



# Longevity<sup>®</sup> Constrained Liner

Surgical Technique





## Introduction

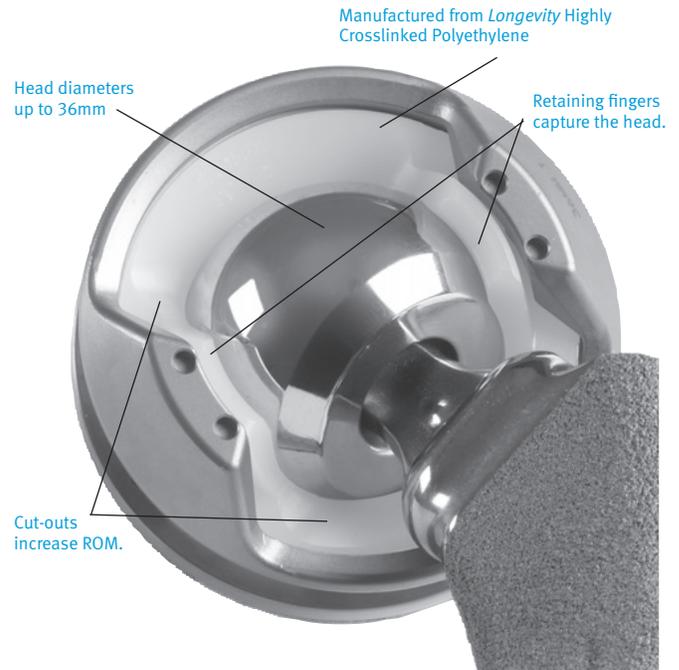
### Product Indications for Use

The *Longevity* Constrained Liners are indicated as a component of a total hip prosthesis in primary or revision THA where there is a high risk of hip dislocation due to a history of instability; bone loss; joint, muscle or tissue laxity; or disease condition. This device is intended for patients for whom all other options to constrained acetabular components have been considered.

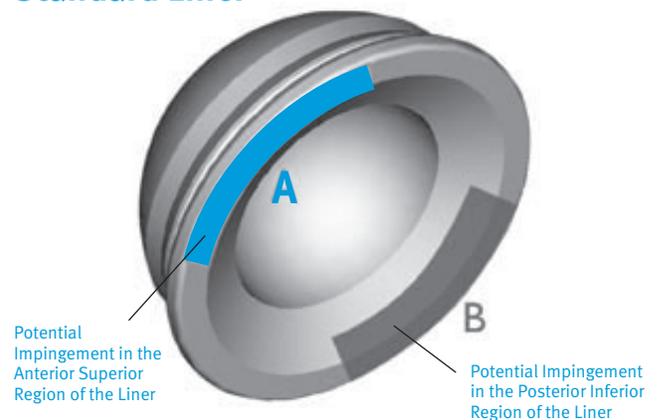
### Longevity Constrained Liner Design

The *Longevity* Constrained Liner was designed to be compatible with the *Allofit*® IT, *Trilogy*® IT and *Continuum*® Acetabular Systems.\* The *Longevity* Constrained Liner features cut-outs that can be placed where impingement is most likely to occur. In a study of 111 retrieved acetabular components, researchers identified two primary sites of impingement damage.<sup>1</sup> One site occurred where the neck impinged during full flexion or flexion plus internal rotation **A** (anterior-superior). The second site occurred where the neck impinged during external rotation in extension **B** (posterior-inferior).

## Longevity Constrained Liner



## Standard Liner



\* *Allofit* IT Acetabular System is not available in the United States.

## Liner Removal

Follow standard surgical techniques for shell insertion if a new shell is required, otherwise follow the steps below to remove existing liner.

- Upon removal of any Liner, inspect the taper and polyethylene locking mechanism for damage.

### Polyethylene Liner Removal (Bone Screw Method)

- Locate a 3.2mm or 3.5mm drill bit included in the Screw Kit.
- Drill a pilot hole into the dome of the Liner between the pole and the taper region of the Shell.
- Locate a non-self tapping screw.
- **A self tapping screw should NOT be used.**
- Drive the screw into the pilot hole by hand until the Liner is lifted out of the Shell. (Fig. 1)
- Special care should be taken not to damage the Shell taper or locking mechanism during removal of the Liner.

### Hard Bearing Liner Removal

- Attach the Liner Insertion Instrument to the Hard Bearing Liner by pressing the Suction Cup in the Liner. Ensure the Liner and Liner Insertion Instrument are clean and dry prior to attachment.
- Attach the single point Hard Bearing Remover to the Universal Handle by aligning the pins on the Universal Handle with the keyhole slot on the underside of the single point Hard Bearing Remover.
- Place the tip of the single point Hard Bearing Remover on the face of the implant Shell with the alignment tab between the outside edge of the Shell and the bone, between scallops on the thickest portion of the Shell. (Fig. 2)
- Place the tip of the single point Hard Bearing Remover entirely flush onto the edge of the metal Shell. (Fig. 3)
- Firmly strike the Universal Handle once with a mallet to dislodge the Liner from the Shell while pulling on the Liner Insertion Instrument.

