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Mid Iowa Tools, Inc.
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INSIDE THIS ISSUE:

OFTEN MISUNDERSTOOD AND RARELY EVALUATED!

Spending a lot of time trying to find the perfect grinding wheel that will give you the wheel life, stock removal rate, surface finish and total cost that you are looking for? The tool you are using to dress and true the grinding wheel probably deserves more attention than it is getting. The dressing and truing tool can significantly impact all of the wheel performances mentioned above. The dressing process may not be understood or applied properly. Or just a refresher of application information on these tools might be useful? Want to get the most out of your grinding application? The story should be shared with machine operators of the grinders. Please read and share "The Whole Story...." by Norton.

The Whole Story...

NORTON

Using Tools to Dress (and True) for Success

By Bill James, Product Engineer, Stationary Tools, Saint-Gobain Abrasives

Before a grinding wheel even touches a workpiece, it must first be trued and dressed, usually by a stationary diamond dressing tool. If you do this task right, then you can be sure that the wheel and parts coming off the machine are probably ground right.

It's true: everything the tool does to the wheel, the wheel does to the part. That's why you should always begin troubleshooting grinding operations with a quick review of the truing and dressing processes. After all, truing and dressing are where the grinding process really begins.

By definition, ***truing*** ensures that the wheel is properly formed and that its spin is concentric to the mounting spindle. ***Dressing*** ensures that the abrasive particles are sharp during production grinding.

Each time a wheel is taken off a grinding machine, it must be re-trued. After production begins, the wheel should be occasionally dressed to restore its grains' sharpness.

The rumors are true. Sharp diamond tools create sharp wheels, and dull tools produce dull wheels. Sharp wheels (also called ***open*** wheels) can remove the maximum amount of workpiece material during grinding. In lay terms, grinding with a sharp wheel is often fast and easy. By contrast, dull wheels (also called ***closed*** wheels) remove less material, often making grinding slow and hard. In addition to cutting less, dull abrasives literally rub the part and create smoother or lower surface-finish readings on the workpiece(s).

Sharp, open wheels are generally the preferred wheel condition. They tend to produce higher surface-finish readings and may require some intentional dulling to lower finish readings.

Creating an open (sharp) wheel is easy: Either 1) use a new stationary dressing tool or 2) move a tool - new or old - fast across the grinding wheel. Closed wheels simply require the opposite: 1) Use a dull tool, or 2) move the tool slowly across the wheel.

TENDING THE LAWN

"THE GRASS IS NOT, IN FACT, ALWAYS GREENER on the other side of the fence," writes Robert Fulghum in *It Was on Fire When I lay Down on It* (Villard Books). "Fences have nothing to do with it. The grass is greenest where it is watered. When crossing over fences, carry water with you and tend the grass wherever you may be."

Creating Wheel Conditions

Open (Sharp) Wheel	Closed (Dull) Wheel
Generally preferred wheel condition	Wheel conditioning you may need
Creates maximum wheel material removal	Minimum wheel material removal
Typically requires a new dressing tool	Typically requires a worn dressing tool
Move the tool faster across the wheel	Move the tool slower across the wheel
Typically produces high finish readings	Produces lower finish readings

To ensure that your tools last a long time, pay close attention to some key parameters when dressing conventional wheels:

Wheel removal per dress pass. On aluminum oxide wheels, we recommend removing 0.001 inches (on the wheel radius) per dress pass. Reduce this amount by 25 percent when dressing silicon carbide or seeded-gel (SG) wheels, and reduce it by 50 percent when dressing Norton® Altos® (self-dressing ceramic aluminum oxide) wheels.

Taking off too much wheel per dress pass overheats the diamond and often causes chipping.

Taking off too little per dress pass, the sound of the dress to get louder, the finish tends to drop, and size/taper issues become evident.

The speed at which the tool moves across the wheel. Run tools using a single diamond at one speed across the wheel, and those using multiple diamonds three times faster. Remember, the slower a tool moves across the wheel, the lower the part's surface-finish readings will be:

For single points, chisels and cone point tools - Traverse Rate (the speed the tool moves across the wheel) in inches per minute = 0.006 x grinding wheel RPM*.

For blades, grit (nib) tools and clusters - Traverse Rate (the speed the tool moves across the wheel) in inches per minute = 0.018 x grinding wheel RPM*.

*To calculate wheel RPM, divide Wheel SFPM (surface feet per minute) by (0.2618 x wheel diameter).

Avoid power dressing. If you need to reduce new wheel truing times, use an old tool as a roughing tool and save new(er) tools for production.

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Thank you for taking time to read and share this information. Contact your sales representative from Metro Tool & Abrasives if you would like to have instructional or educational seminars at your facility regarding dressing and truing, grinding safety and/or abrasive application solutions.

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