



DO YOU KNOW YOUR LAST WORDS?

Last manufacturers use four expressions that not everyone may be familiar with and, even those who are, do not necessarily fully appreciate what they mean in terms of a shoe's performance. They are pitch, spring, range and twist. All help footwear to fit properly and form an essential part of a shoe's mechanics in walking and running. Although they will vary according to the type of footwear involved, all lasts feature them to some degree.

PITCH

Pitch is used in reference to the height of the heel and how this affects the line of contact between the sole of the shoe and the ground. For instance, as the seat of the last is raised, so the line of contact moves forward approximately 3mm for every 12mm of pitch. This is why lasts with higher heels have shorter foreparts and vice versa.

A last with a high pitch should also have a wider forepart and a narrower seat as the weight of the wearer is

concentrated further forward in the foot. This poses a major problem for producers of ladies fashion shoes whose customers demand high heels and slim elegant foreparts. Unsuitable lasts coupled with the fact that women tend to wear shoes that are too small for them can be major causes of bunions and other foot problems from which so many of them suffer.

SPRING

Spring assists progression when walking. The raised toe of the shoe resists the downward pressure of the toes producing leverage at the ball of the foot. A shoe with a high heel needs little spring as the toes are already partially bent and the contact line well forward. This causes the foot to be placed down rigidly rather than flexed while walking. A low heel on the other hand, requires the foot to be bent considerably during walking so that more spring is required to compensate.

Spring is also affected by the rigidity or flexibility of the

footwear concerned. If a sole is very flexible, the shoe will bend more easily to follow the action of the foot and less spring is required. With a thick or stiff sole it is the reverse. This is why ladies ballerina styles have almost no spring whereas those with platform soles have exaggerated spring in order to produce a 'rolling' action.

Spring is also important in terms of fit which is why almost all lasts have it to some degree. The downward pressure of the toes referred to also produces a degree of longitudinal tension in the shoe which helps it to grip the foot. This is particularly important on ladies pumps or courts where the shoe is kept on the foot by a combination of back-curve, topline length and topline tension holding the quarters tightly to the foot. A high-heeled shoe of this type therefore needs toe spring for this reason, if not for the mechanics of walking.

RANGE

Range is used to describe the contours of the edge of a last relative to the harmonious blending of pitch and spring. It is considered to be good when the curves of these edges are smooth and flowing. If the range is broken in any way, these conditions cease to exist in terms of either the last's bottom or its profile. For example, when looking along the bottom of the last from toe to heel, the inside and outside edges of the forepart should harmonise.

While range does not affect the fit of the last in any way, it does determine the shape of the insole. The foot is curved at

the sides and has no defined edges. The shoemaking process does however, demand a defined or 'feather' edge to the last to ensure accuracy and final appearance where the upper joins the sole.

TWIST

Twist is the fourth element and refers to the relative transverse positions of the seat and forepart. For instance, if when looking at the outline of the last bottom the seat is rotated from the centre line of the forepart towards the inside, it is said to be twisted. Moving it more towards the outside therefore makes for a straighter last bottom shape.

This twist can also be judged in relation to the shape of the insole and the two will not necessarily be the same. For example, depending on the construction, there can be shoemaking advantages in having a last with a relatively straight outline but an insole with a small degree of twist which helps the insole to follow the last bottom more closely across the joint and through the waist.

Twist also applies to the transverse shape of a last bottom. If, when looking along the bottom of the last from seat to toe, an imaginary line across the seat appears parallel with one across the contact line, there is no twist. If there appears to be a variance between them, then there is said to be a degree of twist. A small degree of twist is often considered advisable with the contact line rising slightly towards the inside of the foot. 🌀



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