HIGHLAND HARDWARE USER'S GUIDE FOR THE MAKITA 9820-2 SHARPENER

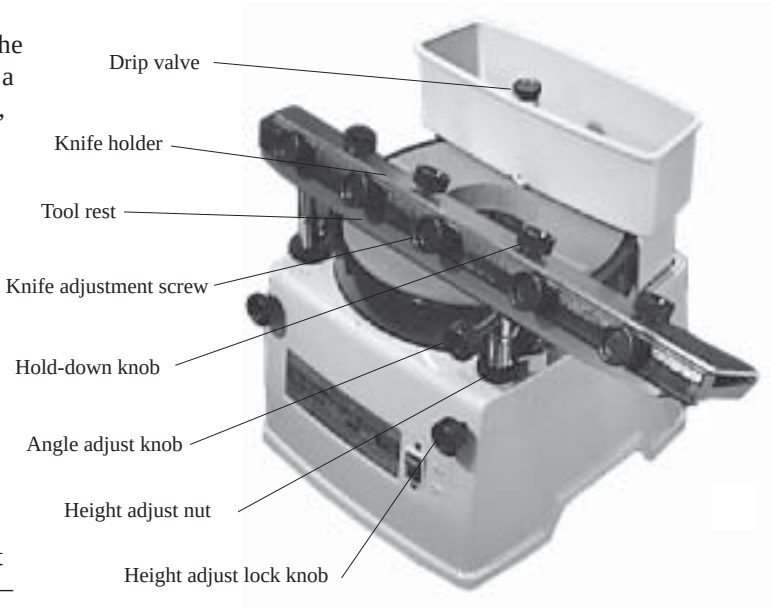
Makita's 9820-2 is the finest grinding and sharpening tool we know of for jointer and planer knives, and you can use it to grind and sharpen your hand tools efficiently and precisely as well. Once you've learned to use it well you'll have earned the right to expect the utmost from every cutting tool in your shop. It takes a little practice to master this machine, just as it does with every other woodworking tool. To make your practice as effective as possible, we've compiled this guide based on many years' experience with the sharpener.

Preparing the stones

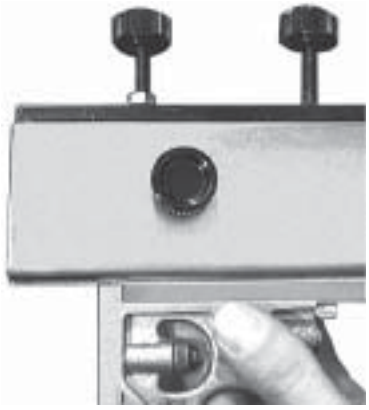
Like our other man-made waterstones, sharpener wheels must be saturated with water before use. Soak the 1000 or 6000 grit wheels in clean water for 10 to 20 minutes. 5 to 10 minutes is plenty for our much more porous Green Wheel.

Installing jointer or planer knives

Back the adjustment screws in the rear of the knife holder well out of the way so you can slip a jointer or planer knife into the holder, bevel down, almost out of sight. Tighten the hold-down knobs moderately so the knife can't slide around on its own. Using the adjustment screws nearest either end of the knife, move the knife forward until the cutting edge is 5/16" (8mm) beyond and carefully parallel to the cast iron lip of the holder. Measure from the casting, not from the plated hold-down cap, which doesn't always locate itself uniformly. Now tighten all the hold-down knobs securely, but don't overtighten any knobs not directly over the knife.

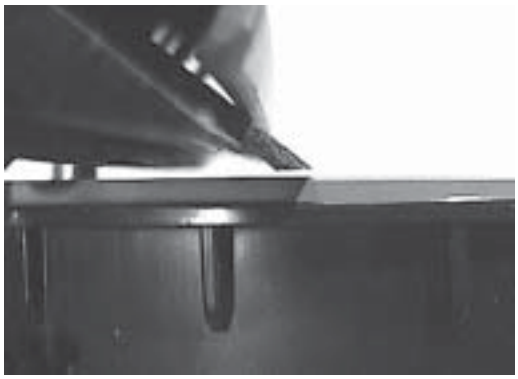


Once the hold-down is secure, back all of the rear adjustment screws well out of contact with the knife so you can't accidentally force it out of alignment while you're sharpening. Or—and this is preferable in the long run—install 6mm hex nuts on the adjustment screws you use most (both ends and the middle, most likely) so you can lock the screws in place once a knife is properly set. Now you can mount a second or third knife without having to measure again.



