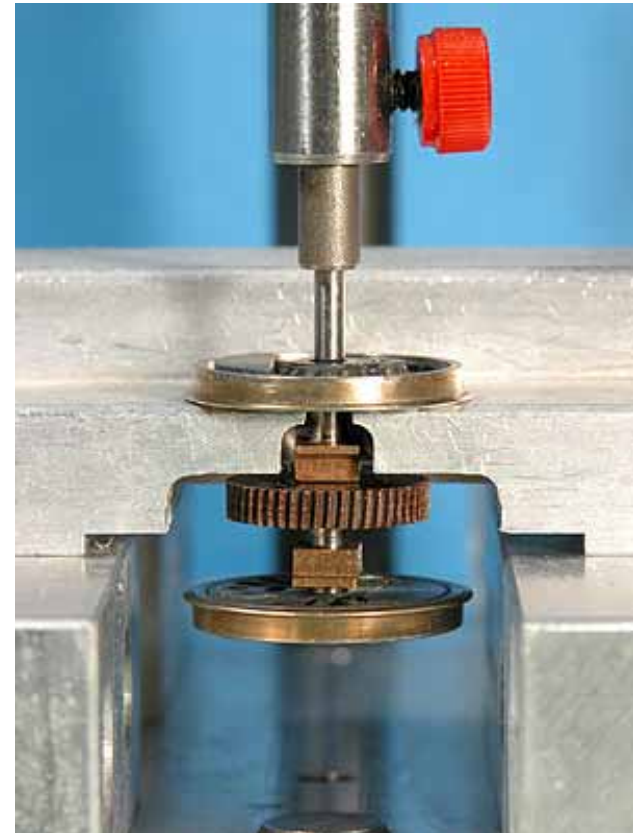
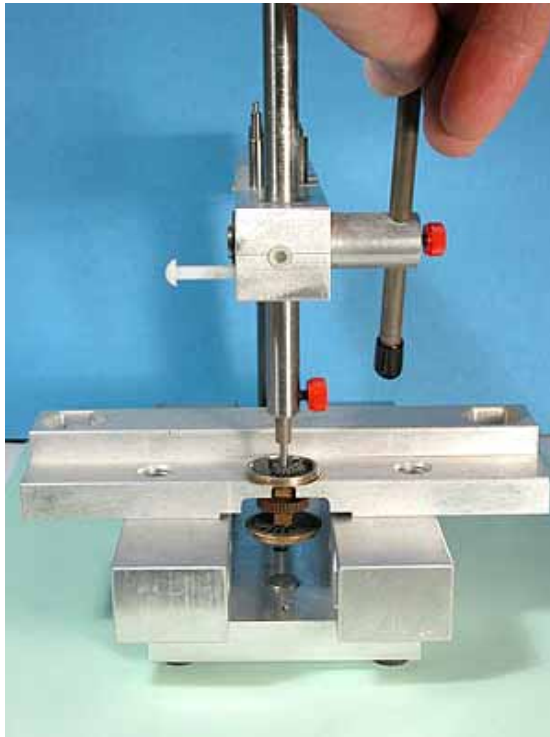
Hobby Tooling – Custom Quartering Vise



