White Paper

Top Ten Bore Grinding Problems . . .
and how to solve them TODAY

An In-Depth Examination of One of the Most Difficult Manufacturing Capabilities to Master

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Top Ten Bore Grinding Problems ...  
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INTRODUCTION

Recently the Meister Applications Team got together to consider the bore grinding problems customers most frequently encounter and how they can be resolved. We present the results of this collaborative effort in a series of 10 parts to help you get to the bottom of any bore grinding issues you are experiencing.

If, after checking these top ten problems and solutions, you need to go deeper, contact us and we’ll do our best to help. Contact a Meister Applications Engineer. We may be able to offer just the right solution.

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TOP TEN BORE GRINDING PROBLEMS and how to solve them.....Today!

WHAT MAKES BORE GRINDING SO DIFFICULT?
Bore grinding is one of the most difficult manufacturing capabilities to master. In fact, compared to bore grinding, external surface grinding is a piece of cake. Here’s why:

1. The cantilever effect:
On its face, bore grinding seems like a simple operation. You send a spinning wheel inside a spinning part and oscillate it back and forth until the desired dimensions and surface finish have been achieved. Unfortunately to reach into the part, the wheel must be mounted on a quill (sometimes long...in essence, a cantilever).

You want the bore to be perfectly straight and perfectly round. However, as soon as you put pressure on the end of a cantilever, no matter how stiff, there’s going to be some amount of deflection. Then weird things are likely to happen.

2. The coolant issue:
Another challenge that external grinding does not have is getting coolant down into the bore while you are grinding it. Grinding creates a lot of friction and heat, which is bad for both the wheel and the part. Getting coolant into the bore is essential, but the wheel itself is an impediment to coolant flow. The problems created by insufficient coolant along with cantilever effect problems are compounded with deeper bores.

3 (Lack of) Speed Kills
With external grinding speed, surface speed is not much of an issue. If you need more of it you can use a larger diameter wheel so that the surface of the wheel is really flying even at moderate RPMs. With bore grinding you don’t have this option. The diameter of the wheel is limited by the diameter of the bore. Even with a high speed spindle, surface speeds for bore grinding wheels are relatively slow so grinding is much less efficient.

So you’ve got low cutting speed. You’ve got cantilever. You’ve got difficulty getting the coolant to where you want it, especially when you are down there at the bottom of the part. These are all things that make bore grinding more difficult.

There are ways to compensate for all of them, which we will explore in this paper.

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TOP TEN BORE GRINDING PROBLEMS and how to solve them….. Today! (part-1)

Taper...

Unlike the late night talk show hosts who read off “Top Ten Lists” starting at # 10 and working backwards until they reach the top, we are going to start with item #1 — taper. Variations of this problem are, by far, the ones most frequently encountered in bore grinding. We don’t think it’s fair to make you wait while we reel off solutions to a bunch of other problems until we finally get to the ones you are most likely to need. So here goes . . .

You have a taper problem when your bore is not as straight as it needs to be. The bore diameter becomes progressively larger or smaller towards one or both ends. In some cases the taper occurs at both ends resulting in an “hourglass” or “barrel” shaped longitudinal profile.

If you are having taper problems here are the best things to try, first one at a time, then in a variety of combinations until you hit the taper-free sweet spot.

Solution # 1: Change Your Oscillation Stroke
If your bore is small (tight) on one end or both it is likely that the ends are not seeing enough of the wheel, while the center of the bore is seeing all of it on each pass (two times during each stroke). The solution may be as simple as increasing the length of the stroke, so that it extends further into, or just beyond, one or both ends of the bore. This insures that every area of the bore gets an equal amount of time exposure to the grinding wheel. Conversely, if the center of the bore is small but the ends are large, do the opposite by reducing the stroke on one or both ends so the wheel spends more time in the center. There is a nice graphic on our tools page to illustrate how oscillation can affect the shape. Follow THIS LINK to see it.

Solution # 2: Dress A Reverse Taper Into The Wheel
What if the bore is relatively shallow and the wheel covers its full length, but you are still getting taper? How does that happen? You would think that every area of the bore would be getting equal exposure to the wheel’s surface.
Unfortunately, this is where the reality of “deflection” comes into play. The pressure of the wheel on the part tends to deflect the quill & wheel away from the surface of the bore. So the surface of the wheel is never entirely parallel to the surface it is grinding. This slight deviation from parallel may cause unacceptable taper in the bore where the quill/wheel is bent slightly away from it.

