

# THE NEW BLEDSOE CONFORMER DIABETIC BOOT

## Improved Model with Dual Density Midsole

### Special Techniques for Proper Fitting

There are several critical factors that must be considered when choosing and fitting the proper size Bledsoe Conformer Diabetic Boot for a diabetic patient with a plantar surface ulcer. These can be summarized as follows:

- The size and general shape of the foot
- The presence of deforming foot conditions such as Charcot
- The location of the ulcer site
- Proper centering techniques of the foot in the bootie
- Proper centering of the bootie in the molded midsole
- Standing to pre-compress the insole
- Proper positioning of the upright arms
- Proper fastening of the straps

### The Size and General Shape of the Foot

It is first necessary to know the regular measured shoe size and width. This permits selecting the proper boot from the general size range. Each size boot will fit approximately 2 shoe sizes. However, there is some variability based upon the foot width, toe length, the distance from the heel to the head of the first metatarsal, the spread of the metatarsal arch, and the arch height. A patient may measure size 12 in length using a measuring device. If you slide the small pointer to the first metatarsal head and read to the left of this, the patient requires a size 13. This is because the distance from the heel to the metatarsal head is a little longer, and the patient's toes are a little shorter. By sliding the width adjustment bar against the lateral side of the foot and permitting the patient to stand up, an additional scale varies the size according to the width of the foot and selects the proper shoe width. While the correct size is optimal, patients have been fitted in Conformer Diabetic boots up to one shoe size larger or smaller than the range shown with good results.

Once the shoe size is known, select the Bledsoe Conformer Diabetic Boot size from the chart on the back of the brochure. Each size begins with a men's even number shoe size and extends to the beginning of the next even number shoe size (size 8 - 9 will fit from 8 to 9 -3/4). Women's sizes and European sizes are also shown on the size chart.

With the new Improved model Conformer Diabetic Boot, it is no longer necessary to pre-fit the foot in the midsole as with the previous version of the Conformer. It is adequate if the foot fits entirely within the confines of the aluminum shell with at least 1/8" clearance and without touching any hard parts of the boot shell or D-rings. There should be about 1/4" spacing around the outer edge of the foot in an ideal situation.

### Heel Width and Partial Foot Amputations

You may try fitting the next smaller size boot or the next larger size boot if necessary to optimize the heel width on patients with heel ulcers. If the patient has a partial foot amputation, the boot should be fitted to optimize the fit on the remaining part of the foot. This is often best accomplished by using the correct boot size as if the foot were intact by measuring the opposite foot, or asking the patient their shoe size prior to amputation.

**Note: Test fitting the foot into the black midsole is an acceptable way to fit patients with varying degrees of forefoot amputation.**

## Deforming Foot Conditions Such As Charcot

The presence of a Charcot condition is not a contraindication for use of the Bledsoe Conformer Diabetic Boot. **In the new Conformer Diabetic Boot with the dual density midsole, Charcot patients can be handled if the foot will fit within the shell as stated above. On patients where the foot is so grossly deformed that the foot will not fit within the shell, or the shell cannot be formed slightly to accommodate the foot, the device is contraindicated and either a total contact cast or a custom-made AFO (such as a CROW Walker) should be chosen.**

## Location of the Ulcer Site

Special considerations during fitting can help reduce peak pressures based on the location of the ulcer. The Bledsoe Conformer Diabetic Boot is not intended for ulcers on the side of the foot, ankle, or leg. It is restricted to ulcers on the plantar surface of the foot. For a **forefoot ulcer**, the arms of the boot should be tilted **forward** on the sides of the leg for about **five degrees of ankle plantar flexion. This is not a typographical error!** The arms should be moved **forward** on the sides of the leg by  $\frac{1}{2}$ " -  $\frac{3}{4}$ " before removing the plastic covers and allowing the hook material to engage to the surface of the bootie. Plantar flexion will slow down the walking gait slightly, but will shift the apparent weight-bearing line posterior to reduce peak forefoot pressure while increasing heel pressure. This may reduce plantar pressures under the forefoot by an additional 10%-15% less than a neutral ankle position. **Note: See the published study on ankle position versus plantar pressures on our web site ([www.bledsoebrace.com](http://www.bledsoebrace.com)) for further details.**

If a **heel ulcer** is present, the **ankle** should be **dorsi-flexed by about five degrees**. The proximal ends of the arms should be tilted **posterior** by  $\frac{1}{2}$ " -  $\frac{3}{4}$ " before removing the plastic covers and allowing the hook material to engage the bootie. Ankle dorsi-flexion shifts the apparent weight-bearing line anterior on the foot to increase peak forefoot pressure while reducing peak heel pressure.

## CRITICAL FITTING TECHNIQUES

### Proper Centering Techniques of the Foot in the Bootie

**It is absolutely essential to position the patient's foot as far back as possible in the bootie with the foot properly centered from left to right on the white insole material.** There should be an even space between each side of the foot and the side edges of the bootie. If the foot is not centered in the bootie, the foot will not be properly centered over the black midsole when the bootie is inserted and centered in the boot. The horseshoe shaped foam pad at the back of the heel area inside the bootie may be repositioned as necessary to obtain a better fit.