Modeling Applications



Hobby Tooling – Driver removal fixture

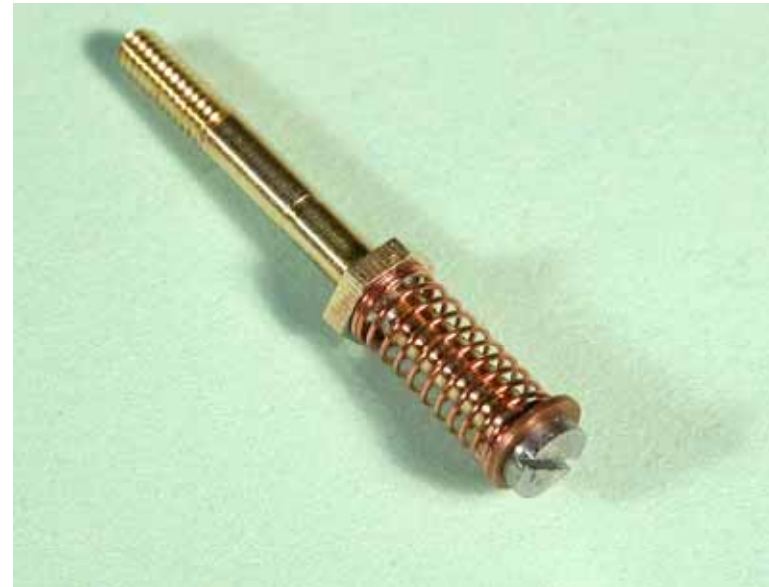
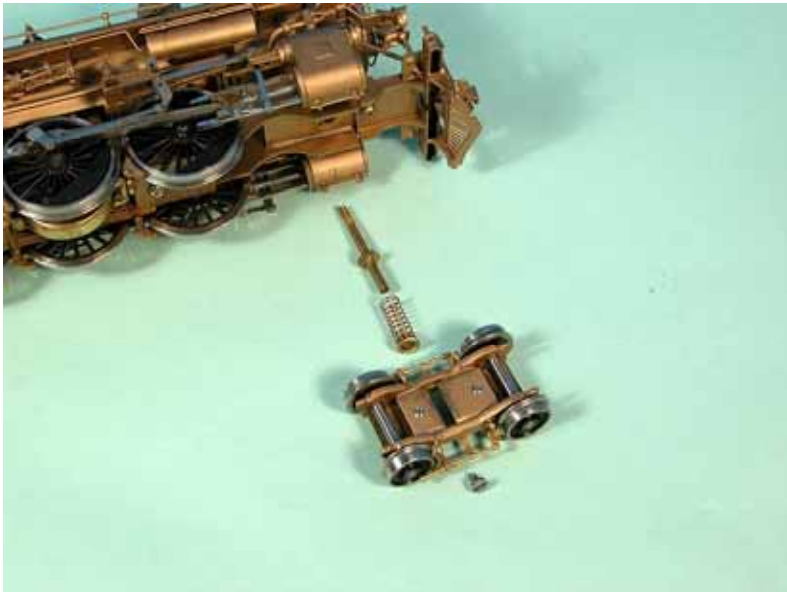


