

I found this information on the web about a year ago. At that time I saved the information for my personal use. With the creation of the Yahoo scraping group I found that the original site is no longer available, nor have I been able to contact Tony. In the absence of the original, I am posting this information. I will leave it posted unless I hear that Tony objects.

John

Tony's Precision Scraping Page

I published this page to assist beginning scrapers achieve faster proficiency with their scraping technique.

I became interested in scraping about 2 years ago. Intrigued by the shiny iridescent scrape marks on precision tools, gages, and machine ways, and inspired by rec.crafts.metalworking, I decided to try my hand at this mysterious process. To the uninitiated like myself it seemed like a magic trick to take a machined surface and increase its accuracy by "distressing" the surface of the metal.

After reading the many posts on RCM, I decided to get a copy of the famous "Connelly Machine Tool Rebuilding" book. I eagerly read the book, and couldn't wait to get started scraping. I took an old 14" mill file, ground the end as per my interpretation of the book's instructions, and started delicately scraping an old beat up cast iron surface plate. Well that file seemed to gouge everywhere but where I wanted it too, with awful results. I couldn't see how I could ever subject a machined surface to this barbaric process.

I tried re-grinding the file to various angles. I tried slowly grinding so as not to draw temper from the file steel. I tried careful stoning on a oilstone. But the file either scratched or skidded around on the cast iron. I decided that the Connelly book would look nice sitting on my bookshelf and I took a break from scraping. At this point I was in agreement with Fred Colvin, who wrote that scraping was wasted effort and a passing fancy!

Awhile later (via RCM) I heard that the Dapra Corporation sold scraping equipment, and I decided that I would give this scraping thing one last shot. So I called Dapra and they sent their catalog. It contained some interesting reading material regarding scraping. I decided to order some scraper handles and carbide blades, which they billed my account through MSC. It was a small investment that I felt was worthwhile. At this point I would like to say that I have no relationship with Dapra other than being a satisfied customer.

I received the my order and couldn't wait to try everything out. The following pictures and explanations will illustrate my technique as it has evolved to this point, and hopefully will be interesting to any newcomers to scraping. I'm not saying this is the only way to do it, but this has been my practical solution.



These are your basic tools. The Red "CANODE" water soluble non-toxic marking/spotting compound. It is non-drying, shows the high spots, and doesn't stain your hands. Its great stuff! Once you scrape off the high spot, the red coloration disappears! It doesn't smear itself under the blade. I believe this is a very important property, because you can easily see areas that still need to be scraped without going over previously scraped areas.

The metal piece with the square hole is a control gauge. It has 3 forms that allow you to gauge the arcs of the carbide inserts should you desire to re-sharpen them. You can gauge 3 different radii. The square hole represents one square inch, in which you can place this on your scraped surface and count the amount of bearing spots (per sq".) The other edge is sharpened to be used for deburring a scraped surface prior to spotting.

The two scraper handles have different ends. One is designed to hold your basic microlapped flat carbide insert for scraping with 4 cutting surfaces (RIGHT). The left side scraper handle holds a carbide blade for the half-moon style of scraping. Not only does it have a convex arc, but the bottom of the blade is also convex. The downside is that you get only one cutting surface with this blade.

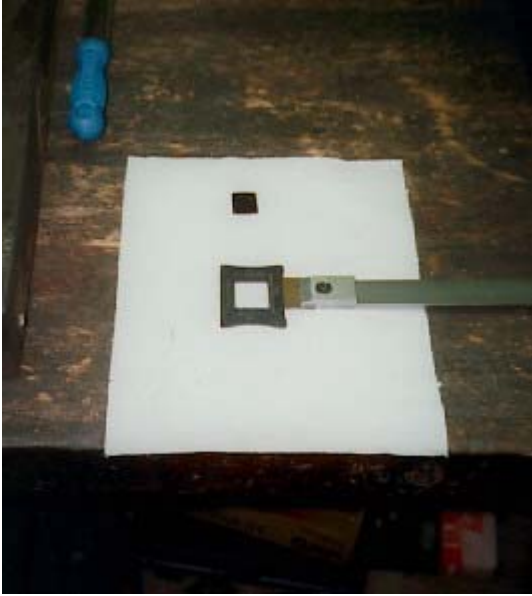
Above the control gauge, there appears to be a green colored shiny object. That is a 3/4" carbide scraper blade. It has a mirror finish so its hard to photograph. This type of blade gives you 4 cutting surfaces. Top and bottom, front and back. They come in various widths, from 3/4" to 1 1/4". I use the wide blade for roughing in and then move to the narrower blade for more control. They cost approx. \$35.00 each.

