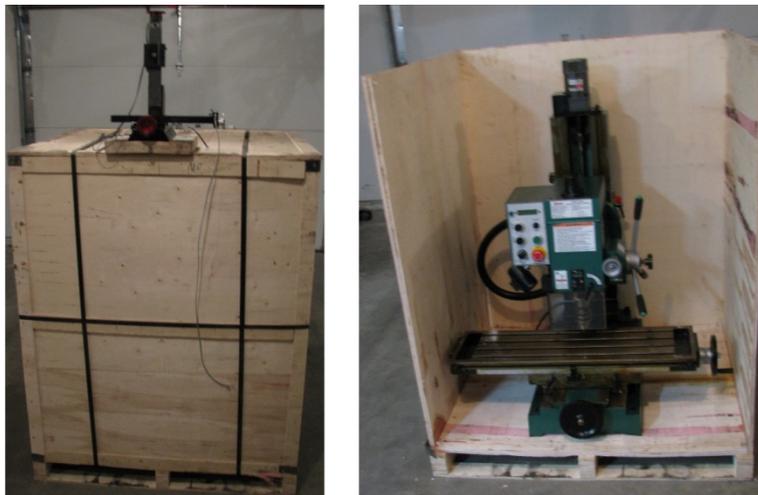


Vendors/manufacture are invited to provide a comment which we would include here. The following text is just the opinion of Uwe Burghaus/LatheCity and may not reflect the opinion or experience of other users. The system is in use at our shop for 15 months or so, it's more or less daily used in a small production environment.

## G0720R - Grizzly - heavy duty benchtop mill

### 1<sup>st</sup> step: Home delivery of heavy equipment



**Fig.:** Just arrived – fully assembled in one piece. Sherlines mill is on top of the box as a size comparison.

In particular professional milling machines can have a weight comparable to a small car. When I turned in my on-line order for the Grizzly mill, their web site had no options whatsoever to request a “liftgate truck” (apparently \$40 in 2012) or “inside delivery” (+\$37 in 2012). (Their web form had a little box restricted to a few characters with the note that more information would be provided later. That’s what I have seen in 2012. Perhaps I overlooked something?) Both options exist, however, perhaps, call in the order, rather than going through their web store. Truck drivers will typically not move even their little finger (understandable). That’s a curb side delivery. You have a few minutes getting the wooden box out of the truck; you cannot open the box and move the equipment piece by piece (see below) – no time for that. Thus, if you don’t have 5-10 friends lifting regularly weights or have connections to a local wrestling club or something, then you need at least a “liftgate truck” and rent a “pallet jack”, have a “large car jack”, or small “fork lift car”. “Easy” enough. However, most likely you will not know when the delivery arrives. The “motor truck company” hired by Grizzly had a nice website to track the order. However, the delivery day was not available unless you lock-in there every few hours to track the movement of the truck yourself. When the truck suddenly arrived, that website did state that it would still be 500 miles away ...

I have had similar issues with equipment deliveries to my research lab. (Universities, however, have loading docks, fork cars, etc.) It’s always a hassle and none of the truck companies I dealt with had

a good customer service. For example, one guy handed nice paper work to me which clearly stated “call ... before delivery”. Did you call my cell phone? Nope. Why? ... You will be on your own with perhaps 641 lbs. (mill + shipping box, manual p. 4)!

Inspect the box carefully all around. Little scratch anywhere?! Mark it on the paperwork or you will most likely have major trouble with the transport insurance. Have a digital camera ready.

Don't send an e-mail and call shortly afterwards. Grizzly's, for example, do well in responding to e-mails (Sherline's not always ...). However, most large companies have internal communication problems ... writing this politely. Call the vendor and not the freight company.

Good luck.