**N** **Note: The single point Hard Bearing Remover should not contact the Liner during impaction.**



**Fig. 1**  
Screwing a non-self tapping screw into the dome of the Liner.



Non-Self tapping screw

Self tapping screw



**Fig. 2**  
Proper placement of the Hard Bearing Removal Instrument.



**Fig. 3**  
Proper seating of the single point Hard Bearing Remover.

## Supplemental Screw Fixation

Supplemental screws should be used only with a well-fixed *Continuum*, *Trilogy IT* or *Allofit IT* acetabular shell as the use of any constrained insert may lead to higher forces at the shell-to-bone interface. Ancillary screw fixation of the shell is strongly recommended to assist in maintaining fixation at the shell-to-bone interface.

## Screw Plug Removal

If screw plugs exist in shell, remove screw plugs from holes prior to inserting supplemental screw fixation.

## Screw Insertion

If Screw placement is desired:

- Carefully following these steps for Screw insertion can help to minimize Screw push-through or torque-out after initial Implantation.
- Drill a pilot hole, using either a Modular or one-piece Flex Drill.
- If using the Modular Flex Drill attach the selected bit using the Hex Wrench (Fig. 4). Check the bit to ensure that it is not dull.
- Position the Adjustable Drill Guide and Flex Drill into the selected Screw Hole. (Fig. 5)
- The screw angle may vary by as much as 36 degrees (inclusive). The effective lengths of the three drill bits available are 15, 30 and 45mm.
- Upon seating of the drill bit completely into the drill guide, the drilled holes will correspond to the effective length of the drill bit.
- For sclerotic bone, an option may be to tap the Screw hole.
  - Attach the Modular Tap Shaft into the Modular Handle by pulling back on the snap-lock collet and aligning the hole in the shaft with the etched line on the collet.
  - Attach the appropriate Tap to the Modular Tap Shaft.
  - Bicortical tapping the entire depth should be done with care by turning the Tap Handle clockwise.

**N** **Note:** Countersink screw heads below the interior surface of the shell to prevent the liner from contacting the screw head. Ensure that the screw heads are properly seated. Use a 3.2mm diameter drill prior to insertion of the screws. Avoid penetration beyond the inner cortex of the pelvis when drilling holes and inserting screws.



**Fig. 4**  
Attaching the bit to the Flex Drill with the Hex Wrench.



**Fig. 5**  
Inserting the Adjustable Drill Guide and Modular Flex Shaft into the Shell.

## Screw Insertion (continued)

- To loosen the set screw, turn it counterclockwise until the thread fully disengages from the flexible shaft. The set screw will be captured in the flexible drill shaft between the threads and the screw stop. (Fig. 6)
- Alternatively, the set screw can be removed by turning it clockwise to fully disengage the set screw. Place it into the set screw holder in the instrument tray.
- After either loosening or removing the set screw, remove the drill bit.

After drilling the pilot or tapping the Screw hole:

- Use the Depth Gauge to measure the depth of the Screw hole. (Fig. 7)
- Select the appropriate length Screw.
- Use a Screwdriver to insert it into the selected Screw hole. Screws cannot be inserted into the Polar Hole at the dome of the Shell. (Fig. 8)
- Check to ensure that the heads of inserted Screws are below the inner diameter of the cup. Screw heads that protrude into the inner Shell can prevent adequate seating of the Insert. (Fig. 9)
- Place additional Screws as necessary.
- Carefully evaluate the bone quality, and avoid over-tightening the Screws.
- To remove a Screw, engage the Screw with a Hex Head Driver and turn it *counterclockwise*.

**Warning: Avoid Screw placement through the Shell into the anterior inferior and anterior superior quadrants of the acetabulum to prevent injury to the neurovascular structures.**



**Fig. 6**  
Loosening the Flex Drill set screw.



**Fig. 7**  
Using the Depth Gauge to measure the screw hole depth.



**Fig. 8**  
Using a screwdriver to insert the screws.



**Fig. 9**  
Checking to ensure that the screws are properly seated.

## Provisional Liner Positioning

- There are two different Provisional Liners. One with a Locking Screw that is **independent** of the Provisional Liner, and one with a Locking Screw **permanently affixed** within the Provisional Liner.

