

## Guidelines for Balance

By Bob Pethick CJF

Farriers should not be trying to straighten limbs in aged horses. You're simply trying to make the horse comfortable for its conformation. To help a horse become comfortable, you need to limit hoof distortion by trimming the hoof to bear weight as evenly as possible. A farrier's key to hoof balance is being able to recognize the cause and effect of distortion. If uneven growth is allowed to continue unchecked, the hoof capsule distortion could cause a breakdown of hoof integrity and eventually lameness in the limb. Uneven hoof growth due to conformation problems will compound those problems.

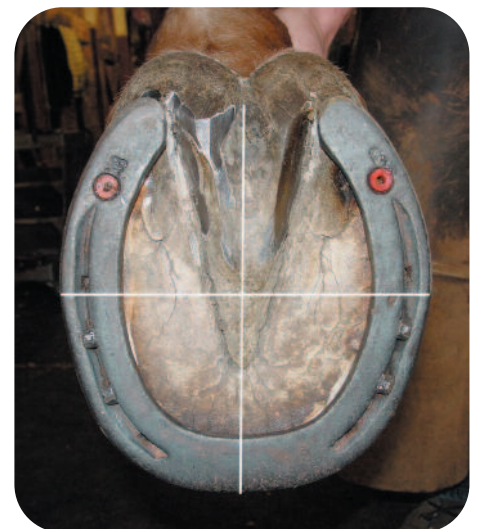
When farriers are dealing with a client whose horse has a balance problem, references that the farrier may cite may not be up-to-date. This problem may also occur when working with veterinarians. The farrier needs to be up-to-date on the current research and theories to be able to explain why the problem exists in the first place.

As farriers, we are working from the coronary band down. What happens above the coronary band can be seen in the distortion of the hoof capsule. My philosophy is if you can balance the hoof according to weight bearing, the horse will land and move the best it can for its conformation. I recommend using Russell's "center of gravity" as a point of



reference for solving hoof distortion problems. More precisely, using the center of the frog because the frog never really moves, the hoof capsule distorts around it.

A major influence on hoof angle is tendon tension. The amount of tension will change how the hoof loads. If you have an upright foot, chances are the deep flexor tendon will be tight which will limit the amount of load on the heels by transferring weight bearing to the toe, limiting toe and increasing heel growth. If you have a horse with a low hoof angle and under run heels, there will be less tension on the deep flexor tendon, increasing weight, limiting growth and crushing the heels.



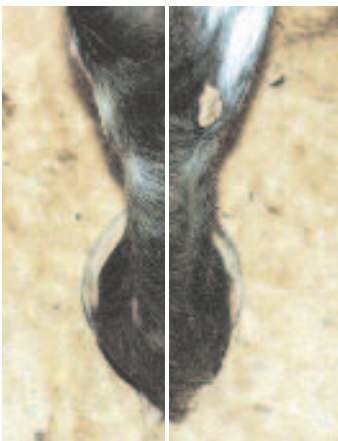
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For the hoof capsule to function normally, it is important to make sure that the hoof is trimmed to its proper proportions and kept symmetrical both medial/lateral and anterior/posterior. When you are limited with what you can accomplish with trimming, the fit of the shoe can complete the equation by providing a base of support or platform for the limb above it.

**Anterior/Posterior:** The hoof capsule interprets weight bearing and load in two ways. It either loads forward of the centerline or back of the centerline and tendon and suspensory tension allows the fetlock to drop what we consider normally, excessively, or very little. All of the above effect growth of the heels and toe. The least amount of growth will occur where the majority of the weight is applied. The hoof will grow at a faster rate where the least amount of weight is applied, causing an imbalance which is compounded over time. When you add torque at breakover it becomes more obvious why long toe low heel syndrome is as detrimental to soundness as it is.

