

Most people go for cement lasting for foreparts, cement and/or tacks for waists, and tacks for the seat. There is a wide choice of machinery and selection depends not only on technological suitability for the products to be lasted, but also on factors such as operator skills, climate and availability of service.

Choosing a **lasting machine**

Lasting used to begin with a drafting process where the upper was tacked temporarily to the insole at the seat and stretched over the last lengthways and tacked at the toe and in front of the joints to position it ready for toe, side and seat lasting. Known as 'pulling over', this operation was eliminated by the advent of adhesives and increasingly sophisticated lasting machines. The trend ever since has been to save cost by combining the different lasting processes, thus the toe is now normally combined with the sides and joints to last the whole forepart (*Figure 1*) and waists are combined with the seat to last the whole backpart (*Figure 2*).

Forepart lasting

These machines have seven to 11 pincers surrounding a central foot/injector block matching the outline of the insole (*Figure 3*). The pincers grip the lasting margin of the upper and pull down as the foot moves up to tension the upper over the last. The force of each is adjustable to allow a huge range of settings to suit the patterns and materials in use.

Most machines also project lines of light on to the upper to aid consistent vamp lengths and central positioning through manual adjustment by levers to suit each shoe. Adhesive is injected on to the insole from the centre block and a toe band holds the forepart around the feather while the pincers release their grip and wiper plates move in to flatten the lasting margin against the insole. Bedding pressure secures the bond and defines the feather edge before the shoe is released.

Separate waist lasting

For separate waist lasting, it is common to use equipment which secures only a small amount of the margin at a time with the edge of the upper being fed through

Figure 1: Molina Bianchi Sincron 11 pincer forepart laster



Figure 2: Ormac Universal Flex tack and cement seat & side laster

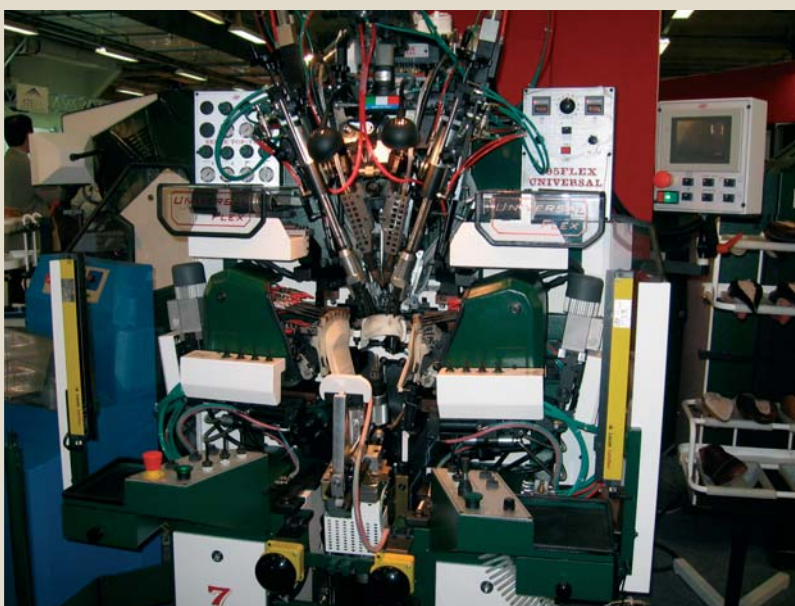


Figure 3: Typical 9 pincer forepart laster from Reces



a guide as the operator moves the shoe through the head of the machine. The upper is tensioned by either a pincer, followed by insertion of a tack or staple, or rollers preceded by an adhesive feed.

Seat lasting

The metallic attachment of upper to insole is popular for seat lasting as flexibility is not required and mechanical attachment is often considered more dependable than adhesives. It is normally the final lasting operation so the position of the upper is already determined and the machine can operate with the insole uppermost. The shoe is gripped by a seat band around the feather before wipers flatten the lasting margin against the insole, either preceded by an application of adhesive or followed by the simultaneous insertion of tacks.



