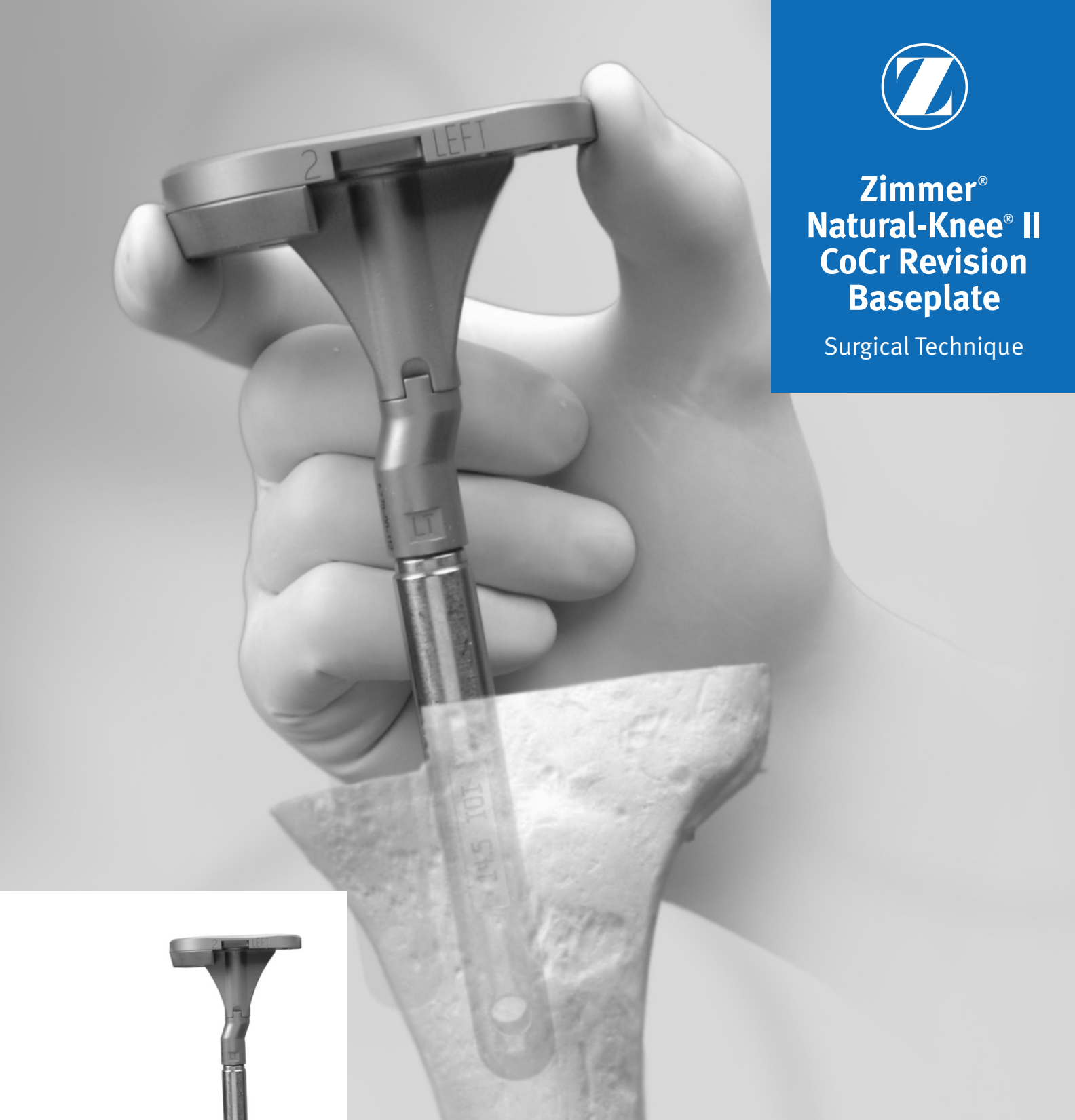
Zimmer® Natural-Knee® II CoCr Revision Baseplate

Surgical Technique



Designed to meet the challenges of a cemented procedure

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Preparing the Proximal Tibia

When using the *Natural-Knee* II CoCr Baseplate in a revision setting, with the use of cylindrical stems, it is important to establish a 5-degree slope for the tibial cut. This is necessary to obtain optimal implant fit, as there is a 5-degree slope built into the implant.