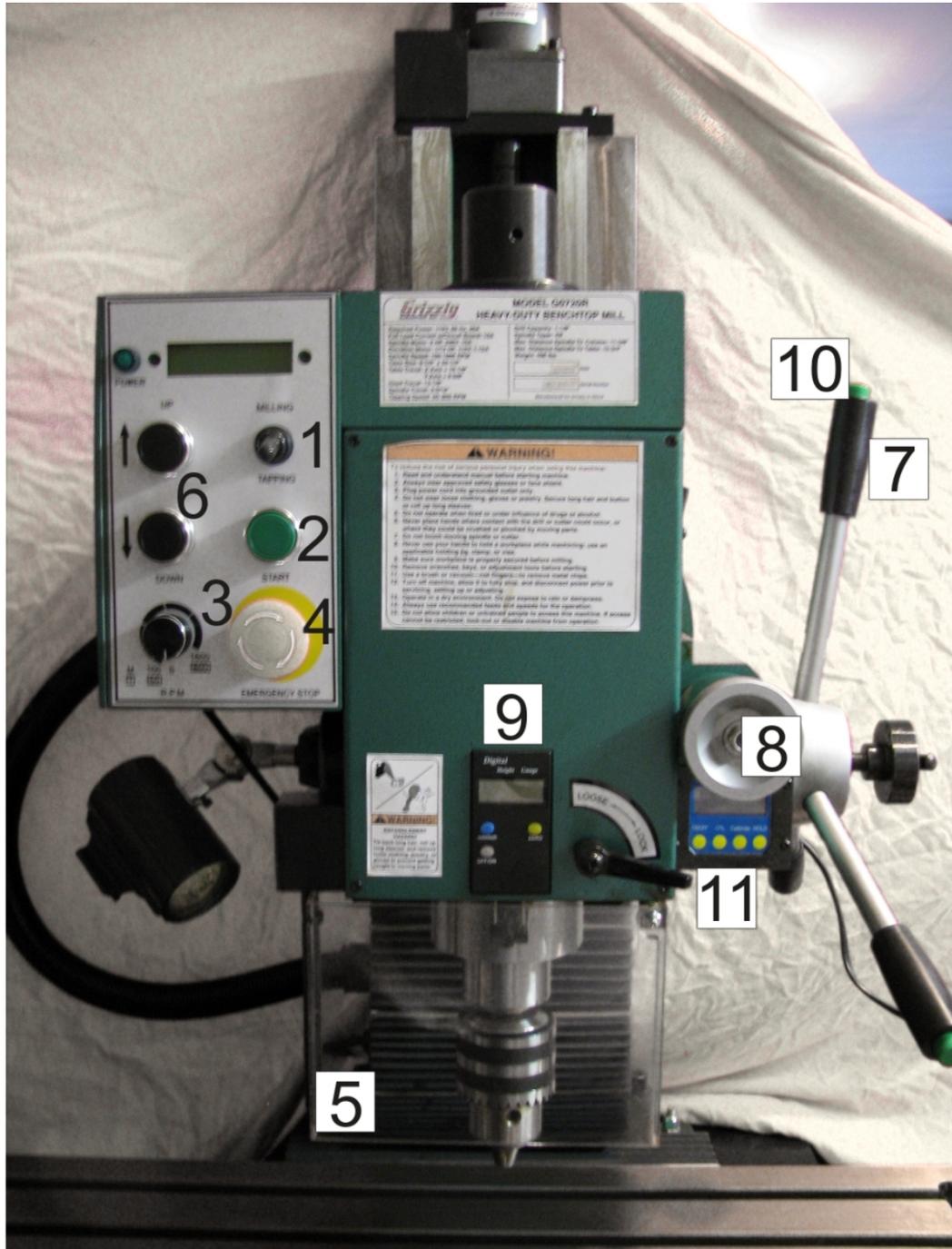
### Home delivery of heavy equipment – part II