Seat and waist lasting are often combined and basic seat lasting equipment has additional mechanisms to either pull the upper in the waist with pincers before wiping it in or to push it in with mechanical fingers, helical rollers (*Figure 4*) or 'tank track' devices. In combined machines, the sides can be cement lasted (the tracers run around the seat and down the waist), tacked or, for extra security, both.

Need for flexibility

The production of ladies' fashion shoes is extremely demanding in regard to the equipment used because of the great need for flexibility. One season can feature extreme high heels, the next flats. Toe shapes can vary from extended points to gently rounded shapes. Lasting machines must therefore be readily adaptable to cope with these parameters and changeovers must be performed with speed if production time is to be maximised. In addition, the materials used can also vary greatly, so the ability to set up for gentle lasting is far more important than sheer brute strength.

To these ends, the main manufacturers all offer sophisticated equipment with the ability to easily programme settings for a new last or material and retain them in its memory to allow fine adjustments to be recalled for use when necessary.

The range of toe shapes has particularly exercised engineering ingenuity and suppliers have adopted several approaches.

Ormac uses an adjustable, jointed cement imprinter to cope with changing toe shapes without the need for individual tooling of the cement delivery mechanism. Cerim, on the other hand, uses a pair of tracers in place of the imprinter (*Figure 5*), while Molina Bianchi goes for a small imprinter followed by tracers.

Very elongated pointed toes and wineglass shapes have necessitated further changes to lasting machines and leading companies were quick to slightly amend the action of their machines and to fit an additional insole support (*Figure 6*).

The joint area has also required particular attention, especially on high-heeled lasts. To ensure that the upper is tensioned in the most appropriate direction, the rear pair of pincers must be able to rotate in order to pull the lasted margin in behind the joints. This development later proved useful when it was added to the front pair of pincers to cope with wineglass shapes.

Side lasting for high heels is also demanding. Securing a small area at a time allows the change in profile and curvaceous nature of the lasts used for high-heeled, slender-waisted styles to be dealt with effectively. Seat lasting is fortunately not problematical and requires no special techniques.

Men's and low-heeled lasts

The comparatively easy production of men's and low-heeled footwear in general allows the use of simpler machines. ➤