**N Note: The Permanently Affixed Locking Screw should not be removed.**

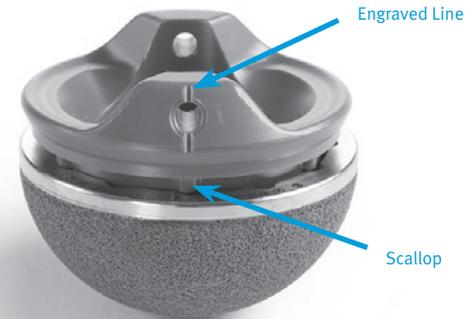
- Select the Provisional Liner size that matches the selected Shell or Shell Provisional.
- The selected Shell or Shell Provisional will be identified through a size and two letter code (e.g. 50 HH). There are different inner diameter Implant sizes available for each Shell size. The Provisional Liner will be identified by letter code matching the Shell diameter and desired inner diameter (e.g. 32 HH).
- Both types of Provisional Liners are inserted the same way; however, the Provisional Liner with Independent Locking Screw must first be assembled by using a Hex-head Driver to insert the Provisional Locking Screw through the Polar Hole of the Provisional Liner. The Provisional Locking Screw will have a silver ring. (Note: this ring will be gold if you are using the *Allofit* IT Acetabular System).
- Clean and dry the Shell or Shell Provisional with a sterile cloth, wipe or sponge to remove third-body debris.
- Insert the Provisional Liner by hand into the Shell or Shell Provisional.
- Ensure that the anti-rotation tabs on the Provisional Liner are engaged in the Shell or Shell Provisional scallops. The engraved line on the constraining finger will align with the scallops. (Fig 10)
- Use a Hex Head Driver to thread the Locking Screw into the Polar Hole of the Shell or Shell Provisional.

**N Note: Do not impact the Provisional Liner, as damage may occur.**

**When fully seated, the feature representing the constraining ring will not be in contact with the Shell face.**

**For those Provisional Liners with a lip, the locking scallops are covered up by the liner lip and will not be visible above the face of the Shell. (Fig 11A)**

**For those Provisional Liners without a lip, the anti-rotation tabs on the Provisional Liner will not be covered up by the lip and will be visible above the face of the Shell. (Fig 11B)**



**Fig. 10**  
Engraved line on the Constraining Ring aligned with a Shell scallop.



**Fig. 11A**  
Provisional Liner with (left) and without lip (right). Note that the feature representing the constraining ring is not in contact with the Shell face.



**Fig. 11B**  
Provisional Liner with (left) and without lip (right). Note that the feature representing the constraining ring is not in contact with the Shell face.



**Fig. 12**  
Correct Provisional Liner Constraining Ring placement for a left hip.

- **Important: The Provisional Liner is a direct representation of the assembled implant liner and constraining ring. Therefore, it is extremely important to make sure that all bone and soft tissue have been cleared from the periphery of the shell in order to help facilitate the proper seating of the liner provisional as well as the final implants. This is best accomplished by either direct visualization or by palpating the entire periphery of the shell.**
- The aim of the trial reduction is to locate the optimal rotational position of the constraining fingers to maximize range of motion. This position may vary from patient to patient because of variations in anatomy and shell placement.
- For the initial trial range of motion, one of the constraining fingers of the appropriate sized trial insert is placed at approximately 1 o'clock for a left hip or 11 o'clock for a right hip. (Fig. 12)

## Trial Reduction and Range of Motion

**N Note: The trial insert is used only to assess leg length and range of motion. It does not constrain the femoral head, as the actual implant does.**

A trial femoral head with the appropriate neck length is placed on the trunion of the femoral component and reduced into the trial insert. After the leg length and femoral offset are verified, a trial range of motion is conducted. The key ranges of motion should be assessed (Fig. 13), specifically:

- Maximum flexion in neutral rotation,
- Maximum internal rotation with 90° of flexion,
- Full extension (but not hyper-extension),
- Full external rotation in full extension.

If the trial range of motion indicates that the orientation of the constraining fingers does not optimize the range of motion, such as might be indicated by premature impingement, the screw at the dome of the trial insert can be released and the trial insert rotated to another position. Once the optimum orientation of the trial insert is determined, the position of the center of the constraining fingers, shown by an engraved line, is noted on the acetabular shell. This mark will aid in reproducing the location of the constraining fingers with the implant. (Fig. 14)

If satisfied with range of motion, remove the Provisional Liner.



Neutral Position. To optimize Range of Motion, the superior finger is placed at 1 o'clock for a left hip, and 11 o'clock on a right hip



External rotation in extension

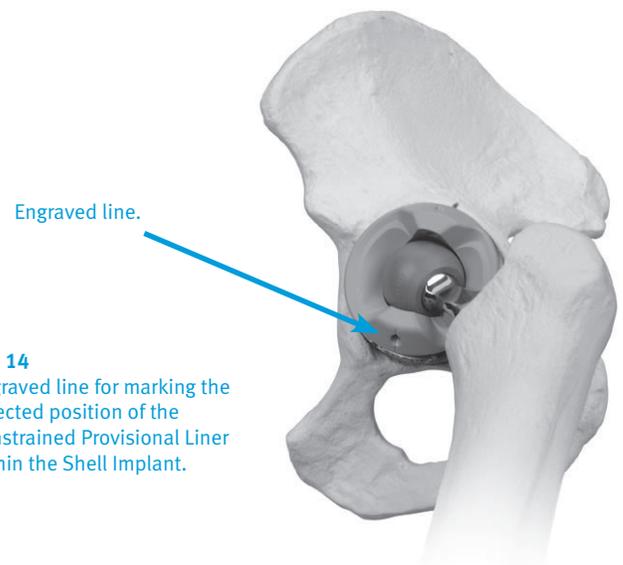


Flexion plus internal rotation



Full flexion

**Fig. 13**  
Trial Reduction Range of Motion.



**Fig. 14**  
Engraved line for marking the selected position of the Constrained Provisional Liner within the Shell Implant.

