

The [LittleMachineShop.com](http://LittleMachineShop.com) model 3503 CNC Milling Machine is a complete CNC solution. It's not a conversion or adaptation; this machine is designed and built by the factory as a CNC machine.

Up until now, hobby CNC has required that you make or buy a conversion of a manual milling machine. You had to integrate the mill, ball screws, stepper motors, drivers, power supplies, and breakout boards. Most people don't even know what those things are, much less how to integrate them into a working CNC machine.

The LittleMachineShop.com model 3503 is the perfect mill for the bench top machinist who wants to create parts and not just build a CNC machine. The power supplies and controllers are built into the mill. No extra cabinets, cables, or connectors are required. Add the optional model 3616 computer and you have a complete CAD/CAM/CNC package with fully-licensed software. The model 3503 CNC milling machine even includes a 4th axis driver so you can add a 4th axis rotary table by simply plugging it in.

With powerful NEMA 34 hybrid stepper motors connected by zero backlash jaw couplings to precision-ground ball screws, the model 3503 can achieve positioning accuracy to 0.0005". Not many hobby-grade machines can make a claim like that. It will machine at up to 20 inches per minute and rapid traverse at up to 80 inches per minute.

The model 3503 offers industrial-grade features such as rigid way covers on the horizontal axis. All of the dovetail ways and ball screws are completely covered. A one-shot oiler with flexible shielded lube distribution tubing takes care of daily lubrication with a single press of a lever.

A 1.3 horsepower closed loop brushless DC spindle motor and synchronized belt drive takes the spindle from 100 to 5000 RPM under full CNC control. That's enough power for a face mill up to 2.5 inches in diameter.

With a work envelope of 11.2" (X-axis) × 4.7" (Y-axis) × 10.6" (Z-axis) the model 3503 has the capabilities to do real work. And at 443 pounds, you know it is not a toy. The mill table is 21.50" × 6.30", giving you plenty of room to mount your work and fixtures.

The coolant catch tray on the table and the pan under the machine make the use of flood coolant practical. A software controlled receptacle on the back of the machine provides CNC control of the optional coolant pump.

And we haven't forgotten your safety. The model 3503 carries the CE marking, the European counterpart to UL listing. A safety E-stop button right on the front and the interlocked spindle shield shut down the mill instantly.

**\$5,495** *introductory price*

**LittleMachineShop**  




## MODEL 3503 SPECIFICATIONS

End Milling Capacity	0.6" (16 mm)
Face Milling Capacity	2.5" (63 mm)
Drilling Capacity	0.6" (16 mm)
Table Size	21.50" × 6.30" (548 mm × 160 mm)
T-slots	3 slots 12 mm (7/16") wide
X- Axis Travel	11.2" (285 mm)
Y-Axis Travel	4.7" (120 mm)
Z-Axis Travel	10.6" (270 mm)
Throat	7.9" (200 mm)
X- and Z-Axis Ball Screws	20 mm (0.79 in) dia. × 4 mm pitch
Y-Axis Ball Screw	14 mm (0.55 in) dia. × 4 mm pitch
X-Axis & Y-Axis Motors	NEMA 34 35 lb-in (4 Nm) torque
Z-Axis Motor	NEMA 34 53 lb-in (6 Nm) torque
Positioning Accuracy	0.0005" (0.01 mm)
Spindle Taper	R8
Drawbar Thread	7/16"-20
Spindle Motor	1.3 hp (1 kW) brushless DC
Spindle Speed	100-5000 RPM
Spindle Torque @ 1500 RPM	49 lb-in (5.5 Nm)
Power Requirements	120 V 60 Hz 15 Amps
Coolant Pump Receptacle	120 V 60 Hz 5 Amps CNC Controlled
Feed Speed Maximum	20 in/min (500 mm/min)
Rapid Travel Maximum	80 in/min (2000 mm/min)
Machine Weight	443 lb (201 kg)
Overall Dimensions (W × D × H)	33.8" × 34.4" × 34.0" (855 mm × 875 mm × 960 mm)
Shipping Weight	573 lb (260 kg)
Shipping Dimensions (W × D × H)	40" × 39.5" × 44" (1020 mm × 1000 mm × 1120 mm)



## FEATURES

- 11.2" × 4.7" × 10.6" work envelope
- Class 5 precision hardened and ground ball screws
- Direct drive NEMA 34 hybrid stepper motors
- Zero backlash jaw couplings
- Three stepper drivers for X, Y, and Z axes
- Extra stepper driver for 4th axis pre-wired with external socket
- Variable spindle speed under full CNC control
- Synchronous belt spindle drive (no gears)
- Limit switches and homing on all three axes
- Parallel interface board optically isolates the machine from the computer
- Fully covered ways and ball screws
- Emergency e-stop switch and chuck guard switch
- CE marking (comparable to UL listing)
- CNC controlled coolant pump receptacle
- Coolant catch tray on the table and coolant catch pan under machine
- Power supply and control system are integral to the machine.
- One shot oiler with flexible shielded lube distribution tubing
- Industrial grade ABEC 5 angular contact and ball spindle bearings
- Dovetail slides with adjustable gibs