Setting the grinding angle

Fortunately, there's no need to use gauges or jigs, since set-up is quick, easy and accurate using the knife's factory-ground bevel as a guide. Mount a stone on the machine's spindle, making sure the stud under the stone's mounting plate nests properly into one of the mating depressions in the spindle. Put the knife holder on the tool rest and rotate the angle adjustment knob to put the knife edge just barely in contact with the stone. Unlock the two knobs on the front of the sharpener and rotate the nuts on the tool rest support posts, adjusting their height so the knife lies flat (for the time being) across the stone. Re-lock the front knobs before checking your settings.



Take a look at the knife edge-on from the right side of the machine, and you'll see that the bevel is not (except by chance) lying flat on the stone. If there's daylight under the cutting edge while the heel of the bevel touches the stone, then the tool rest needs to be raised and its angle steepened somewhat. If the cutting edge touches while the heel is high, the rest needs to be lowered a bit and its angle lessened. It will probably take a couple of tries to set a grinding angle that looks right.

Note: once the grinding angle is set, *raise the left side of the tool rest about 1/16" higher than the right side.* Now the knife will contact the stone only on its right side, which will enable you to grind the knife consistently and straight. It's impossible to produce a straight edge if you attempt to grind flat across both sides of the stone, so from now on the tool rest should be set at this very slight left-to right slope. At this point it's nearly time to turn the machine on, check your set-up, and begin sharpening.

Using and maintaining the stones

It's a good idea to do your practice work using the standard 1000-grit stone that comes with the 9820-2. If you've purchased one of our Green Wheels, you might find that it cuts too fast for comfort until you get your basic technique ironed out. If you haven't already donned a shop apron or other foul-weather gear, now's the time; stone and steel stains will be with you always. Fill the drip tank with clear water and adjust the valve to provide a steady drip onto the stone. Shoot for about two or three drops per second when using 1000 or 6000 grit stones. You want the stone to remain wet without being washed clean, since a little build-up of muddy slurry on the surface makes sharpening go a lot faster and finer as well. Position the tank so the drip falls on the inner edge of the wheel rather than into the center hole. Don't let the stone run dry, as it will quickly clog and glaze over. If this happens to you, dress the stone lightly under full water flow with a piece of 150 or 200 grit wet-or-dry sandpaper wrapped firmly around a small block of scrap (or with the dressing stone described below) braced against the tool rest, working only on the right side of the stone where it's rotating toward you. Please note that wheels should only be trued while running on the machine, in order to guarantee that they are worn evenly and will continue to run balanced and flat.

The Green Wheel is so porous that it requires a steady stream of water at all times. The stream will fall into the center hole, but will centrifuge out to bathe the stone as needed. The tank will run dry relatively quickly with the valve opened for a steady stream, so pay extra attention to its water level. If the Green Wheel runs dry and becomes glazed, or if it becomes unduly hollowed during hand tool grinding, it can be dressed flat and clean by grinding a machine knife or hand tool over a sprinkling of silicon carbide abrasive grit. The silicon carbide dressing stone listed in our catalog also does a good job of dressing the Green Wheel. Use it on edge, butted against the tool rest, stroking back and forth across the right side of the stone.

If you sharpen machine knives fairly regularly, your stones should need no other dressing or flattening; every time you sharpen you're also truing the stones. When sharpening hand tools, move a tool across the surface as though its job were to dress the stone. The tool will get sharpened well, and you'll keep the stone from becoming too grooved or hollowed until you can true it again with a machine knife or a dressing stone.

Sharpening machine knives

First, just turn the machine on for a few seconds and turn it off again. If it runs silently, try again—that's not normal. The 9820-2 characteristically makes a sort of chugging hum while idling, a louder but steadier hum under load, and a sort of intermittent stumbling zoom while slowing down. All these sounds are normal products of the motor housing and of the large nylon reduction gear which drives the spindle.

You've installed a machine knife and set the grinding angle as closely as you could see. Now turn the sharpener on, set the water flow, and slowly rotate the angle adjustment knob until the knife edge just kisses the stone. With both hands securely but comfortably on the knife holder, slide the knife from left to right across the stone. You'll find that the weight of your hands flexes the tool rest forward to put the knife into firm contact with the stone. This is all the pressure you need for sharpening, and you might not even have to change any of your settings as you take a knife from dull to sharp.