Modeling Applications



Custom part replacement

- Pilot Screw Sample and duplicated replacement

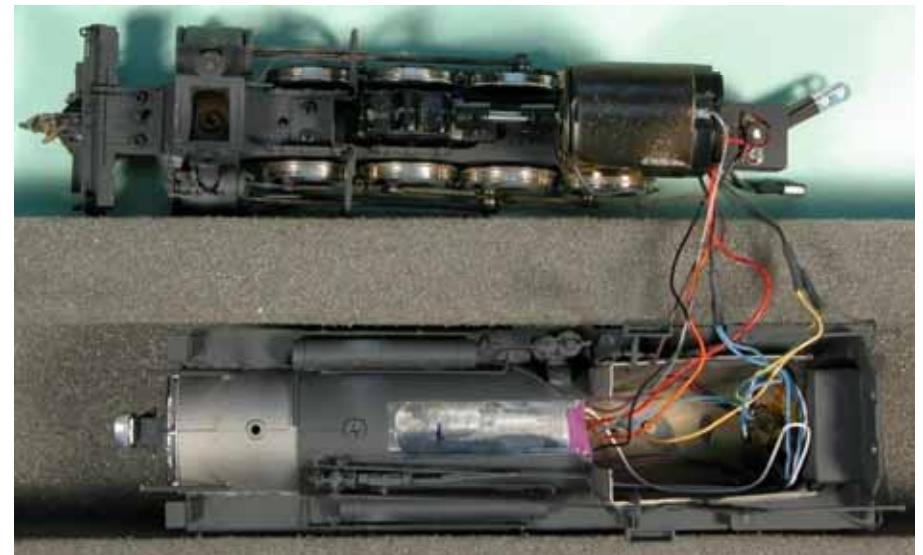


Modeling Applications



Customizing boiler weights

- For driveline modifications
- For DCC decoder installs



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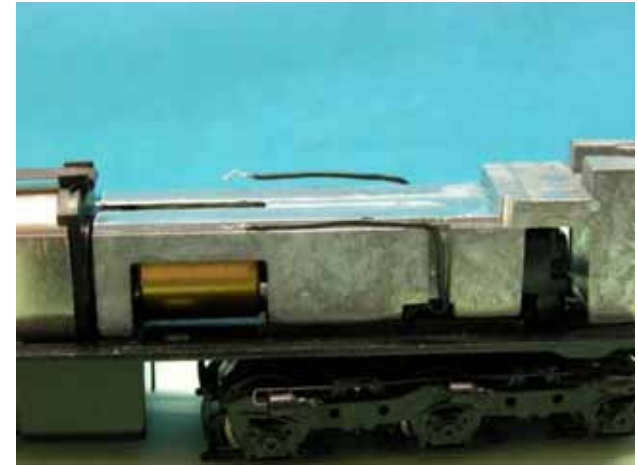
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Modeling Applications



Frame Milling for decoder installations

- Tsunami installation in SD9

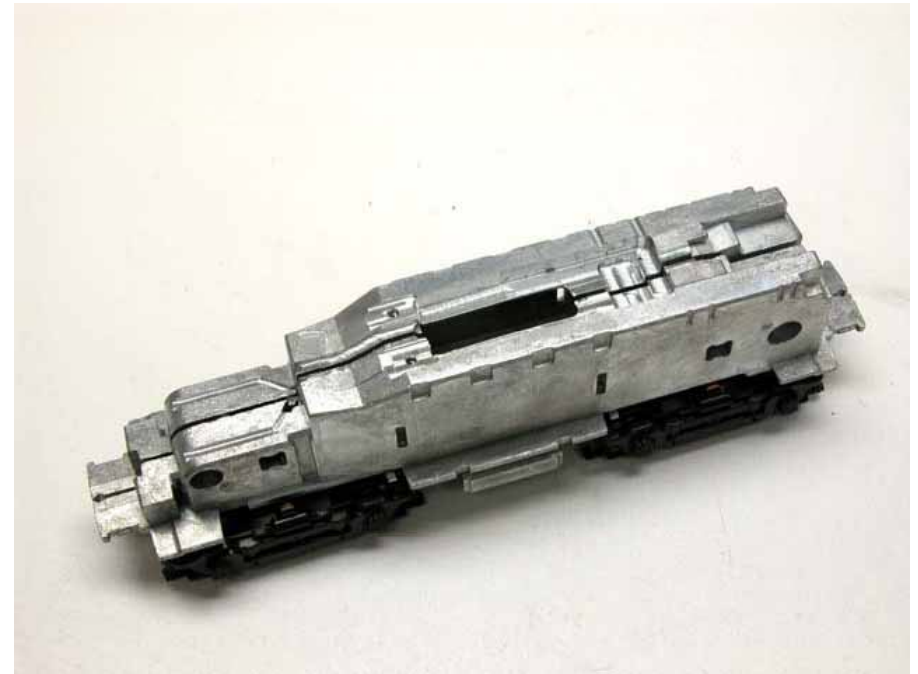


Modeling Applications



Frame Milling for decoder installations

- Decoder installation in NW2



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Modeling Applications



Custom sound cams



Modeling Applications



Custom sound cams



Modeling Applications



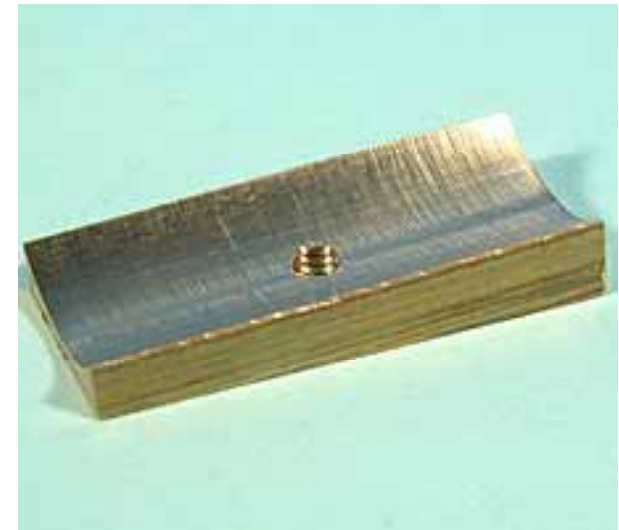
Steam locomotive crank screw replacements