## STANDARD EQUIPMENT

- Drawbar
- Tool kit
- Parallel cable
- Leveling feet



## COMPUTER REQUIREMENTS

The 3503 CNC Milling Machine requires a computer to drive it with the Mach3 software. Our model 3616 Pentium 4 Computer is specifically designed to handle this task, or you can use your own computer. There are two important considerations when choosing a computer:

- It must have a parallel port on the motherboard or in a bus slot. USB parallel port converters do not work.
- It must not be a notebook computer. The power management hardware in many notebook computers interferes with real-time control of the machine. We do not support the use of notebook computers.

These are the minimum requirements for the computer:

- 2-GHz CPU
- 1 GB memory
- 20-GB hard drive
- Windows XP
- 32-MB AGP/IDE-E video card
- Parallel printer port
- Front USB port (for USB flash drives for moving files)
- DVD/CD-ROM drive

## WARRANTY AND SUPPORT

LittleMachineShop.com warrants the CNC milling machines to be free of defects for six months. Our warranty is limited to replacement of defective components. Because we have no field support staff, we can provide support only by telephone and in Internet forums; you must make any necessary repairs. We stock replacement parts in our Southern California warehouse. For more information about our warranty and support policies, visit [www.littlemachineshop.com/support](http://www.littlemachineshop.com/support).

- User Manual including:
  - Quick Start Guide
  - Mach3 User Guide
  - Technical Guide
- Software CD including custom Mach3 configuration files and demo versions of the following software:
  - **Mach3.** Mach3 converts a standard PC into a fully featured, 6-axis CNC controller.
  - **Dolphin CAD/CAM.** PartMaster creates complete programs for CNC milling machines and machining centers. PartMaster is completely icon driven so that no programming language needs to be learned.
  - **Cut 2D.** Cut2D converts CAD DXF and graphics designs to GCode / CNC Toolpaths for machining high quality parts and components.
  - **VCarve.** VCarve Pro is a powerful, flexible industrial strength software package that includes all the design, layout and machining functionality demanded by commercial shops and users, while remaining incredibly easy to use and affordably priced. VCarve Pro is a complete solution for CNC routing, sign making, woodcarving, and engraving.

## LOOKING FOR SOMETHING SMALLER?

Check out the [LittleMachineShop.com](http://LittleMachineShop.com) **model 3501 CNC Milling Machine**, which features a 10.2" x 4.3" x 7.1" work envelope.



## OPTIONS

### 3616 PENTIUM 4 COMPUTER

\$995.00

- Intel P4 3.0-GHz LGA775 processor
- ATX case w/400 W power supply
- Intel chip P5GC-MX/1333 motherboard with parallel port
- 1 GB DDRII 800 memory
- 80-GB hard drive
- DVD-ROM
- Keyboard and mouse
- Acer 17" LCD monitor
- Windows XP Home Edition with Service Pack 3

The model 3616 Pentium 4 Computer includes the computer, a 17" flat screen monitor, plus keyboard and mouse. It comes with fully licensed copies of Mach3 and Dolphin CAD/CAM. The software licenses alone are worth more than the total cost of the computer.

### 3519 4TH AXIS ROTARY TABLE

\$750.00

The 4th axis rotary table plugs right into the model 3503 CNC Milling Machine, which includes the 4th axis driver.



Diameter	4" (100 mm)
Capacity	11 lbs (5 kg)
Motor Torque	12 lb-in (1.35 Nm)
Maximum Torque	35 lb-in (4 Nm)
Thru Hole	0.47" (12 mm)
Tail Stock	Part number 1812
Vertical Center Height	2.68" (68 mm)
Ratio	40 to 1

Net Weight	26.4 lb (12 kg)
Shipping Weight	33 lb (15 kg)
Rotational Accuracy	5 seconds
Backlash	Less than 0.002" (0.05 mm) Adjustable to less than 0.0005" (0.01 mm)
Repeatability	0.0005" (0.01 mm)
T- Slot Size	7/16" ( 12 mm) wide

### 3532 MACHINE STAND

\$295.00

This stand is custom made for the model 3503. It includes coolant drain and supply fittings so you can install a coolant pump in the cabinet. The cabinet includes adjustable leveling feet.

Overall Dimensions (W × D × H)	19" × 28.5" × 31" (480 mm × 725 mm × 790 mm)
Weight	99 lb (45 kg)
Shipping Weight	132 lb (60 Kg)
Shipping Dimensions (W × D × H)	23.6" × 34.5" × 38.3" (600 mm × 870 mm × 970 mm)



**LittleMachineShop**  
  
 The premier source of tooling, parts, and accessories for bench top machinists.

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