### Proper Centering Techniques of the Bootie in the Walking Boot

After properly fitting of the bootie, the foam wrap should be closed over the forefoot followed by closure of the foam wrap around the leg. It is not necessary to place too much tension on these closures. **The bootie must then be very carefully positioned into the walking Boot centered on the black midsole. All edges of the bootie should be positioned at the perimeter edge of the walking Boot. The surged edge seam should be completely outside of the molded foot area in the black midsole. If any portion of the seam slips down into the molded area, a pressure point will occur that could lead to further ulceration.** Proper centering of the Bootie in the midsole ensures that the foot is properly centered within the foot shaped area of the midsole. The bootie should not protrude to the front or the back, and it should be centered from side to side in the heel and forefoot area.

## Standing to Pre-compress the Automold™ Insole

**Before attempting to remove the plastic covers from the upright arms of the boot or fastening the straps, the patient must stand on the boot with full body weight for 20 to 30 seconds.** Standing with full body weight helps center the patient's foot in the midsole, compress the white insole to begin the Auto molding process, and pull the position of the bootie slightly lower in the boot. If you fail to have the patient stand and pre-compress the insole, and simply remove the plastic covers and fasten the straps, the bootie will be captured in a higher position by the hook material on the arms of the boot. With each step the patient will compress downward in a pistoning motion, and as weight is removed the foot will be pulled upward in a rebounding motion. This up-and-down trampoline effect can cause abrasion and further ulceration. After the patient has walked for 1 to 2 days, the insole will remain compressed and completely molded to the perfect loaded shape of the foot.

## Proper Positioning of the Upright Arms

The position of the boot arms on the leg can shift the average weight-bearing line either anterior or posterior over the foot. Dorsi-flexing the ankle five degrees (shifting the proximal end of the arms 1/2 inch backward) shifts the apparent weight-bearing line anterior increasing forefoot pressure while reducing heel pressure. Plantar flexing the ankle by only five degrees (shifting the proximal end of the arms forward) shifts the apparent weight-bearing line posterior increasing heel pressure while reducing forefoot pressure. Dorsi-flexion of the ankle slightly increases the rock through speed. Plantar flexion slightly slows down the rock through speed. However, with neuropathic ulcers, the most critical parameter is reducing the peak pressure at the ulcer site. The upright arms should be positioned on the sides of the leg while the patient is standing and compressing the insole. This is accomplished by having the patient push their knee a little forward or a little backward until the desired position is reached. **While still standing, and with the upright arms in the proper position on the sides of the leg, the plastic covers are pulled off of the arms allowing the hook material on the inside of the arms to engage with the pile surface on the outside of the bootie.**

## Proper Fastening of the Straps

**The initial fastening of the straps should occur with the patient in the standing position bearing full weight to maintain the insole in a compressed condition.** After the arms have been positioned properly, the plastic covers are removed, and the upright arms of the boot with hook material on the inner surface are pressed inward slightly to engage the pile surface of the foam bootie. The forefoot straps should then be fastened followed by interlocking and fastening of the three straps on the lower leg. The lower leg straps engage the upright arms of the boot with hook and loop fasteners. It is important to achieve the same tension on the posterior portion of the strap as is present on the anterior portion of the strap. Pull with adequate tension and wrap the strap ends forward around the sides of the arms to engage the hook and pile material. The straps become interlocked with the upright arms to transmit shear forces. The hook end of the strap may then be inserted through the plastic D-ring on the end of the strap, pulled back to tension, and pressed to close. All straps should be fastened with the patient standing.

## Reforming the Automold Innersole

The Automold innersole will take a compression set after a couple of days of walking and will only rebound about 10% after the foot is removed from the boot. If the shape of the foot and dressing changes enough to warrant remolding of the foot shape in the bootie, it can be accomplished with a hair dryer or hot air blower. Wave the hair dryer back and forth on the inner surface of the Automold foam to achieve even heating until the material starts to rebound slightly. It will not completely return to its original condition, but it will rebound sufficiently to permit changes in the dressing or shape of the ulcer after debridement.

## Summary

If these techniques are properly observed, and adequate care is exercised in treating diabetic ulcers, you will soon see faster healing times than have been observed using other methods. In a properly fitted Bledsoe Conformer Diabetic Boot, the white Auto-molding insole will mold around every part of the foot and into every small crevice between the toes. The soft tissue areas in the arch and the perimeter of the heel will be somewhat pre-compressed to carry a higher load than is possible with a total contact cast or other methods. This optimizes the surface contact area and distributes the pressure more evenly. Learning how to reduce peak pressures is an integral part of a rapid healing situation. If the pressures are shifted too much to one area in an attempt to avoid pressure over the ulcer site, an increased possibility of secondary ulceration exists.

In older methods of treating ulcers, where a hole or a deformation is created beneath the ulcer, additional problems can occur. Pressure is increased around the perimeter of the hole creating a high-pressure boundary that can limit blood perfusion into the damaged tissues. The sudden reduction in pressure in the area of the hole beneath the ulcer site can cause increased exudate from the wound, and causes the wound to heel in a distended condition requiring secondary shaving of the distended area. Too little pressure on the ulcer site robs valuable surface area that can be used to distribute peak pressure.

Experience on hundreds of patients has shown that there is a low-pressure threshold below which undisturbed healing of the granulating tissues can occur. When the peak pressure drops below this boundary threshold, healing times can approach nearly normal soft tissue healing times for other parts of the body instead of the weeks and months that often occur with neuropathic ulcers. Since many factors present in the "diabetic soup" can affect healing time, one of the best indicators that peak pressures are much lower in a Bledsoe Conformer Diabetic Boot comes from patients that were previously treated using other methods and reached a stalled healing condition. In the Conformer Diabetic Boot many of these heal in a reasonably short time.