Sometimes, an easy way to make this problem disappear is to reverse dress a compensating taper into the wheel. The wheel will then have a shape that is the opposite of the tapered bore. This may be all you need to do.

Solution # 3: Increase Spark-Outs
Spark-outs are a period of time where the wheel is oscillating but not feeding— typically consuming 2-5 seconds at the end of a 20-second bore grinding operation. So spark-outs can occupy up to 25% of the machine cycle. Some manufacturers cast a greedy eye upon those 2-5 seconds, thinking of them as useless air-cutting time that could be slashed for the sake of productivity improvements. Whether spark-outs were minimized intentionally or not, ones that are too short can result in taper problems. Here’s why:

During the spark-out, all the forces that have accumulated during the grinding cycle are allowed to relax. If the wheel was deflected during grinding it will relax back to parallel during spark-out and grind those places that were tending to taper. So increasing the spark-out period a second or two is often a fast and easy solution for correcting this sort of taper problem.

Solution # 4: Retract and Regrind:
Sometimes spark-outs can take a long time to slowly relax all of the forces that have accumulated in the spindle and you need to keep cycles as short as possible. In this case, another way to approach the situation above is to back off the amount of the taper and then come back in and regrind — sort of a mini grind cycle. When you back off the part, the wheel is no longer in contact, so everything can straighten out faster. Then you can go back and grind the tapered area quickly without adding much time to your cycle.

Solution # 5: Sharpen The Wheel To Make It More Aggressive.
Since the most common cause of taper in a part is deflection in the quill, the sharper your wheel, the less the quill deflects. So sometimes just having a sharper wheel will mean less deflection and less taper. You get a sharper wheel using aggressive dressing parameters.

You won’t always benefit from having a sharper wheel, but more often than not, you will. As a matter of fact, this solution is one that can be applied to seven of the ten bore grinding problems cited in this blog. To learn more about getting a sharper wheel refer to our tutorial “How To Be A Smart Dresser.” (Click Here)
Solution # 6: Make a Taper Adjustment on Your Machine
Many machines allow the user to make a taper adjustment by swiveling the work head and/or the grinding spindle to compensate for taper. This type of adjustment can be made on most machines but the ease with which this can be done varies considerably. With newer CNC machines these adjustments can often be made in seconds via the control. Some high-end equipment will even compensate for taper automatically. People with these machines have probably skipped this discussion of taper problems.

With older, less automated equipment you will have to stop everything and haul out your wrenches, loosen and tighten bolts here and there to tweak your taper compensation. This is not an exact process. So it may take several times to get it right. In addition, if you do eliminate taper with trial and error mechanical adjustments to the machine you may be misaligned for the next part numbers in your grinding queue and have to go back to the adjustment process once again.

This is why mechanical adjustments to older machines should only be the method of last resort for correcting taper. It is far better to get to the root cause of taper by using some of the best practices listed above.
Roundness …

After taper, the next most common bore-grinding problem is roundness. Maintaining roundness to within the specification is critical to the ultimate performance of the component—affecting such things as lubricant retention and distribution, leakage, vibration levels, friction and ease of assembly. We want our parts to be as round as possible, within the specification, without compromising efficient grinding cycles.

Roundness is defined as the amount of deviation from the nominal shape to the actual shape after grinding. These deviations shown in the image produced by your roundness measurement system can look like a jagged mountain range. However the sharpness of these peaks and valleys are generally of no concern unless they fall outside of the concentric control limits or form an unusual shape.

Even nominally round parts are not perfectly round. Some are oval, some are lobular, and some have other “non-circular” shapes. (See figure-1 for examples of non-circular measurements.) Complex scientific analyses of these characteristics performed in the quality lab can reveal how certain irregularities within your grinding process (such as harmonics and vibration) are impacting the parts roundness profile and its performance. (That’s not our concern here.)
Our concern is this: You have a grinding process that has been producing round parts and now they are drifting out-of-round. What are the most likely fixes for this problem?

1. **Increase Sparkout**: Roundness problems are often caused because there’s still deflection or forces built up in the quill or the wheel during grinding that need to be relaxed. The simple solution here is to make sure everything has relaxed properly by increasing your sparkout before retracting the wheel.

2. **Speed up The Workhead**: Sometimes increasing the rotational speed of the part will fix the problem. This is especially true if roundness issues are resulting from a harmonic, which is eliminated by changing the workhead speed. Going faster also reduces the depth of cut per revolution, which often reduces grinding forces, deflection, vibration, etc.