Should you damage a cutting surface, you can dress it on a carbide grinder. Set the table to the proper angle, and take a light sweep across the diamond wheel. You can use the control gauge to make sure you haven't changed the radius.

The silver tube contains Prussian Blue spotting ink, which I haven't used yet.

Yes, you can probably make your own handles and maybe even blades. But if your a beginner and you want to start scraping without re-inventing the wheel and second guessing yourself, I don't recommend it. The components are easily obtainable at a reasonable cost, and will last a long time.

The following pages contain more pictures and explanations. The pictures will slow things down, so I hope you have a speedy connection!



This picture shows the 1 1/4" blade in the scraper handle against the control gauge. The 3/4" blade is at top.



Here I am scraping the last remaining high spots of the surface plate that I am re-finishing. This will represent one of many passes I will have to make to eliminate all the low areas on this plate. The scraper handle is placed on the plate to "point" to the high spots for purposes of illustration.



Here I am scraping off the high spots. With a little practice I was able to accurately guide the blade to the high spot to be removed. Where I see a high spot, I pass the blade over initially with light pressure in order to view where the blade is cutting. When I see that I'm on target, I then apply greater pressure to remove the high spot on subsequent scrapes. When cutting with light pressure, you are only removing tenths or less, so don't worry too much if your "off course."



I use a fine mill file to de-burr the surface prior to placing this workpiece on my master surface plate. Use light pressure and keep the file carded (clean). Don't scratch your work with the edges of the file. You can also use a flat oilstone, but it make more of a mess (IMOP).



Rub your hands of you work surface and master gauge surface to detect any grit, burrs, or dirt. They must be perfectly clean or you will get false reading and damage your master gauge.



Apply your spotting ink to the master surface plate. This particular one is a granite toolroom grade "B", calibrated to .0001" This is sufficient for my purposes. Don't use too much ink. Just a little will do!



Here I use a open cell foam roller to spread out the spotting ink. Work it all around like your making a pizza!

Far better than applying by hand! This will make a very even coat. Ink Roller from Dapra of course.



This is the inked master gauge surface plate ready for spotting. It has a very thin ink coating. The granite surface is almost transparent through the ink.



The cast iron surface plate has "assumed the position", and the ink is being transferred to the high spots. I use a very small circular motion to assist in the marking process. It is critical to have handles on the plate. You cannot safely place the plates together or separate them without a firm hold on the work surface. You risk damage to your master gauge if you drop the cast iron! Also, when the two surfaces are placed together they will become wrung. It

can be quite the dickens to separate them! I try to evenly lift off one end first in a kind of hinge motion.



OK, our work is cut out for us now! With the two plates separated & high spots marked, its back to scraping. It is evident that the lower left corner and upper right region are low areas in comparison to the central diagonal area. So get your scraper and start "erasing" the red marks. I am working on a heavy workbench which will resist the forces I am applying with the scraper. It is solidly against the wall so it doesn't spring under the pressure from my body. Another thing you will notice is that your arms get tired as hell. That is normal. I was speaking to a scraper from LS Starrett and he visits the chiropractor regularly. When your arms get tired, just take a walk and swing them around some 'till the strength comes back.

Last words for now.....

If you are a beginner, and start out with the right tools, you will learn much faster that I can illustrate here. There are other shortcuts that I picked up, and you will develop your own too! As I don't have a digital camera yet, I don't have a picture for everything. All I can say is once I had these Dapra scrapers, it made a world of difference. So if your stuck in the scraping doldrums, don't despair yet!

Good Luck, Tony

Source: Dapra Corp.

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Visit the Dapra website: www.dapra.com

Also, McMaster Carr has the Andersen style tube scrapers on their website <http://www.mcmaster.com> Search on "dovetail scraper"