## Liner Insertion

- Prior to inserting the *Longevity* Constrained Liner, ensure that the Shell interior is clean and dry.
- Place the final polyethylene Liner into the implanted Shell by hand, or use the Liner Insertion Instrument.
- Spin the Liner until scallops engage.

**N Note: Before impactation, the polyethylene Liner will not be flush with the rim of the Shell.**

- Select the proper size constrained Liner Impactor Head and attach it to the Universal Handle. (Fig. 15)
  - Align the pins on the Universal Handle with the keyhole slot on the underside of the Liner Impactor Head.
  - Push the constrained Liner Impactor Head onto the handle and twist in either direction to lock it in place.
- Verify that the Liner is in the desired position prior to impacting the Liner.
- Place the constrained Liner Impactor Head on the Liner and strike the Liner until it is fully seated.

**N Note: Once Liner is seated within the Shell, it cannot be removed without causing damage to the Liner, necessitating removal and disposal.**

## Verifying Liner Seating

### Smaller Sized Liners

- Smaller sized liners have window cut outs to allow visualization of two anti-rotation tabs (Fig. 16A). This ensures that the tabs are flush relative to the shell. If additional Liner seating verification is desired, gently move the elevated portion of the Liner to ensure that it is locked into place.

### Larger Sized Liners

- Larger sized liners do not have the lip and therefore allow visualization of the anti-rotation tabs (Fig. 16B). After impactation, run finger along edge to ensure liner is flush with shell.

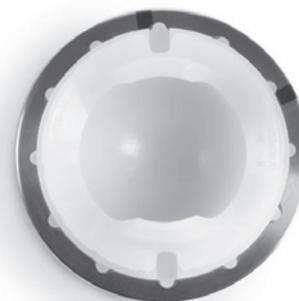
**N Note: Do not use the standard Liner Dome Impactor as it may cause damage to the constraining fingers of the constrained liner.**



**Fig. 15**  
Attaching the Liner Impactor Head to the Universal Handle.



**Fig. 16A**  
Window cut-out on smaller size Liners to allow visualization.



**Fig. 16B**  
Full visualization of the anti-rotation tabs on the larger size Liners.

## Implant Assembly and Final Reduction

### Preparation of Constraining Ring

To assemble the *Longevity* Constrained Liner, place the metal Constraining Ring over the head of the femoral component in the proper orientation (Fig. 17). The top-side of the ring with the two protruding fingers must point toward the femur. The underside of the ring, which will contact the face of the polyethylene liner, must be towards the patient's acetabulum.

**N** **Note:** For clarification, the ring is engraved with “TOWARDS FEMUR” and “TOWARDS ACETABULUM” (Fig. 18).

### Femoral Head Reduction

**N** **Note:** The metal constraining ring must be in place around the femoral neck before reducing the head into the liner.

Reduce the appropriately sized femoral head into the *Longevity* Constrained Liner by applying a continuous, steady force axially along the femur (Fig. 19). Attempts should not be made to reduce the femoral head into the insert with a sudden impaction force. Sudden impaction actually requires a higher force to be applied.



**Fig. 17**  
Placing the Constraining Ring over the head of the femoral component prior to inserting the femoral head into the Liner.



**Fig. 18**  
Engraving on the Constraining Ring to ensure proper orientation.



**Fig. 19**  
Reducing the femoral head into the *Longevity* Constrained Liner using a continuous steady force axially along the femur.

## Constraining Ring Assembly to Insert

- To attach the metal constraining ring to the insert, advance the ring from around the femoral neck to the face of the insert. (Fig. 20A)
- To ensure proper alignment of the ring, the titanium pegs on the flat side of the reinforcement ring must fit into the slots on the outside of the polyethylene liner.
- When properly positioned, the fingers of the metal ring are aligned with the fingers on the polyethylene liner.
- There are two types of Ring Impactors available. The Axial Constraining Ring Impactor and the Offset Constraining Ring Impactor. The Axial Constraining Ring Impactor is shown in (Fig. 20B).
- Select the appropriate size Ring Impactor and attach it to the Universal Handle.
  - Align the pins on the Universal Handle with the keyhole slot on the underside of the Impactor.
  - Push the Ring Impactor onto the handle and twist in either direction to lock it in place.
- The posts of the Ring Impactor are inserted into the holes on the constraining ring.
- Two or three moderate blows are applied with a surgical mallet to seat the ring onto the insert. (Fig. 21)

**N** **Note:** The Ring Impactors are sized according to the inner diameter of the insert (28mm, 32mm, and 36mm).

**N** **Note:** Soft tissue must be cleared from the periphery of the polyethylene insert in order to avoid trapping of the soft tissue between the insert and the metal constraining ring. This trapping of soft tissue may result in difficulty seating the metal constraining ring onto the liner. If difficulty assembling the ring is encountered, check the periphery for soft tissue impingement. After assembling the constraining ring to the insert, the range of motion is re-checked, and joint stability is checked by applying traction on the femur. If both range of motion and stability are satisfactory, closure of the wound proceeds as usual.