3. **Sharpen The Wheel**: Sharper wheels cut more efficiently. Sharp wheels require less force and generate less vibration, both of which have a negative impact on roundness. So sharper wheels produce rounder parts. Optimizing your dress is a great way to ensure you are getting a sharp wheel. See our [Dressing Calculation Tool](#) for more information.

4. **Turn Down the Coolant Pressure**: If you have a long part to grind it is a good idea to push in a substantial amount of coolant to improve cooling and material removal. Unfortunately, within the narrow confines of a long cylinder, grinding wheels can actually hydroplane on highly pressurized coolant. This causes the wheel to deflect and the part to be out-of-round. We have seen many instances in which backing off on the coolant pressure has fixed a roundness problem.

Those are the most common and easiest fixes for roundness problems.
TOP TEN BORE GRINDING PROBLEMS and how to solve them…TODAY! (part-3)

Staying In Shape

Taper—discussed in a previous blog—always means that the walls of the bore are straight; they’re just not parallel. When we have shape problems the walls of the bore are neither straight nor parallel. They are typically either bowed out (barrel shaped) or bowed in (hourglass shaped).

Don’t forget when we say “barrel shaped” or “hour-glass” shaped, these are just figures of speech indicating the general direction of the out of shape condition. It is not something that you are likely to see with your naked eye.

The most common out of shape problems encountered in bore grinding are 1: barrel shapes and 2: hourglass shapes. These conditions are, in general, easily corrected.

For barrel-shaped parts there are two common solutions. The best bet is to extend the oscillation stroke so that the wheel moves a little further out at each end of the bore. This is similar to what you do to correct inward taper at one end of the part. Since the inward trending condition of the wall occurs at both ends, the oscillation stroke needs to be increased at both ends as well. This is the most common solution for barrel-shaped parts.
If this doesn’t fix the barrel shape, then the cause of the problem may be insufficient coolant reaching the center of the bore. This can result in thermal expansion of the wall at the center of the bore. This unwanted expansion drives the wall into the wheel, causing more material to be removed in the center than at the ends.

In this case you can do a couple of things. First, check that the coolant application is adequate; adjustment of your nozzles and/or pressure may be required. Second, sharpen the wheel with more aggressive dress parameters. The more efficient cutting action of a sharper wheel reduces the incidence of heat build up at the center of the part. As a result, the walls remain straight and parallel. *(For advice on how to select the best dressing parameters, please refer to our post “How to be a Smart Dresser”).*

For the hourglass out of shape condition there is one typical solution, to reduce the in and out position of the oscillation stroke. The hourglass out of shape condition results when you are oscillating the wheel too far beyond the ends of the bore. Therefore, the wheel will be spending more time grinding at the end positions than along the interior of the bore. This will cause the outward bowed hourglass shape. Reducing the extension of the stroke at both ends will often correct the problem.

Finally, there is an additional out-of-shape problem that results in neither an hourglass nor barrel shape. It’s a weird condition where the bore is out of shape at one or several locations along the bore. In many instances we have found this to be caused by heat generated when a wheel that it slightly too big for the job randomly restricts the flow of coolant at one or more locations and, again, thermal expansion results in uneven material removal. Here the solution is to dress the wheel down so that the wheel is smaller in diameter and the coolant flows more freely.

A less common but equally puzzling cause of the random shape issue results from an overabundance of coolant, which causes a hydroplaning effect. This too can often be solved by turning down the coolant pressure and/or making the wheel smaller in diameter.

There is a chart on our “Tools / Calculators” page that is designed to assist you further with common solutions to shape problems by adjusting the oscillation stroke. Please follow [THIS LINK](#) to download your own copy.

Getting and staying in shape is a relatively simple matter. Unfortunately, beauty is sometimes only skin deep. So in our next excursion into the 10 Most Common Bore Grinding Problems, we will address problems relating to Surface Finish.

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Surface Finish Too Rough
I need to hold a certain surface finish and my parts are coming off too rough. I don’t have a finer grit wheel to try. What can I do?

1. Increase the wheel speed. This is the most common solution. Imagine you’ve got a little guy sitting out on the surface of the wheel with a shovel and every time that wheel comes around he takes a scoop.

The faster you spin the wheel in a given amount of time the smaller those scoops need to be in order to take away the same amount of material. The smaller the scoops, the smoother that part is going to be.

So increasing the speed of the wheel should make your finishes smoother. That’s the most common solution. Unfortunately, in many cases when people are bore grinding they are already doing so at maximum rpm. So you have to do something else.