Modeling Applications



Custom motor mounts and flywheels

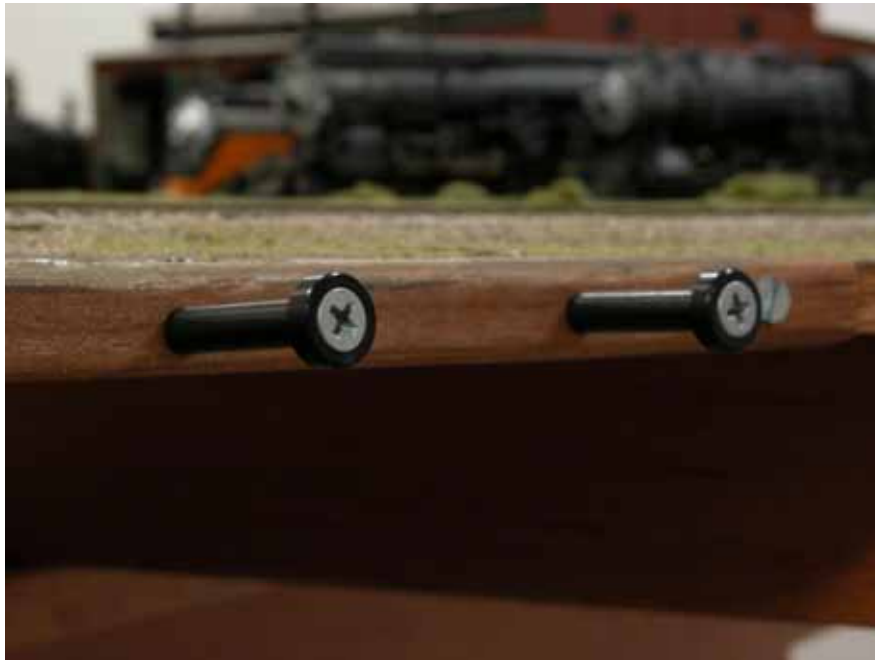


Modeling Applications



Simple cab holder

- Turned Acetal plastic



Modeling Applications



Additional stuff

- Any size custom washers
- Shouldered screws
- Shouldered insulating washers
- Custom detailing parts
- Custom bushings and bearings

Equipment



Lathe

- Sherline makes versions with 15” and 24” bed lengths
 - Costs between \$700 dollars to \$1200 dollars depending on the lathe model and the accessory packages
- Taig Tools also makes a small lathe with a 15” bed.
 - Costs between \$400 to \$500 depending on the accessory packages.
- Both are made in the USA
- MicroMark sells the MicroLux Micro Lathe
 - Costs \$500 for lathe alone

Equipment



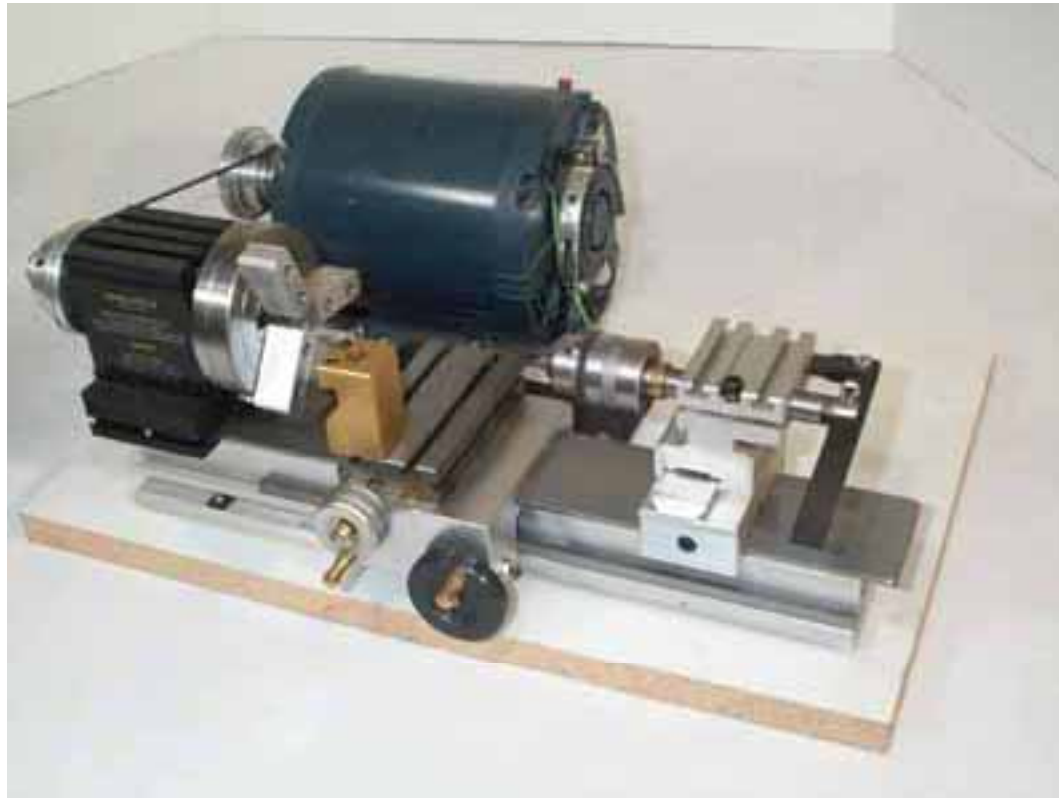
Sherline Lathe – Model 4400 with accesories