**Fig. 20A**  
Attaching the Constraining Ring to the Polyethylene Liner.



**Fig. 20B**  
Axial Constraining Ring Impactor.



**Fig. 21**  
Seating the Constraining Ring with two or three moderate blows.

The constraining ring is fully seated when the metal constraining fingers are seated either flush or slightly below the level of the polyethylene constraining fingers on the liner and is consistent on both sides of the liner (Fig. 22). This will be palpable if direct visualization is not possible. If the metal constraining fingers are not seated flush/slightly below the polyethylene on both sides (Fig. 23), check that there is no soft tissue trapped between the constraining ring and the periphery of the shell or liner and repeat the impaction with the Ring Impactor.

## Implant Disassembly (If Required)

To remove the constraining ring, insert a flat instrument, such as a quarter-inch osteotome, under the ring (Fig. 24). Apply rotational torque to the instrument in order to pry the constraining ring from the polyethylene snap feature. Carefully repeat this process at a few sites around the periphery of the ring until the ring is loosened from the insert.

**N** **Note: Do not reuse liner or ring if the part has been disassembled.**

Follow standard *Continuum*, *Trilogy IT* and *Allofit IT* Modular liner removal procedure for liner extraction.



**Fig. 22**  
Metal constraining ring is fully seated.



**Fig. 23**  
Metal constraining ring is not fully seated.



**Fig. 24**  
Removing the constraining ring with a flat instrument such as an osteotome.

## Postoperative Care, Indications, Contraindications and Warnings

### Indications

The *Longevity* Constrained Liner is indicated as a component of a total hip prosthesis in primary or revision total hip arthroplasties where there is a high risk of hip dislocation due to a history of instability, bone loss, joint, muscle or tissue laxity, or disease condition. This device is intended for patients for whom all other options to constrained acetabular components have been considered.

### Contraindications

- The *Longevity* Constrained Liner is contraindicated for use with skirted femoral heads due to reduced range of motion, and increased possibility of impingement and subsequent dislocation of the device.
- The *Longevity* Constrained Liner is also contraindicated for use in the following conditions:
  - Active or unresolved local or systemic infection
  - Osteoradionecrosis of the acetabulum
  - Skeletal immaturity

### Warnings

- This product should be used only with a well-fixed *Continuum*, *Trilogy* IT or *Allofit* IT\* acetabular shell as the use of any constrained insert may lead to higher forces at the shell-to-bone interface. Ancillary screw fixation of the shell is strongly recommended to assist in maintaining fixation at the shell-to-bone interface.
- The *Longevity* Constrained Liner and metal acetabular shell must be properly aligned to prevent impingement of the liner and femoral neck. Careful attention to position and range of motion must be observed. Impingement may lead to dislocation of the femoral head from the constrained liner.
- To avoid impingement, do not use a *Longevity* Constrained Liner with any femoral component or femoral head where the passive range of motion is less than 90°. This includes some collared stems and 6 degree femoral heads designated “short.” Provisional (trial) components must be used to confirm adequate range of motion of a particular stem/head/liner combination prior to making the final decision to implant a *Longevity* Constrained Liner.
- Assemble the constraining ring on the constrained acetabular liner only once. If the device is not assembled correctly, it should be removed and replaced with a new liner and constraining ring.
- Closed reduction of this device is not possible. Treatment of device dislocation will require additional surgery.
- Do not implant the *Longevity* Constrained Liner without the reinforcing ring assembled.
- Ring failure has been reported for similar devices. Proper monitoring should be conducted. If ring failure or dissociation is observed, additional surgery may be required.
- Where there is insufficient acetabular bone stock, bone grafting or other adjunctive reinforcement procedures to provide socket support and cup containment are recommended.
- Do not use the *Longevity* Constrained Liner with components of other manufacturers. Combining products of different manufacturers may lead to impingement, premature wear or failure of the device.

- This device is for single patient use only. Do not reuse.
- Do not use this product for other than labeled indications (i.e. off-label use).

### Precautions

- Do not use implant components (femoral heads or acetabular liners) to perform trial reductions. To avoid damaging implants, provisional femoral heads should only be mated with provisional liners and provisional liners should only be mated with provisional heads.
- To facilitate proper assembly, components must be at room temperature before implantation.
- To correctly position the metallic locking ring, surgeons should consult the manufacturer’s instructions for appropriate device assembly.
- Compatible constraining rings and constrained liners are packaged together and must be used together. Do not mix liners and rings from different packages.

### Adverse Effects

The following adverse effects have been reported for total hip arthroplasty:

- Early or late component loosening
- Component failure or fracture
- Component dislocation and/or migration
- Infection
- Metal sensitivity
- Inflammatory reaction and osteolysis
- Heterotopic bone formation, ankylosis, and reduced mobility
- Perforation of the acetabulum
- Wear
- Vascular complications
- Disassembly of modular components
- Pelvic or acetabular fractures
- Subclinical nerve damage

### Patient Counseling Information

This prosthesis will not restore function to the level expected with a normal healthy joint, and the patient should be instructed as to the limitations of the device. The range of motion achievable with a constrained liner is less than the range of motion of a normal joint, and less than with a semi-constrained prosthesis. The patient should be told that, although the constrained liner provides resistance to dislocation, it can dislocate if subjected to excessive loading. Once dislocated, additional surgery will be required to reduce the joint.