2. Increase Oscillation. Increasing your oscillation speed or the length of the stroke will make a smoother finish. This will increase the effect of the abrasive cutting at angles that are different from the wheel’s rotational direction, and will create more of a random grind pattern that should improve the effective surface finish.

3. Use Longer Sparkouts. The longer you dwell with no feed at the end of the cycle, the smoother your finish will be. This is because smaller and smaller “scoops” are removed each wheel rotation while the built-up forces within the grind system relax. This is likely to solve your finish problem but at the cost of longer cycles.

4. Make the Wheel Duller. This is counter-intuitive but if you still can’t get your part smooth enough, try using less aggressive dressing parameters to make your wheel duller and back off on your feed rate. You may lose a couple seconds on your cycle time but you will most likely get the surface finish you are looking for.

If you are running into this problem a lot, then it is time to consider purchasing a finer grit wheel; And look for part 5 in our top 10 bore grinding solutions...fluctuations after dressing...in our next installment.
TOP TEN BORE GRINDING PROBLEMS and how to solve them...TODAY! (part-5)

Fluctuations After Dress
Problem: You are grinding a lot of parts between dressing cycles. Every part looks fine until you dress the wheel. Then the first one or two parts on the next cycle look horrible. It could be size or surface finish but something is thrown off after dress.

Solutions: When you come in and run the rotary dresser across the wheel, whether you like it or not you are changing the top layer of the abrasive, and that could result in an unacceptable shift in part quality in the next parts off the machine.

Change your dressing parameters: If you are experiencing this problem, the first thing to do is collect some data on your process. Say you are grinding 100 parts between dress cycles. Assemble all the data for size, surface finish, roundness, taper, etc. for those 100 parts and determine if some aspects of your process are drifting. It could be that the first part after dress looks so bad because the process has drifted too far and the newly dressed wheel is bringing that into focus.

If this is the case, it is very likely that you need to change the parameters you use to dress the wheel. This is easy enough to do if you use Meister’s Dressing Calculation Tool, which was designed to assist you in setting up the optimal parameters for rotary dressing of vitrified CBN and Diamond grinding wheels.

Keep in mind that the way you dress a new wheel is not the same as the way you redress a wheel as it is being used cycle after cycle thereafter.

During the first dress you may want to make several passes to get the new wheel nice and round. Subsequent dresses generally require only a single pass to re-establish the desired wheel condition. If you are using the new wheel approach for your redress cycles, then you might be over-dressing and very well get the type of problems we are discussing here. If you optimize your dressing parameters, this problem could go away.

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**Increase Dress In-Feed.** Sometimes the unexpected change is what the dress cycle does to bring your process back to where you want it to be. For example, as you grind 100 parts they continue to be straight and with good finish but the size is getting smaller and smaller because your wheel is getting smaller and smaller too. So you come in and dress the wheel. The machine should compensate for that and your size should come right back up to where you want it. But it doesn’t. It keeps on getting smaller. The most likely reason for this is that the wheel wore more than the amount of the dress. Therefore you may need to increase the dress infeed on the wheel and the machine compensation will then bring the part size back to where it should be.

**Dress more frequently.** Another solution is to dress more frequently. For example if you are dressing 5 microns every hundred parts, maybe you should dress 2-1/2 microns every fifty parts. Your wheel life will be exactly the same but maybe that change in size after dress will only be half as much because you are dressing more often. This will only work, however, if your machine has enough resolution to accurately remove thinner layers during a dress cycle.

**Check the condition of your dresser.** If the steps above do not produce the desired results, you might want to take a look at your dresser to make sure that it still has all of its diamonds. Dressing wheels are tough but they do wear out over time. We run into this one more often than you might think!

Tooled-up. Clockwise (hDD dresser, cDD form dresser, CBN ID profile wheel, Diamond external wheel)
TOP TEN BORE GRINDING PROBLEMS and how to solve them…TODAY! (part-6)

Metal Loading in The Wheel

During bore grinding you want your wheel to stay nice and clean, but sometimes it becomes caked with metal flakes. This condition is caused by metal loading and when it occurs the loaded areas produce metal on metal rubbing instead of clean cutting. This rubbing will result in various problems, including scratches, deflection, and potential cracking due to excessive heat.