Intramedullary Tibial Option

Finding the Reference Hole

Drill a 1/4 inch hole in the proximal tibia, centering from medial to lateral on the tibial plateau in preparation for use of the 1/4 inch IM Rod. Anterior/posterior positioning should fall between the middle and anterior one-third of the tibial plateau (Fig. 1).

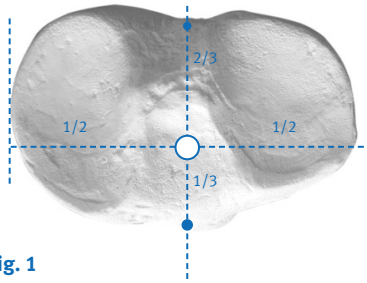

Fig. 1

Setting the Rotation

Adjust rotational alignment using the tibial tubercle. Position the distal pin of the cutting block just medial to the tibial tubercle (Fig. 2).

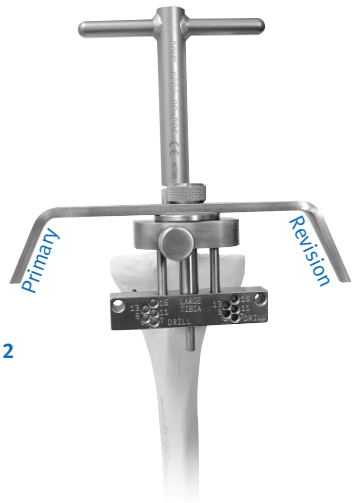

Fig. 2

The posterior surface of the cutting block should be parallel to the posterior edge of the tibial plateau (Fig. 3).

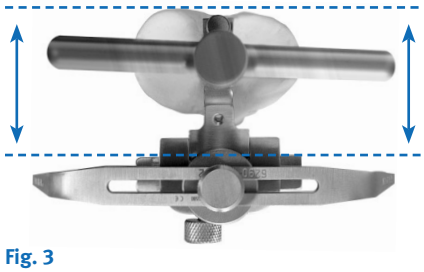

Fig. 3

Ideally, use both references mentioned above. Lock rotation into place by impacting the set pin with a mallet. Additional stability can be obtained, if necessary, by drilling and pinning through the auxiliary anterior hole (Fig. 4).

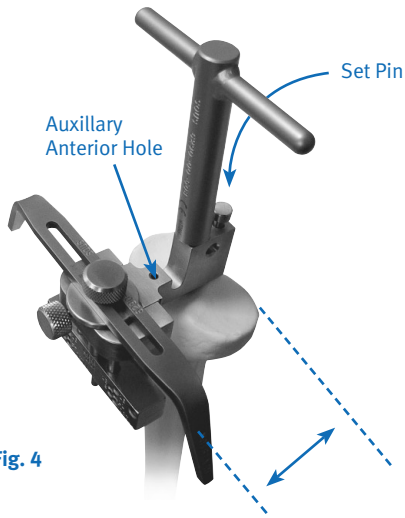

Fig. 4

Setting the Posterior Slope

As discussed earlier, when using the *Natural-Knee* II CoCr Baseplate in a revision setting, with the use of cylindrical stems, it is important to establish a 5-degree slope for the tibial cut. This is necessary to obtain optimal implant fit, as there is a 5-degree slope built into the implant. The posterior slope is set at 5-degrees when the black line on either side of the fixed part of the IM guide is parallel with the posterior aspect of the swivel part of the guide (Fig. 5).