Patients should be instructed that significant reduction in the range of motion is inherent to the design characteristics of a constrained acetabular liner, and activities that may force the joint to exceed those range of motion limits should be avoided.

Please refer to the package insert for product information, including contraindications, warnings, and precautionary information.

\* *Allofit* IT Acetabular System is not available in the United States.

## Constrained Liners

### Longevity Liner, Constrained, 28mm

Item Number	Description
00-8758-009-28	Longevity Liner, Constrained, 50 HH x28
00-8758-010-28	Longevity Liner, Constrained, 52 II x28
00-8758-011-28	Longevity Liner, Constrained, 54 JJ x28
00-8758-012-28	Longevity Liner, Constrained, 56 KK x28
00-8758-013-28	Longevity Liner, Constrained, 58 LL x28

### Longevity Liner, Constrained, 32mm

00-8758-012-32	Longevity Liner, Constrained, 56 KK x 32
00-8758-013-32	Longevity Liner, Constrained, 58 LL x 32
00-8758-014-32	Longevity Liner, Constrained, 60 MM x 32
00-8758-015-32	Longevity Liner, Constrained, 62 NN x 32
00-8758-016-32	Longevity Liner, Constrained, 64 OO x 32
00-8758-017-32	Longevity Liner, Constrained, 66 PP x 32
00-8758-018-32	Longevity Liner, Constrained, 68 QU x 32
00-8758-019-32	Longevity Liner, Constrained, 70 RR x 32
00-8758-020-32	Longevity Liner, Constrained, 72 SS x 32
00-8758-021-32	Longevity Liner, Constrained, 74 TT x 32
00-8758-022-32	Longevity Liner, Constrained, 76 UU x 32
00-8758-023-32	Longevity Liner, Constrained, 78/80 VV x 32

### Longevity Liner, Constrained, 36mm

00-8758-014-36	Longevity Liner, Constrained, 60 MM x 36
00-8758-015-36	Longevity Liner, Constrained, 62 NN x 36
00-8758-016-36	Longevity Liner, Constrained, 64 OO x 36
00-8758-017-36	Longevity Liner, Constrained, 66 PP x 36
00-8758-018-36	Longevity Liner, Constrained, 68 QU x 36
00-8758-019-36	Longevity Liner, Constrained, 70 RR x 36
00-8758-020-36	Longevity Liner, Constrained, 72 SS x 36
00-8758-021-36	Longevity Liner, Constrained, 74 TT x 36
00-8758-022-36	Longevity Liner, Constrained, 76 UU x 36
00-8758-023-36	Longevity Liner, Constrained, 78/80 VV x 36

## Constrained Provisional Liner Kits with Independent Locking Screw

For use with *Continuum*, *Trilogy* IT and *Allofit* IT

### Constrained Core Kit KT-8798-100-00

Item Number	Description
00-5900-099-00	Instrument Tray Lid
00-8792-029-00	IT Constr Liner Core Instr Tray
00-8790-009-28	Constraining Ring Impactor 28mm
00-8790-009-32	Constraining Ring Impactor 32 mm
00-8790-009-36	Constraining Ring Impactor 36mm
00-8790-014-28	Axial Ring Impactor 28mm
00-8790-007-28	Liner Impactor Head 28mm
00-8790-014-32	Axial Ring Impactor 32mm
00-8790-007-32	Liner Impactor Head 32mm
00-8790-014-36	Axial Ring Impactor 36mm
00-8790-007-36	Liner Impactor Head 36mm

### Constrained Core Kit KT-8798-100-00 (Continued)

Item Number	Description
00-8738-009-28	Prov Liner, Constrained, 50 HH x 28
00-8738-010-28	Prov Liner, Constrained, 52 II x 28
00-8738-011-28	Prov Liner, Constrained, 54 JJ x 28
00-8738-012-28	Prov Liner, Constrained, 56 KK x 28
00-8738-013-28	Prov Liner, Constrained, 58 LL x 28
00-8738-012-32	Prov Liner, Constrained, 56 KK x 32
00-8738-013-32	Prov Liner, Constrained, 58 LL x 32
00-8738-014-32	Prov Liner, Constrained, 60 MM x 32
00-8738-015-32	Prov Liner, Constrained, 62 NN x 32
00-8738-016-32	Prov Liner, Constrained, 64 OO x 32
00-8738-017-32	Prov Liner, Constrained, 66 PP x 32
00-8738-018-32	Prov Liner, Constrained, 68 QU x 32
00-8738-014-36	Prov Liner, Constrained, 60 MM x 36
00-8738-015-36	Prov Liner, Constrained, 62 NN x 36
00-8738-016-36	Prov Liner, Constrained, 64 OO x 36
00-8738-017-36	Prov Liner, Constrained, 66 PP x 36
00-8738-018-36	Prov Liner, Constrained, 68 QU x 36
00-8790-010-00	Straight Universal Handle