Figure 4: Ormac seat and waist laster with helical rollers

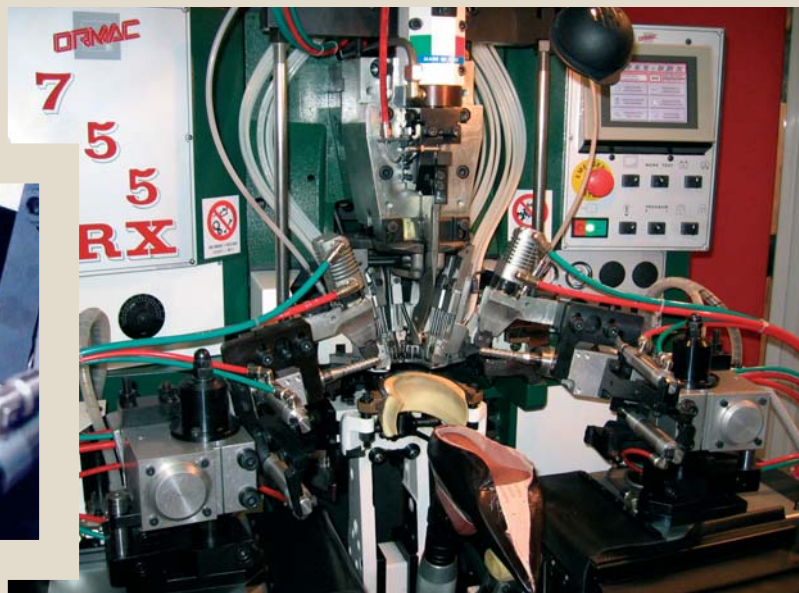


Figure 5: Cerim forepart laster with cement tracers

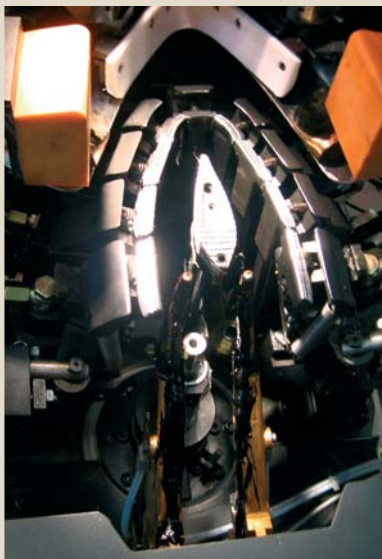


Figure 6: Cerim forepart laster with extra toe post for elongated toes



Less variation from style to style and low heel heights reduce the need for the most sophisticated and expensive engineering aspects of many lasting machines. Molina Bianchi offers a complete lasting line approved for use on adidas-Salomon footwear with this specifically in mind.

Similarly, children's shoes are not demanding in terms of power or flexibility but the tiny sizes do not need or allow multiple large pincers to grip the upper and smaller, simpler machines are the most suitable.

Other constructions

Welted and stitch-down constructions can be catered for on many of the machines developed for flat lasting through a change of fittings and settings. Basically, for welted footwear, this involves the movement of the wiper plates being limited and a flexible insole rib (which can be partially flattened during cement lasting) being used.

Stitch-downs—where stitching passes through the lasted margin of the upper around the featherline—use extended insoles. The outward flanging of the upper in this construction requires specially designed accessories and most forepart lasters can accommodate these extended insoles on a normal size roll. Large sizes, however, could prove to be beyond the capability of some models.

Many sports and safety boot companies now use combined constructions where the main part of the upper is a force lasted

bag. When using this as a complete process, compressing or gathering the material around the toe is difficult if heavy or synthetic materials are involved, so the toe is now sometimes left open to be 'toe lasted' on a forepart laster. Needless to say, this can be performed on the most basic machine available.

Before and after

Some upper styles such as those with large plain vamps will last more easily if pre-shaped on a blocking machine. Similarly, some pre-conditioning using steam and heat will help to soften the upper as well as reactivate the toe puff. Ladies' shoes in particular will benefit from backpart moulding to consolidate the back of the shoes, define the featherline around the seat, and set the back height.

To retain the shape and fitting qualities of the lasted shoe, it is necessary to either leave it on the last for several days or heat set it in a few minutes. As the latter setting is an intense treatment, heat builds up in the lasts and it is often desirable to use a cooling chamber to follow the process before the last is removed.

Selecting the ideal equipment

Considering all the factors noted above, selecting the optimum equipment is already a complex decision. And there are further considerations even before assessing the price. With footwear production taking place in some quite remote locations and extreme climates,

serious consideration has to be given to factors such as ease of maintenance and the availability of spares and consumables. Is there a specialist service engineer available within a reasonable time for difficult tasks? If not, then extra machines may need to be purchased as spares to ensure production is not lost.

Climatic conditions can also cause problems as dust can clog delicate mechanisms and high ambient temperatures cause machines to overheat and have problems with their lubrication systems. Where these considerations have not been addressed in the design of the machines, it is a common sight to see forepart lasters being run with their hoods open, which goes totally against common sense and safety considerations, even if not actually against local health and safety legislation. If clean compressed air cannot be guaranteed, it is best to avoid models which rely on pneumatics to a great extent and instead choose mechanical options such as hydraulics or oleo dynamics.

Ensuring optimum performance

It might seem self evident but lasting machines do represent a sizeable investment and, as such, are worth good, planned maintenance. This should ideally start with the operator carrying out basic cleaning and involve regular checks to ensure that lubricants are adequate and temperatures correct (basically no overheating of adhesives or wiper plates). This should keep the machine running well between the manufacturer's recommended services.

Materials and patterns are also important and the ideal is to have high quality upper materials with excellent extension and compression properties, gentle last shapes, good patterns and skilled operators. Reality is frequently very different and lasting becomes far more difficult as a result. As with most shoemaking operations, the problems caused by poor materials at lasting often mean that high-priced materials might actually be better value for money. Similarly, knowledgeable pattern cutters can minimise difficulties with fewer 'user friendly' materials and accommodate the action of machinery that is less than perfect for the product. There is also no substitute for operator training—the range of settings on modern machines provides both great flexibility and many opportunities to get it wrong. 🌐