

Demagnetizing Tools

By R. G. Sparber

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Magnetism can be a wondrous force. It holds Dial Test Indicator supports securely to a steel surface along with countless other applications. But it can also be maddening. Tools that have picked up magnetism attract bits of steel and iron swarf from all over the shop. Fortunately, there is a way to reduce if not eliminate this magnetism.



You could buy a purpose built demagnetizer but an old soldering gun works well.

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Here I have a dish of steel swarf and a low cost screwdriver. I dipped the screwdriver into the swarf.



Up came a few bits of swarf.



I then took one of my rather strong magnets and stroked it with the screwdriver. This magnetizes the screwdriver by forcing all of the magnetic domains in the metal to face the same way. In this state, it would be handy for holding steel

screws as I begin to screw them in.



You can see that the amount of swarf picked up has greatly increased.



I then turned on my soldering gun and passed the tip of the screwdriver through the loop as shown. The gun produces a magnetic field that reverses direction 60 times per second so returns the screwdriver to its non-magnetic state with the magnetic domains facing in random directions.

I know, I know, this picture doesn't show my finger on the trigger. It was on the camera button...



When I dipped the tip of the screwdriver into the swarf, nothing stuck.

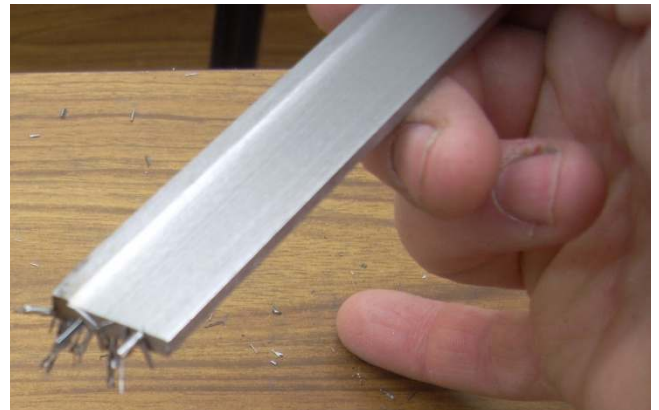
Understand that the operative word here is “cheap” as it applies to this screwdriver. Soft steel magnetizes and demagnetizes easily.

My next test involved my high quality parting tool made of High Speed Steel.



After a few strokes on my magnet, the parting tool picked up almost all of the swarf.

After passing it through the soldering gun's loop a few times, the attraction was greatly reduced but not eliminated. A light wipe with my finger did knock all of the swarf off.



I tried

- passing it through the loop while also striking it
- passed it slowly through the loop
- put it in the loop and then turned on the gun
- pulled it through the loop and moved it many feet away before turning off the gun.

I didn't notice any difference in effectiveness. I also tried replacing the gun's tip with a coil of wire which was less effective than just the tip. I suspect that the longer wire had a lot more resistance than the tip so less current flowed. Even though there were more turns in my electromagnet, the reduction in current caused a net decrease in magnetic field.

I'm confident that a stronger AC magnetic field would completely demagnetize the tool.



My final test was with a tap of moderate quality. It sure makes a good magnet after a few swipes on my magnet.



After a quick trip through the soldering gun's loop, no swarf sticks to it.

I also tested an Allan wrench and had similar results.

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I welcome your comments and questions.

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