### Constrained Jumbo Kit KT-8798-200-00

Item Number	Description
00-5900-099-00	Instrument Tray Lid
00-8792-030-00	IT Constr Liner Jumbo Instr Tray
00-8790-009-32	Constraining Ring Impactor 32 mm
00-8790-009-36	Constraining Ring Impactor 36mm
00-8790-014-32	Axial Ring Impactor 32mm
00-8790-014-36	Axial Ring Impactor 36mm
00-8790-007-32	Liner Impactor Head 32mm
00-8790-007-36	Liner Impactor Head 36mm
00-8738-019-32	Prov Liner, Constrained, 70 RR x 32
00-8738-020-32	Prov Liner, Constrained, 72 SS x 32
00-8738-021-32	Prov Liner, Constrained, 74 TT x 32
00-8738-022-32	Prov Liner, Constrained, 76 UU x 32
00-8738-023-32	Prov Liner, Constrained, 78/80 VV x 32
00-8738-019-36	Prov Liner, Constrained, 70 RR x 36
00-8738-020-36	Prov Liner, Constrained, 72 SS x 36
00-8738-021-36	Prov Liner, Constrained, 74 TT x 36
00-8738-022-36	Prov Liner, Constrained, 76 UU x 36
00-8738-023-36	Prov Liner Constrained, 78/80 VV x 36
00-8790-010-00	Straight Universal Handle

## Constrained Provisional Liner Kits with Permanently Affixed Locking Screw

For use with *Continuum* and *Trilogy* IT

### Constrained Core Kit KT-8838-100-00

Item Number	Description
00-5900-099-00	Instrument Tray Lid
00-8792-029-00	IT Constrained Liner Core Instr Tray
00-8790-009-28	Constraining Ring Impactor 28mm
00-8790-009-32	Constraining Ring Impactor 32 mm
00-8790-009-36	Constraining Ring Impactor 36mm
00-8790-014-28	Axial Ring Impactor 28mm
00-8790-014-32	Axial Ring Impactor 32mm
00-8790-014-36	Axial Ring Impactor 36mm
00-8790-007-28	Liner Impactor Head 28mm
00-8790-007-32	Liner Impactor Head 32mm
00-8790-007-36	Liner Impactor Head 36mm
00-8838-009-28	Prov Liner, Constrained, 50 HH x 28
00-8838-010-28	Prov Liner, Constrained, 52 II x 28
00-8838-011-28	Prov Liner, Constrained, 54 ii x 28
00-8838-012-28	Prov Liner, Constrained, 56 KK x 28
00-8838-013-28	Prov Liner, Constrained, 58 LL x 28
00-8838-012-32	Prov Liner, Constrained, 56 KK x 32
00-8838-013-32	Prov Liner, Constrained, 58 LL x 32
00-8838-014-32	Prov Liner, Constrained, 60 MM x 32
00-8838-015-32	Prov Liner, Constrained, 62 NN x 32
00-8838-016-32	Prov Liner, Constrained, 64 00 x 32
00-8838-017-32	Prov Liner, Constrained, 66 PP x 32
00-8838-018-32	Prov Liner, Constrained, 68 QU x 32
00-8838-014-36	Prov Liner, Constrained, 60 MM x 36
00-8838-015-36	Prov Liner, Constrained, 62 NN x 36
00-8838-016-36	Prov Liner, Constrained, 64 00 x 36
00-8838-017-36	Prov Liner, Constrained, 66 PP x 36
00-8838-018-36	Prov Liner, Constrained, 68 QU x 36
00-8790-010-00	Straight Universal Handle

### Constrained Jumbo Kit KT-8838-200-00

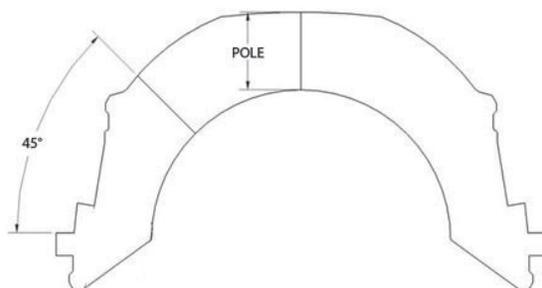
Item Number	Description
00-5900-099-00	Instrument Tray Lid
00-8792-030-00	IT Constrained Liner Jumbo Instr Tray
00-8790-009-32	Constraining Ring Impactor 32 mm
00-8790-009-36	Constraining Ring Impactor 36mm
00-8790-014-32	Axial Ring Impactor 32mm
00-8790-014-36	Axial Ring Impactor 36mm
00-8790-007-32	Liner Impactor Head 32mm
00-8790-007-36	Liner Impactor Head 36mm
00-8838-019-32	Prov Liner, Constrained, 70 RR x 32
00-8838-020-32	Prov Liner, Constrained, 72 SS x 32
00-8838-021-32	Prov Liner, Constrained, 74 IT x 32
00-8838-022-32	Prov Liner, Constrained, 76 UU x 32
00-8838-023-32	Prov Liner, Constrained, 78/80 VV x 32
00-8838-019-36	Prov Liner, Constrained, 70 RR x 36
00-8838-020-36	Prov Liner, Constrained, 72 SS x 36
00-8838-021-36	Prov Liner, Constrained, 74 U x 36
00-8838-022-36	Prov Liner, Constrained, 76 UU x 36
00-8838-023-36	Prov Liner Constrained, 78/80 VV x 36
00-8790-010-00	Straight Universal handle