Equipment



Taig Tools Lathe – Micro Lathe II



Equipment



MicroMark – MicroLux Micro Lathe



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Equipment



Lathe accessories



Equipment



Lathe accessories – Measuring tools



Equipment



Mill

- Sherline makes several models of mills
 - Costs run between \$950 to \$1240 dollars depending on the mill and accessory package
 - Digital readouts can be added
 - Computer operation CNC option can also be added
- Taig Tools makes a Micro Mill
 - Costs between \$800 to \$900 depending on the accessory packages.
- Both are made in the USA
- MicroMark sells the MicroLux Micro Mill
 - Costs \$500 dollars for Mill alone

Equipment



Sherline Mill

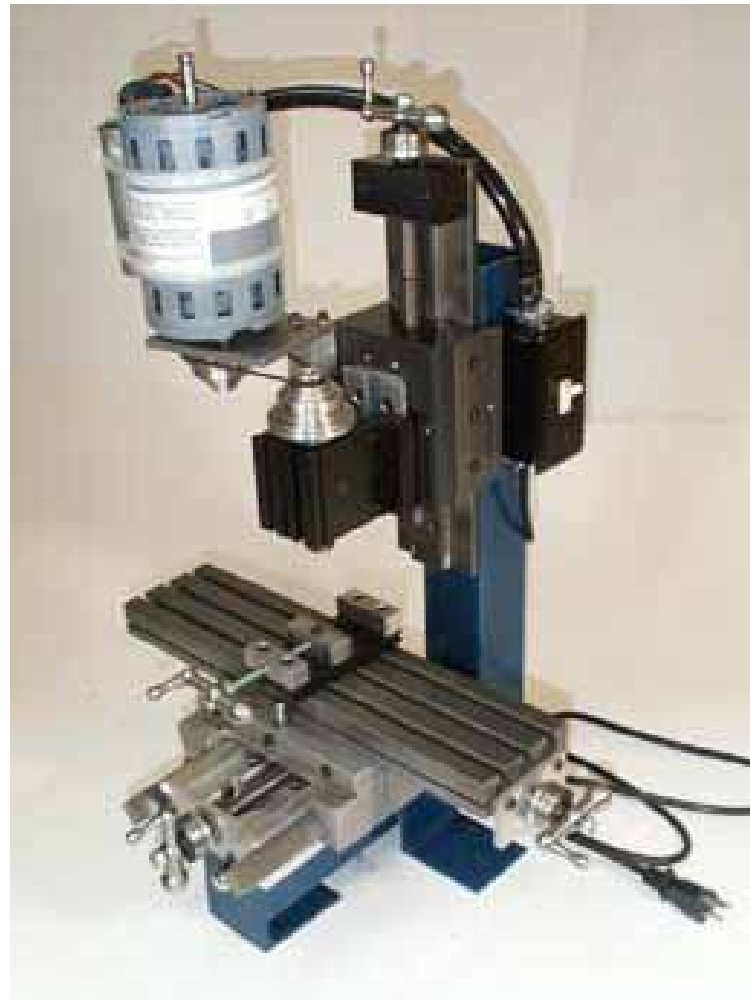
- Model 5400 package



Equipment



Taig Micro Mill



Equipment



MicroMark

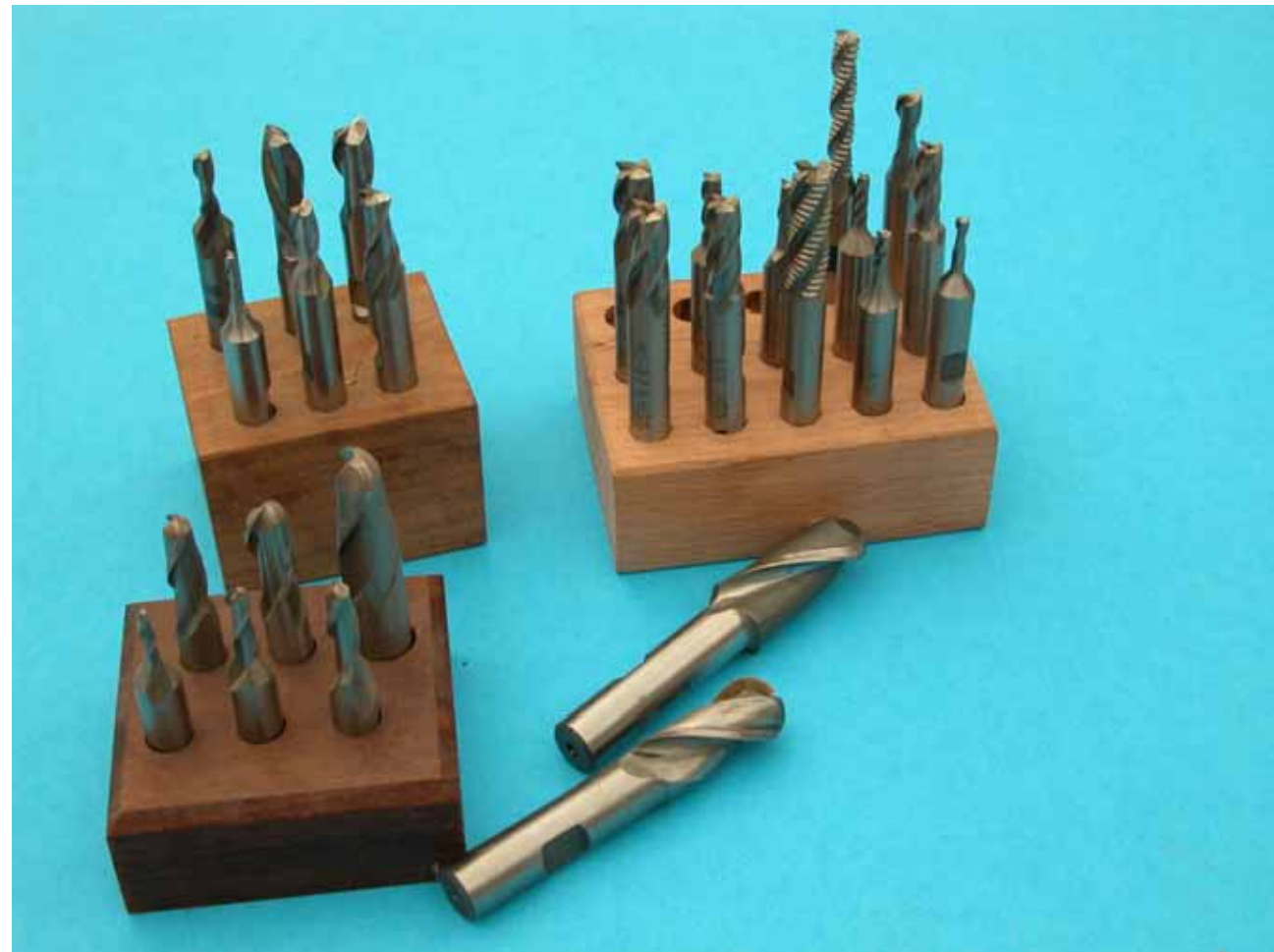