Metal loading on the surface of a CBN wheel

The first line of defense against metal loading is your coolant. The purpose of coolant is to minimize heat while washing away the metal chips that might otherwise load into the wheel. Adjusting the coolant nozzles may be all you need to do. Make sure you have enough pressure and flow, and be sure the nozzles are pointed in the right direction. Also check that the filtration system is working properly and that chips aren’t being re-circulated into the machine. If there is a chiller to maintain a constant temperature, check that too.

The next thing to check is the diameter of your wheel. It may be just a little too big for the bore you are grinding and this can “starve” the flow of coolant to critical areas. In this case, reducing the wheel diameter could fix the problem. A properly sized bore wheel is typically 80%-90% of the unground bore size, however there are exceptions, and a small adjustment can sometimes make a big difference.

Third, check is whether the wheel is unknowingly being asked to remove more stock, more quickly than it was designed to. A common example of where this happens is when something changes in the manufacturing processes of pre-machined bores that you are trying to grind and they are coming in undersized. These often undetected changes in bore diameter can starve the coolant and accelerate metal loading as the wheel makes contact sooner than it should, often when it is still on rapid approach.

Always keep in mind that grinding is a finishing operation. So you want to start out with parts that are as close as possible to the final diameter you are looking for. Ideally, grinding will just remove a little material and leave a nice finish. Bad things happen to parts when grinding is used to correct dimensional issues that should have been addressed in earlier stages such as machining, heat-treating, etc. Finally, it is possible the wheel may not be sharp enough to scoop out material efficiently and avoid metal loading. If this is true, try sharpening the wheel with more aggressive dress parameters.

This is the ultimate fallback solution for a wide variety grinding problems and is easy enough to do if you use Meister’s [Dressing Calculation Tool](#).
TOP TEN BORE GRINDING PROBLEMS and how to solve them...TODAY! (part-7)

What’s All the Chatter About?
Those annoying zebra-like stripes that can mar the finish of an otherwise good looking part are called “chatter.” Chatter is usually caused by vibrations that may come from a number of sources.

First, the chatter may be the result of harmonics in your grinding process. The grinding machine represents a mechanical system of components; machine parts, spindles, bearings, quills, wheels, etc., each with their own natural frequencies of vibration.

Whenever one or more of these components is excited at or near its natural (harmonic) frequency, those components can vibrate violently, and those vibrations can be transferred right into your ground component resulting in chatter marks. You may be able to eliminate this harmonic vibration by changing some parameters in your machine—rotational speed is a good bet. Change the work head speed to spin it faster or slower and often the chatter goes away. If that doesn’t work, try reducing the wheel speed, keeping in mind the wheel may act softer with higher wear.

The next thing to look for is excessive runout in the grinding spindle, quill or wheel. Runout in each of these components can compound on one another, and the cumulative effect at the tip of the wheel can be surprising. Excessive runout can cause vibrations that will result in a chattery surface finish.

However, even if the runout is in spec, you should also check to make sure the grinding system and its components are properly balanced. Most vibrations begin from an imbalance somewhere in the system and can cause chatter.

Finally, chatter might come from a wheel that is not cutting efficiently. If this is true, try sharpening the wheel with more aggressive dress parameters, using Meister’s Dressing Calculation Tool, which was designed to assist you in setting up the optimal parameters for rotary dressing of vitrified CBN and Diamond grinding wheels.

Of course, this solution may be robbing Peter to pay Paul, since the more aggressive wheel may eliminate the chatter but produce a surface finish that is too rough. But if this works, you can always adjust the wheel spec on your next Meister order and arrive at the best balance of efficient, chatter-free performance.
TOP TEN BORE GRINDING PROBLEMS and how to solve them...TODAY! (part-8)

Noisy Grind
Noisy grind and chatter frequently go hand in hand. Chatter is usually something you see on the part. Noisy grinding occurs when you are standing outside the grinder and the machine is howling. Usually if you hear that, you're also going to see chatter marks on the part but not always.

Sometimes something just doesn’t sound right. Usually in the grinding process you shouldn’t hear anything unusual. But if you hear a high-pitched squeal like someone is dragging their fingernails across a chalk board, then something is probably not right.

One thing that can cause noisy grind is a wheel that is not round. This will cause an interrupted cut; in other words, the wheel is only going to hit on the high spots. At 60,000 revolutions per minute, this is going to sound like a scream. To fix this condition you may just have to dress the wheel until it is round. To help ensure the wheel is round after dressing you can use a crayon or paint pen to lightly mark the wheel first before dressing. After a few normal dress passes, stop and check the wheel to see if the markings are gone. Any isolated spots of color left will indicate a low spot in the wheel.