Make two passes and stop. Wipe the knife edge (carefully!) and look at it closely. You'll see clearly where the stone contacted the bevel, and it will be obvious if you need to make any last fine adjustments to the grinding angle.

Make your strokes from left to right, rotating the holder up out of contact with the stone on the return stroke. Establish a smooth, steady rhythm so that every part of the knife gets the same amount of work done to it as it travels across the stone. If a knife isn't straight to begin with, work its full length with the same steady strokes, applying a little more pressure as you cross any high spots. Check periodically with a straightedge to make sure you're getting it straight, but don't be too obsessive about the results — remember, this is practice, and perfection isn't to be expected on your first time out.

As you sharpen, you'll notice that you're fairly quickly wearing a shallow slope on the outside edge of the stone to match the slight left-to-right downward slant of the tool rest. The wider this slope becomes, the faster the machine will do its job. Performance is ideal when the stone is worn in full width, presenting a 2-1/2" wide surface to work on. As the working surface widens, however, you'll have to adapt your technique to its changed condition.

For the purpose of illustration, let's say you've sharpened a couple of planer knives and have worn in a full-width 2-1/2"-wide slope on the stone. Through most of a sharpening stroke, you've got 2-1/2" of knife edge supporting the pressure you're applying, and if you move the knife steadily it will be ground away at a uniform rate. At the start and finish of each stroke, however, there's less knife edge (from 0 to 2-1/2") supporting that same pressure, and the knife gets ground away proportionately faster. A totally uniform stroke will result in a knife with 2-1/2" on each end dropping away; to avoid this you must change the speed of your stroke over the first and last couple of inches. You'll start your stroke just a little faster than normal, slowing down until there's a full 2-1/2" of knife on the stone. Then you'll proceed through the stroke at your usual steady pace, speeding up again over the last 2-1/2". Sounds tricky, perhaps, but it's easier to do than to describe. Just keep practicing and checking with your straightedge, and you'll have it down within two or three sessions. The technique remains the same with any stone.

Sharpening hand tools

Hand tools may be sharpened freehand, partially jigged by supporting them on the tool rest, or (with plane irons and most bench chisels) fully controlled in a hand tool jig that we sell for the purpose. Just as with machine knives, setting up by eye is quick and more than accurate enough. Put a tool in the jig and let the cutting edge protrude by 1-1/2" or so. Make sure the tool rest is set parallel to the stone's slope angle. Place the jig (clamp bar forward) on the tool rest, and rotate the angle adjust knob to

lower the tool until it touches the stone. Rather than altering the height of the tool rest to get the bevel angle right, simply push the tool farther forward in the jig to set a shallower angle, or pull it back to make the angle steeper. If a plane iron's cutting edge is ground square, adjust its position within the jig to make the edge lie flat across the surface of the stone. If the edge is out of square, put the high side into contact with the stone and leave the low side just a hair above; by the time you've ground the edge into full contact it will be square. Bevel-edged chisels are most easily squared by varying the torque on the jig's two knurled nuts. If a test pass shows you're wearing the chisel's left side more than the right, back the left nut off 1/2 turn and tighten the nut on the right accordingly. Then make another test pass.

Freehand sharpening (on carving or turning tools, for instance) is easiest with the tool rest removed. Unlock the two front knobs, loosen and flip out of the way the two tabs that hold the height adjustment nuts in place, and lift the rest assembly straight out of the housing. Now present the tool to the stone at the appropriate angle and let the machine do most of the work. Just as with sharpening by hand, stop every ten seconds or so and check your results. If you're doing it right, do it some more. If you ground one side more than the other, or if your angle control wasn't quite what you wanted, amend your technique and try again.

The relatively narrow edges of hand tools present you with the opportunity to hollow your stones quite rapidly. It's difficult to avoid some degree of hollowing, but as mentioned earlier, the problem can be minimized by judicious technique. Use the full surface of the stone. Work as if you're trying to dress the stone evenly, and the tool in hand will be sharpened well while the stone remains in good condition.

We hope you enjoy your 9820-2 as much as we have ours, and that it gives you many years' reliable work and fine sharpening. If you have any questions that a little more practice can't answer, please don't hesitate to give us a call.

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