- MicroLux Micro Mill



Equipment



Mill accessories - Mills



Equipment



Mill accessories

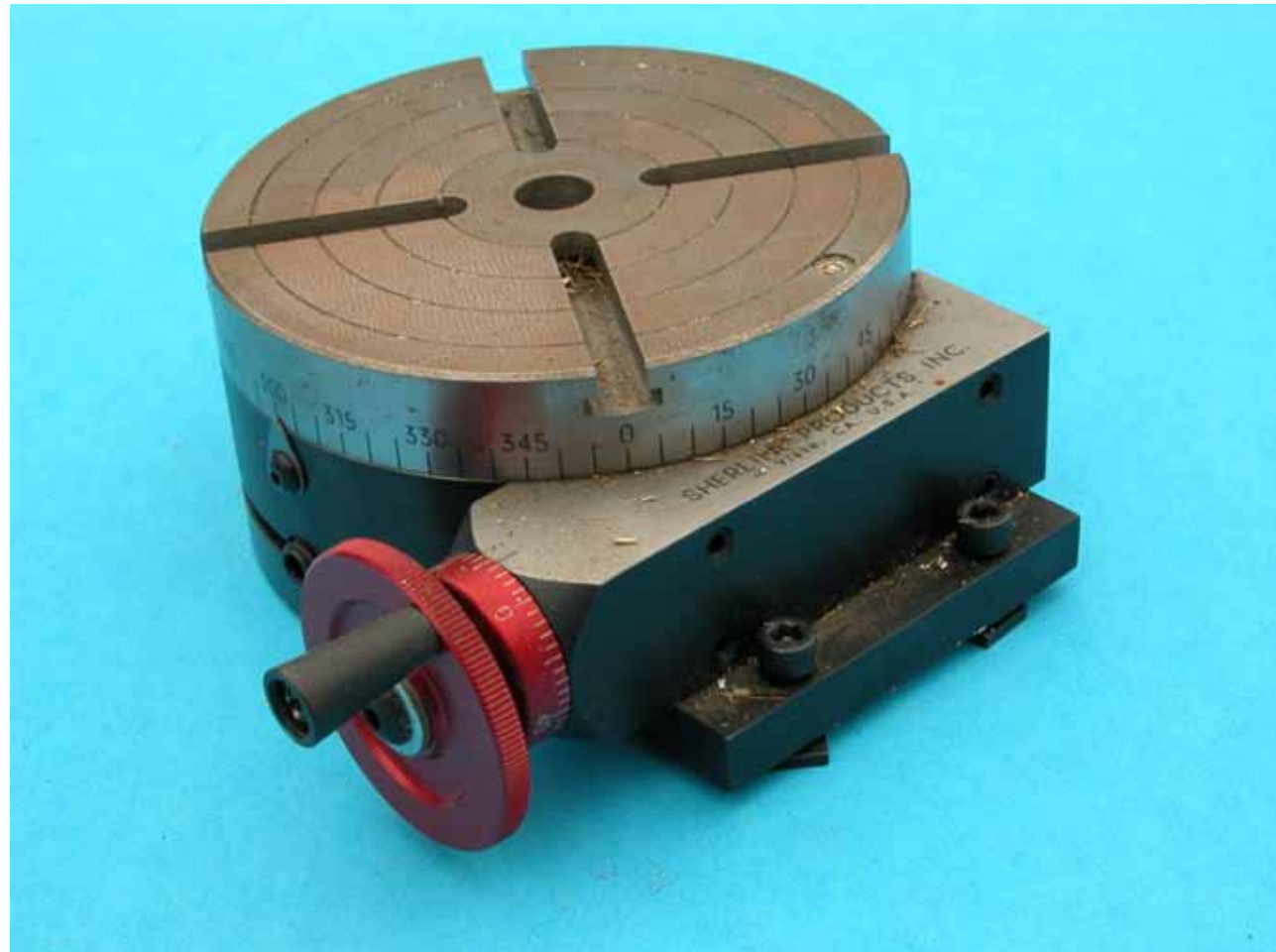
- Drill chucks
- Collets
- Fly cutter
- Mill holders
- Slitting saws



Equipment



Mill accessories – Rotary Table





Sources

Sources



Sherline Lathes and Mills - www.sherline.com

Taig Lathes and Mills – www.taigtools.com

MicroMark – www.micromark.com



Questions?