**Medial/Lateral:** The hoof capsule also interprets weight bearing and load in two ways. It will be either base-wide, loading outside the centerline or base-narrow, loading inside the centerline. The



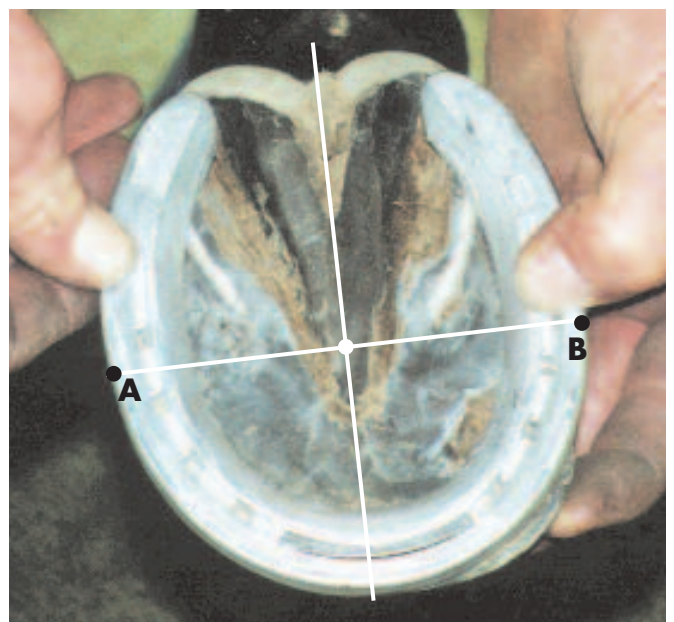
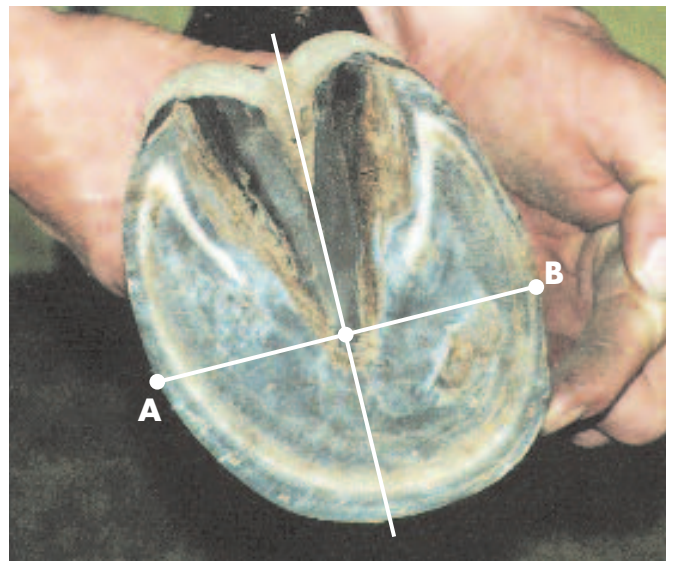
effects of base loading are seen from the widest part of the hoof back in the heel quarters. The quarter bearing the most weight will have the least amount of growth, become more vertical, closer to the frog and in extreme cases, considered a sheared heel. The quarter bearing the least amount of weight will grow at a faster rate away from the center of the hoof, causing an imbalance compounded over

time. Base-wide will effect the medial heel quarter. Base-narrow will effect the lateral heel quarter.

The second consideration is toe-in, toe-out conformation. This effects the hoof from the widest part of the foot forward or the toe quarters. The quarter bearing the most weight at breakover will have limited growth while the opposite toe quarter will grow at a normal or a faster rate becoming a flair. Toe-in will have a flair on the medial toe quarter. Toe-out will have a flair on the lateral toe quarter.

All distortion in the hoof capsule is a combination of weight bearing, compression, load and torque and is directly related to the conformation of the limb above it. Remember, whenever horses are standing on their feet these forces are at work effecting growth.

Once we have an understanding of why hoof capsules distort, only then can we actually start to “balance” horses. ■



THE TOOL CORNER

# Tool Problems?

One of the major problems that tool manufacturers face is the return of tools that the user considers to be defective. All manufacturers will readily admit there is potential for defects to occur. The most likely problems to occur in forging and shoeing tools are in the heat treat process or the raw material they used. When manufacturers inspect returned tools they are first looking for signs of incorrect heat treatment and material flaws. They will also be looking for indications the tool was not used correctly, resulting in the damage. This article will focus on forging tools and in future articles we will turn our attention to shoeing tools.

While all manufacturers are willing to accept responsibility for defects, the majority of tools that are returned are determined to have problems that are use (misuse) related. With forging tools there are a few common problems that occur and most tools have damage that is easily repairable by the user. Hot Iron Productions now has a DVD or VHS tape, "Tool Maintenance", that guides the viewer through step-by-step repair of common forging tools. Toolmakers like Roy Bloom, Jim Poor and Jim Keith often go through repair of tools in the clinics they participate in. Be sure to look for clinicians and events that can help you improve your tool use and maintenance skills.