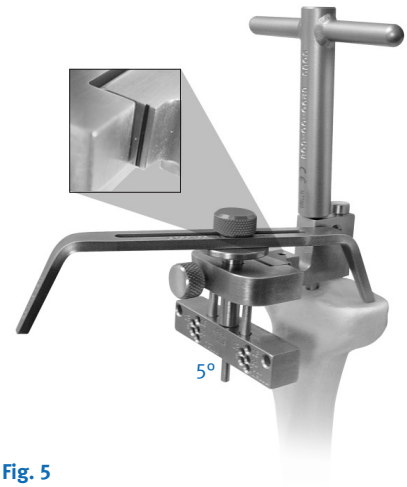

Fig. 5

Setting the Level of Resection

The “REVISION” end of the stylus is used to determine the tibial saw guide position for minimal resection of the proximal tibia (Fig. 6).

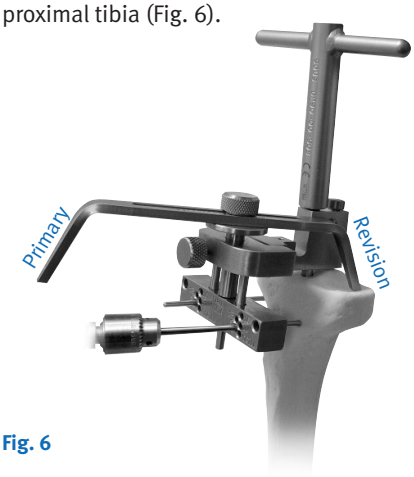

Fig. 6

This end of the stylus will position the tibial saw guide 1.5mm below the point of reference. If there is minimal difference in bone loss of the medial and lateral side, the tip of the stylus is placed on the lower side at a point which will allow at least one-half of the cortex on that side to contact the implant. A conservative bone-sparing cut is preferable to a perfectly flat bone surface. If there is more than a 4mm difference in bone loss medial to lateral, the stylus tip is placed on the higher side and use of a tibial spacer is planned (See Tibial Spacer Preparation section). Stabilize the cutting guide by drilling and pinning through the 7mm medial and lateral holes of the cutting guide (Fig. 7).

Fig. 7

Remove the stylus and IM rod to disassemble the jig (Fig. 8). A slaphammer helps to remove the IM rod and jig, leaving the saw guide fixed to the anterior face of the tibia.

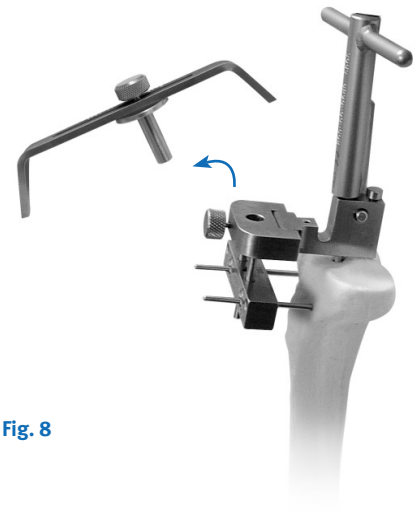

Fig. 8

Cutting the Proximal Tibia

A saw blade or resection guide is placed on the tibial saw guide along the medial and lateral edge to confirm the level of the tibial resection. If it appears that an inadequate resection will occur, the level can be lowered by moving the saw guide down on the anterior pins. The saw capture is placed on the saw guide and the cut is made with an oscillating saw.

Sizing the Proximal Tibia

Position the Modular Revision Drill Guide on the proximal tibia that provides the most coverage without overhanging (Fig. 9). Medial overhang is a recognized source of pes bursitis and should be avoided. Sizing the tibia is necessary to aid in determining the appropriate reaming depth described in the next step.

Fig. 9

Reaming for Cylindrical Stem Augmentation

See the included chart (Fig. 10) for the minimum required reaming depths for the various stem and baseplate combinations. The chart accounts for stem/baseplates lengths only; it does not account for the additional length for a cement restrictor plug. Based on preoperative templating, ream to the desired depth and diameter until desired endosteal bone contact is achieved. The reaming depth and diameter will be dependent on available baseplate/stem combinations, as shown in Fig. 10.