If noise persists, check your wheel, quill, and spindle nose for runout. Any of these components being out of round will cause noise. Place a dial indicator on each. The needle should be steady as you rotate these components. If one of the components does not pass the dial indicator test, it may be bent, improperly mounted, or in the case of the spindle nose the bearings could be worn out.

Finally there is the “old standby” solutions for many grinding problems...sharpen the wheel. If the wheel is dull and rubbing instead of cutting, it might actually deflect and bounce on the surface of the part. This can manifest itself in many ways (e.g. chatter, roundness and/or taper problems). However, the screeching wheel may be your first alert.

The old standby…sharpening the wheel

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TOP TEN BORE GRINDING PROBLEMS and how to solve them…TODAY! (part-9)

Hot Parts

Sometimes the parts come out of the machine hot and if you are attempting to grind to micron tolerances, this is a problem. The bore size of a hot part might measure in spec immediately after grinding; however, once it cools, it might shrink enough to be out of spec later on. The opposite might also occur, you could reject a hot part right off the grinder, but once it cools it could be on the money. To avoid these sorts of problems you want to have parts that are as close as possible to room temperature as soon as they come off the machine.

So why are the parts hot? The first thing to do is check your coolant. If your coolant is not taking the heat out of the grinding process, you are going to be chasing your tail. So check your coolant lines, your nozzles, the filter, etc.

If that does not work, you will have to get more analytical by identifying whether or not the parts are getting cooler or warmer during a production run. Let’s say you just dressed the wheel and you pick up part number 10 and it feels hot. You grind some more parts and check part number 20. It’s getting a little cooler. Check part 30. It’s better. Check part 100. Everything feels great. Then you dress the wheel and parts # 1,2,3,4 and 10 are all hot again.

This would indicate something going on with the dress. Maybe you are dulling the wheel during dress and it’s really struggling on those first ten parts and building up a lot of heat. It could also be the opposite. Maybe the parts feel fine at 10 and then they are getting hotter and hotter. That could mean that the way your process is set up, the wheel is dulling over time and you need to dress it more often to keep it sharp.

Finally, as in so many bore grinding problem-solving scenarios, remember:

- The more data you collect the better position you will be in to get to the bottom of any grinding problem.
- Sharpening the wheel with more aggressive dress parameters or a sharper acting dressing tool will often reduce the severity of most grinding problems or make them go entirely away.
TOP TEN BORE GRINDING PROBLEMS and how to solve them...TODAY! (part-10)

Wheel Wear

Full Disclosure: As a grinding wheel manufacturer, we don’t always consider wheel wear to be a problem. In fact, it can be a good thing because, as the wheel wears, dull abrasive particles are released from their bonding matrix, revealing sharp granules that are ready to bite into the part. On the other hand, we also acknowledge that users have a legitimate interest in getting the longest possible useful life out of their grinding wheels.

So how do you do that? One thing you can do is increase your wheel speed, taking smaller scoops per revolution of the wheel. This will generally make the wheel hold up better. Not everybody can do that, however, because they might be already maxed out.

A second thing is flatten your feed cycle. Many users have a grinding cycle that incorporates an aggressive feed rate during roughing, a medium rate in the middle of the cycle, moving down to a very fine feed or none at all (spark out) at the end. If a customer wants to increase wheel life, we sometimes suggest that they flatten the feed cycle by adjusting the feed rate during these phases so that they are closer to each other. (See graph.) don’t push the wheel so hard at the beginning of the grind cycle, ease up on the roughing feed rate and increase the medium and finish feed rates a little more.

Another thing you can try is improving your coolant application. One of the biggest enemies to wheels is heat. Wheels break down if they get too hot. Sometimes simply adjusting the position of your cooling nozzles or the coolant flow rate can greatly improve your wheel life.

So if your wheel wear is not what you would like, there are some things you can do. Unfortunately (for you) and fortunately (for us) you will eventually have to buy another wheel. When that day arrives, buy a good one that has been tailored to your application. It will perform better and last longer.
TOP TEN BORE GRINDING PROBLEMS …
And how to solve them…TODAY! (Conclusion)

And There You Have It…
An in-depth look at the top ten bore grinding problems and how to solve them. These top ten problems were identified by the Meister Applications Team after extensive research into difficulties most frequently encountered by our customers.

For a quick solutions guide, download our Top Ten Bore Grinding Solutions Chart here. Finally, if you need to go deeper, contact a Meister Applications Engineer and we’ll do our best to give you some suggestions.