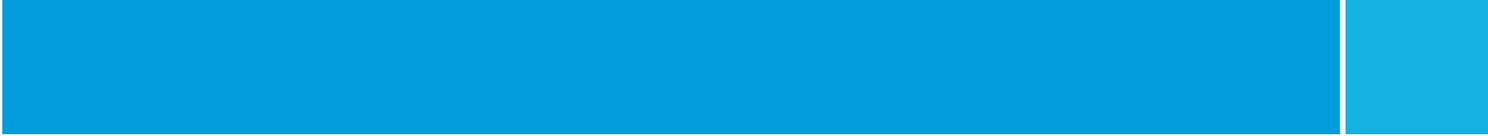
## Longevity Polyethylene Liner Thickness Chart

<b>Longevity Liner, Constrained, 28mm</b>		<b>Pole (mm)</b>	<b>45° (mm)</b>	<b>Lip</b>
Item Number	Description			
00-8758-009-28	Longevity Liner, Constrained, 50 HH x 28	7.3	7.7	YES
00-8758-010-28	Longevity Liner, Constrained, 52 II x 28	8.4	8.7	YES
00-8758-011-28	Longevity Liner, Constrained, 54 JJ x 28	9.3	9.7	YES
00-8758-012-28	Longevity Liner, Constrained, 56 KK x 28	10.3	10.7	YES
00-8758-013-28	Longevity Liner, Constrained, 58 LL x 28	11.4	11.7	YES

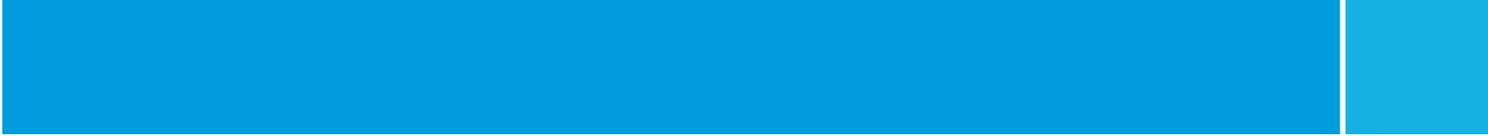
<b>Longevity Liner, Constrained, 32mm</b>				
00-8758-012-32	Longevity Liner, Constrained, 56 KK x32	8.3	8.7	YES
00-8758-013-32	Longevity Liner, Constrained, 58 LL x32	9.3	9.7	YES
00-8758-014-32	Longevity Liner, Constrained, 60 MM x32	10.3	10.7	NO
00-8758-015-32	Longevity Liner, Constrained, 62 NN x32	11.3	11.7	NO
00-8758-016-32	Longevity Liner, Constrained, 64 OO x32	12.3	12.7	NO
00-8758-017-32	Longevity Liner, Constrained, 66 PP x32	13.3	13.7	NO
00-8758-018-32	Longevity Liner, Constrained, 68 QU x32	14.4	14.7	NO
00-8758-019-32	Longevity Liner, Constrained, 70 RR x32	15.3	15.7	NO
00-8758-020-32	Longevity Liner, Constrained, 72 SS x32	16.3	16.7	NO
00-8758-021-32	Longevity Liner, Constrained, 74 TT x32	17.3	17.7	NO
00-8758-022-32	Longevity Liner, Constrained, 76 UU x32	18.3	18.7	NO
00-8758-023-32	Longevity Liner, Constrained, 78/80 VV x32	19.3	19.7	NO

<b>Longevity Liner, Constrained, 36mm</b>				
00-8758-014-36	Longevity Liner, Constrained, 60 MM x36	8.3	8.7	YES
00-8758-015-36	Longevity Liner, Constrained, 62 NN x36	9.3	9.7	YES
00-8758-016-36	Longevity Liner, Constrained, 64 OO x36	10.4	10.7	NO
00-8758-017-36	Longevity Liner, Constrained, 66 PP x36	11.3	11.7	NO
00-8758-018-36	Longevity Liner, Constrained, 68 QU x36	12.4	12.7	NO
00-8758-019-36	Longevity Liner, Constrained, 70 RR x36	13.3	13.7	NO
00-8758-020-36	Longevity Liner, Constrained, 72 SS x36	14.3	14.7	NO
00-8758-021-36	Longevity Liner, Constrained, 74 TT x36	15.4	15.7	NO
00-8758-022-36	Longevity Liner, Constrained, 76 UU x36	16.3	16.7	NO
00-8758-023-36	Longevity Liner, Constrained, 78/80 VV x36	17.3	17.7	NO









1. Yamaguchi M, Akisue T, Bauer TW, Hashimoto Y. The spatial location of impingement in total hip arthroplasty. *J Arthroplasty*. 2000, Apr; 15(3):305-13.

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