According to Murphy's law there is always a second problem. When I opened the shipping crate (finally home delivered after several phone calls with Grizzly's...), I thought something would hit me. I should have known it better having dealt with heavy equipment in my lab before, but guess what? The entire mill, 596 lb., was completely assembled and bolted on a pallet. Any mill consists of at least 4 segments that can be separated: the mill table (additionally one can typically remove the X slide of the mill table rather easily), column, base, and headstock. Would it be good to ship it that way? Each component could be lifted by a single person (or two), etc. Even Sherline ships their mini mill separated in components. Unfortunately, in this case, the headstock is basically hard wired to the electric box on the column – no easy way to separate these. Removing the entire headstock? Well, that one is bolted on the base, i.e., lifting up the mill to remove the nuts would be required (it didn't look like tapped holes in the base). Also, the weight of the entire headstock assembly probably amounts to 50% of the total weight. Unfortunately, there is no hook on the mill to hang it on a shop crane or car hoist! In addition, the mill base is basically flush with the pallet, i.e., no way to move anything underneath (e.g. using a pallet lift). Using the four mounting bolts of the mill table to attach a chain or something? Well, how to get the bolts out there afterwards. Sliding a steel chain/cable under the mill – obviously not safe. Hanging it on the mill table or headstock – nope! (Well, I am not in the moving business of heavy equipment, perhaps there is a smart way to move the thing, but ...) Congratulations! To me or Grizzly's? This is still a hobby “benchtop” size mill and not really professional shop size equipment. Never mind, making a longer story short: one may rent an engine hoist, cherry picker, pallet lift, shop crane, gantry crane (\$40/day in 2012) after welding a hook on the mill, or, find 4-6 strong friends. Grizzly's manual (p. 11) does state correctly use “hoisting apparatus” and find “an assistant”. The crane thing is a good suggestion, but there is no simple (and safe) way to attach the mill to a shop crane, in my opinion. And, I would triple at least the nose count: get at least three guys to lift the ~600 lbs with a crane.

### Cleaning the mill (?)

Yes, you have to clean the mill, which took me about 2 hours and 4 rolls of kitchen paper towels. All un-painted surfaces are covered with a rust preventing grease (in my case also the plastic hand wheels were basically covered). I used oven cleaner which also removed the black staining color on the inside of the T slot table – that was likely not recommended. Grizzly recommends WD-40. Don't forget

the lower side of the mill table and move the mill table all the way to the column to find more grease. Perhaps this is standard for new larger mills – I cannot tell, however, storing it in a heated warehouse may also be a way to prevent rusting... (WD-40 does indeed work nicely, as I learned in the meanwhile, see below.)



**Fig.:** Front side of the mill. (1) milling/tapping selection; (2) start; (3) RPM; (4) emergency off; (5) chip guard; (6) column up/down; (7) spindle feed; (8) spindle fine feed; (9) column “DRO”; (10) reverse spindle rotation; (11) digital protractor

## Running spindle in

After a test run, as described in Grizzly's manual, the mill needs to be lubricated. Rub oil on all ways and fill the ball oiler. A ball oiler is an oil reservoir that is sealed with a small ball-spring seal. Grizzly's manual (p. 31) informed me that that mill would have nine ball-oiler although the images in that manual, which came with the mill, did show only eight. I did also find only eight – I hope there is not another one on the bottom (I would not like to lift that mill any time soon again). Instead of a ball oiler there is only a hole on the left side of the table on my mill. (Something missing? See below.) The mill comes without oil and an oil gun is recommended for the procedure. You may want to order one together with the mill. (Or, go to e.g. MaxShop these cost \$2.99)

Next is the spindle break in. As detailed in Grizzly's manual, it consists of running the mill for 10 min each at increasingly greater RPM.

Writing also something very positive here. Initially (see below), the mill did work perfectly (through that test and startup) without any trouble!

## Basic features and controls of that “heavy duty benchtop mill”

The Fig. shows the controls of that mill: somewhat more complex than on Sherline's system.

