

# The iBalance HTO Opening Jack

## *A Technical Overview of Opening the Osteotomy with the iBalance HTO Opening Jack*

The iBalance HTO Opening Jack is used to open the completed osteotomy to the desired correction angle. The osteotomy should be opened slowly to its final position. Opening slowly will allow the cortical and cancellous trabecular micro structures to stress-relieve and aid in the prevention of macro fractures of the lateral cortex. The iBalance HTO Opening Jack consists of two arms (front and back), the Jack Turn Key, the Fastener and the Correction Guide (see Figure 1).

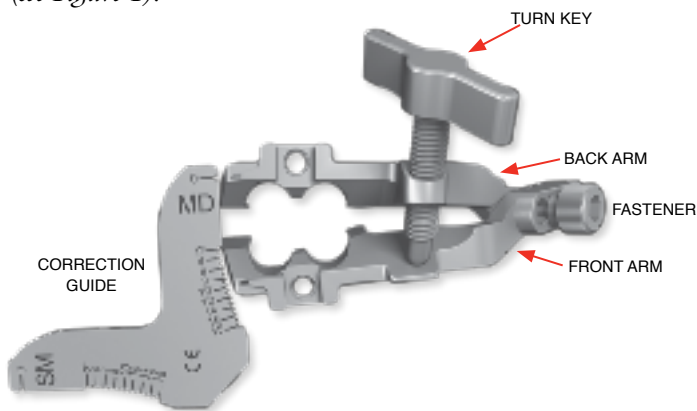


Figure 1: A labeled diagram of the iBalance HTO Opening Jack identifying the components of the system

The Turn Key is assembled into the Back Arm so that the hemispherical end rests on the Front Arm bearing surface. The Turn Key is rotated to provide the mechanical force necessary to perform the distraction. The paddles of the Front and Back Arms of the iBalance HTO Opening Jack are inserted into the osteotomy and the keyholes on the Jack are properly aligned to the prepared keyholes in the tibia.

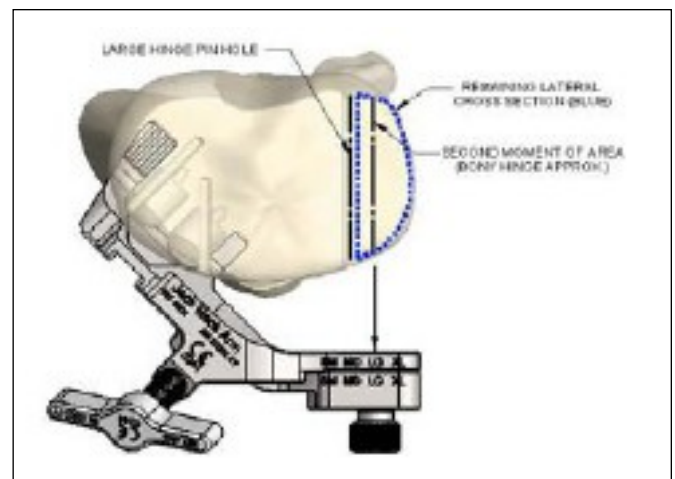


Figure 2. The iBalance HTO Opening Jack is adjustable to individual tibia sizes and opens the osteotomy around the theoretical bending axis of the bony hinge

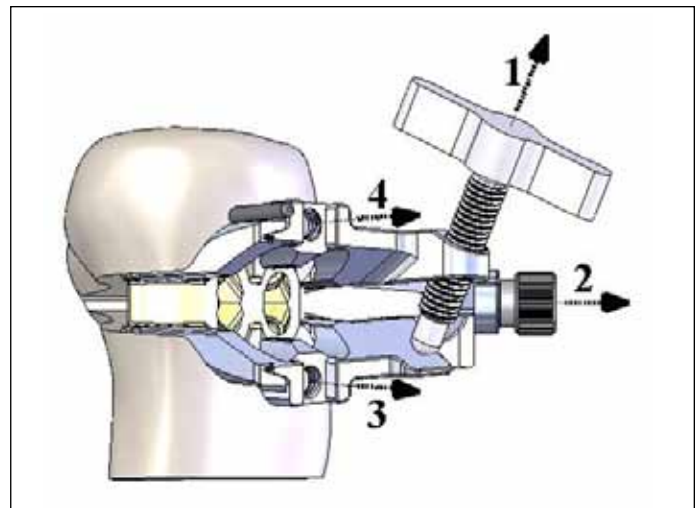
## How it Works

The Front Arm and Back Arm of the iBalance HTO Opening Jack are assembled using the Fastener to set the rotation axis that corresponds to the tibial width as shown in Figure 2. In other words, hinge axis of the Jack is selectable for the specific tibia size. To select the correct size, the Fastener is simply inserted into the size that corresponds to the preoperative planning. The Fastener tightens securely to the Back Arm leaving the Front Arm creating an axis about which the osteotomy is opened. This axis corresponds to the approximate second moment of area of the remaining lateral cross section of bone, shown in Figure 2 (outlined in the blue dashed line). The iBalance HTO Opening Jack design is intended to facilitate bending around the bending axis of the remaining bony hinge (just slightly lateral to the prepared hinge pin hole).

The Correction Guide is intended to provide the surgeon with a progress reference as the Opening Jack is slowly opened from 0° to the prescribed correction angle (determined during preoperative planning). The Correction Guide should be used only as an approximation and is reliable to within +/-2°, due to normal variation in bone stiffness and small variations in the iBalance HTO Opening Jack system itself.

Therefore, the Correction Guide and the Opening Jack function together as a reference for the approximate osteotomy wedge angle (within +/-2° typical tolerance) as well as a support structure for the osteotomy during insertion of the iBalance HTO Implant. After the prescribed correction angle is achieved, the Opening Jack is opened an additional 2°-3° to allow passage of the implant past the paddles. For example, if the desired correction angle is 11°, the Opening Jack would be opened until the Correction Guide reads 13°-14°. The “over” opening is required because the paddle features on the Opening Jack are configured between the implant and the osteotomy surfaces. After distraction is complete, the iBalance HTO Implant is placed into the osteotomy through the Opening Jack and into the prepared keyholes.

Once the iBalance HTO Implant is seated, the Opening Jack is disassembled piecewise and removed from the osteotomy site. Care should be taken to ensure that the implant remains seated while removing the components. The order of removal is shown in Figure 3. Remove the Turn Key first, the Fastener second, and then the Front Arm and Back Arm third and fourth, respectively.



**Figure 3. Piecewise removal sequence for the iBalance HTO Opening Jack**

Fixation of the iBalance HTO Implant can then be started as prescribed by the surgical technique guide.

The iBalance HTO Opening Jack plays an important role in the iBalance HTO Implant System. The Opening Jack is designed to completely open and support the osteotomy surfaces, while inserting the iBalance HTO Implant. The Opening Jack can be used as a reference to monitor the progressive opening of the osteotomy.

#### REFERENCE:

1. ER-122-0076-01 Rev A, *iBalance HTO Opening Jack Functional Analysis*, Document on file at Arthrex, Inc., Dec 2009.