Struck tools like forepunches and pritchels take the most abuse. They are designed to punch precisely as long as the tool is struck on center, not held too long in extremely hot metal and not driven into the anvil or to a point that the resistance is greater than the force of the blow. If a tool has been heat-treated, excessive heat, bringing color into the tool, will soon remove any heat treatment and reduce the tool to a relatively soft state. Once you have this kind of discoloration you can expect the tool to mushroom or even bend completely out of shape. If you have quenched tools with too much heat in the working end you may even set yourself up for breakage as the material will crystallize and become brittle.

Rather than return a tool to your supplier when it is damaged, inspect the tool and think through your steps in use of the tool to see if you may have accidentally created the problem. As mentioned above, most forging tools are easily repairable.

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## THE NATURAL ANGLE

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Many punches will be slightly softer on the struck end than they are on the working end. This is done purposely by the manufacturer. If your tool is too hard on the struck end there is a danger of chipping or breakage, causing a safety risk to the user or anyone nearby. According to Bloom, your hammer should also be slightly softer than the tool so that it minimizes the chance of excessive damage to the tool or chipping of the hammer. This intentional effort to soften the striking surfaces means you will have to do regular maintenance on the hammer faces, and the struck end of the tool. Again, a belt

sander or expander wheel with finer grit belts (100 grit) will be invaluable to increasing the longevity of your tools. Make it a part of your daily routine – it only takes a few minutes each day to dress your tools and make sure they are in good condition. Once they start to deteriorate, the pace of further deterioration is much more rapid.

Most pritchels are damaged as a result of excessive heat. Pritcheling should be done at a black heat, not when there is color in the shoe. You should also be careful to not pritchel too thick a slug. If you find your slugs are too difficult to get out you may need to use a drift to minimize the amount that has to be pritcheled. If you pritchel at a black heat you will also end up with much cleaner, more precise nail holes.

Your supplier is in the middle of the “defective” tool dilemma. They want to do everything they can to make sure you are satisfied. But, at the same time, they know that the manufacturers in the farrier industry don’t have the huge Craftsmen or Wal-Mart market that can allow the replacement of every tool that is damaged – no questions asked. Most manufacturers have a policy that states the tool should be returned directly to the manufacturer for inspection, repair or possible replacement. Try to be considerate of your supplier’s dilemma before you return a tool. Be sure it is truly a defect and not a problem that may have resulted from use or negligence. ■



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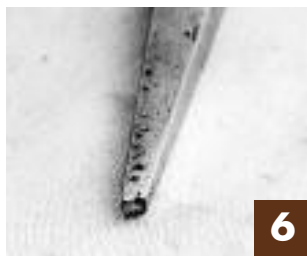
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**1, 2.** E-Head forepunch has been damaged because of excess heat and resistance.

**3.** Drift that was broken. End should be ground flat then taken to proper dimensions on belt sander. Don't allow it to overheat while grinding, if you can't hold it because of the heat it's too hot.

**4.** Drift back in working condition.

**5.** Home made gauge for establishing dimensions of punches. You can now buy this type of gauge (Bloom Forepunch Gauge) from your dealer.


**6.** Pritchel that was snapped, this is one tool that you can put back in the fire to fix. Carefully draw it back out to the dimension you are looking for, then use belt sander to finish.

**7.** Typical lack of maintenance on the struck end of tool. These edges should be dressed on a regular basis so that they don't reach this stage of disrepair. This tool could easily cause serious injury to the user or anyone standing nearby.



*Tool Maintenance* is the latest addition to the Hot Iron Production series of videos. It is available in DVD or VHS format. Also available now in DVD format – Volume 2 & 4 of the *Fundamentals of Forging* series.

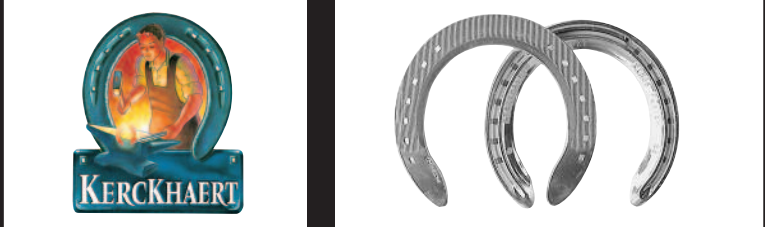
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