**Starting the mill.** To start the spindle, select tapping or milling mode (1). Next, push start button (2), assuming that speed control (3) is set to zero. The spindle RPM can be set variably by the speed dial (3) (1600 max RPM, the manual states RPM 3600 on p. 4 for motor speed, spindle speed 1600 RPM, a little misleading for my taste). I was used to a variable RPM from Sherline's mini mill, that's why I liked that feature. The spindle stops when the emergency button (4) is pressed or the chip guard is open (5). (The mill has also a main switch.) That chip guard (thin polycarbonate plate) is not locked in position; it's just held with a small magnet. Therefore, I doubt somewhat that it provides a lot of protection, but may often be in the way. It will block chips and cutting oil, however. It's a chip & oil guard rather than a safety guard, I would say, just my opinion. The spindle doesn't start up if emergency switch is pushed in or chip guard is open. If you push the start button, the spindle will start up. Therefore, always turn the speed dial to zero (as on Sherline's system). I like safety features, but that's a little of a cheapo design, for my taste. A digital display shows the RPM. In tapping mode the RPM is reduced to 50 – 800 RPM.

**Headstock feed.** The headstock can be moved up/down with a motor when pushing the corresponding buttons (6) – that's a rather slow one-speed-only movement, but it is cool not to crank on a handwheel as crazy anymore. A great feature available as a standard for that mill. A rough scale is on the mill column. The column has stops.

**Spindle (R8 type).** The quill can be moved up/down with the downfeed handle (7) similar to a drill press. When locking that handle, a fine feed (8) can be used. The spindle position is displayed (9), i.e., the mill has a DRO for the column height (Metric/English), but not for the mill table. The column DRO, however, has only 3 digits, good to remember when setting the cutting height of a face mill. (The motor has apparently an over load shut off ...) DRO's typically have at least four digits. The cutting depth for milling is typically set by the quill position assuming that the total cutting depth is not too large. Extending the spindle too much can result in unstable milling conditions. The downfeed handles have a

button at their ends (10). Pushing one of these in tapping mode reverses the spindle rotation. That's probably only needed when trying to tap holes directly. Tapping attachments have a clutch and RPM reversal anyhow. Perhaps a not really often used feature. That mill comes with a professional R8 spindle taper. R8 tools are hold with a drawbar (a long 7/16"-20 bolt). The mill comes together with a Jacobs drill chuck that has an R8/B18 taper.



**Fig.:** Grizzly's drawbar with R8 collet also shown is Sherlines Morse taper for the headstock and the drawbar for it

**Tilt.** The headstock can be tilted. A feature I will probably never use (I did never use it on Sherline's mill). Unfortunately, there was no option of a fixed and more rigid mill column. The tilt of the column is displayed using a digital protractor (11). These mini protractors are in the meanwhile available for \$40 or less (, i.e., perhaps glue one on your mill if you don't have it). I cannot understand why rather fancy features are built in which most customers will rarely use, but a DRO for the mill table is not a standard ... The DRO and protractor use separate batteries, not really great, these little button batteries start to burn a hole in my wallet. Unfortunately, they are very common for caliper and DROs and don't work too well in a colder shop (I am in ND).

**Dovetail column.** All ways use dovetails which is great and one reason why I purchased that mill. Pure mill drills typically don't have a dovetail column. That design should be a lot more rigid than a drill/mill. All ways can be locked – great and full size standard. All dovetails have adjustable gibs – double great (actually also standard on any better system). The lead screws are held at both ends using bearings (I think) – they don't dangle in air as on Sherline's system or other mini benchtop mills. The ways are covered. The X-direction has a table locks (i.e. adjustable end position stops).

So far, I would write: it's a great system with, however, a number of unnecessary features, which I would rather replace by a simple DRO keeping the price. I don't need a DRO that calculates the fuel consumption for a trip to the moon – I would never use that either. Just a basic and sturdy DRO (X, Y, and Z) ... All of this is just my opinion based on my current knowledge and experience with that system. Build your own opinion. It's a great system, a quantum leap from the Sherline mill when mostly interested in engineering type projects.



Although that mill is advertised as a tabletop mill, one approaches professional shop size level with that system. Apparently different standards are here in place when it comes to shipping and startup procedures. Grizzly's customer service was helpful solving the issues with the home delivery and the mill initially did start up without any problems. However, one may need to be aware of: this is (close to) industrial standard rather than hobby machinist standard.