Reaming Depth for Baseplate/Stem Combinations

	Baseplates		
Stems	**00/0**	**1/2**	**3/4/5**
75mm (Smooth)	80	85	95
125mm (Smooth or Fluted)	130	135	145
155mm (Fluted)	155	160	170
175mm (Fluted)	175	180	190
190mm (Fluted)	195	200	210
200mm (Smooth)	205	210	220

Fig. 10

Drilling and Broaching with the Modular Revision Drill Guide

Place the appropriate stem trial on the stem adapter into the reamed canal and remove the modular handle (Fig. 11).

Fig. 11

Place the Modular Revision Drill Guide on the tibia.

Place the appropriately-sized Modular Tibial Stem Adapter onto the stem adapter and onto the Modular Revision Drill Guide (Fig. 12).

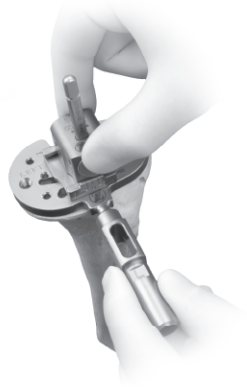

Fig. 12

If tibial coverage is not optimal with the Modular Tibial Stem Adapter in the neutral position it can be translated 3mm (Fig. 13) for use with the 155mm offset stem.

Fig. 13

Upon satisfactory placement, the modular revision drill guide is fixed to the proximal tibial by drilling and pinning it in place.

The stem trial, stem adapter and the modular tibial stem adapter are removed. The appropriately-sized keel broach is impacted into the tibia.

Tibial Spacer Preparation

Tibial spacers address medial and lateral tibial defects. (Both 4mm and 8mm modular spacers are available for the CoCr baseplate.) Tibial spacers correct the deformity, while requiring minimal additional bone resection.

After standard preparation of the proximal tibia, assemble the spacer cutting guide and alignment plate for sizes 00 and 0, sizes 1 and 2, or sizes 3, 4 and 5 tibias. Set the assembly for medial or lateral and left or right using the reference marks on the end of the spacer alignment plate (Fig. 14).

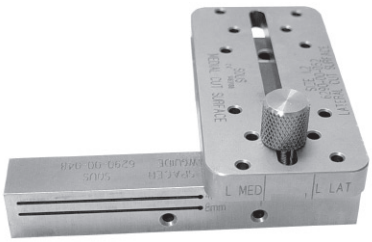

Fig. 14

Stabilize the Alignment Plate using three smooth pins placed in the nondefective tibial plateau surface previously drilled with the proximal tibial drill guide. For added stability, place at least one pin through one of the holes located anteriorly on the spacer cutting guide (Fig. 15).

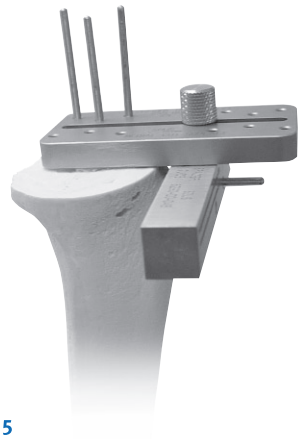

Fig. 15

Make a vertical osteotomy using a calibrated 1 inch saw blade (Fig. 16).

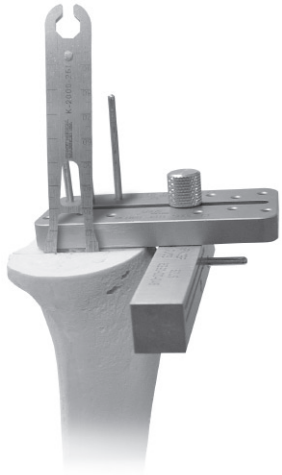

Fig. 16

This saw cut is either 4 or 8mm deep, depending on the size of the defect. Leave a free saw blade imbedded in the bone to avoid undercutting the uninvolved tibial plateau surface when the horizontal osteotomy is performed. The horizontal portion of the step cut is then made through the 4 or 8mm slot, depending on the size of the defect (Fig. 17).

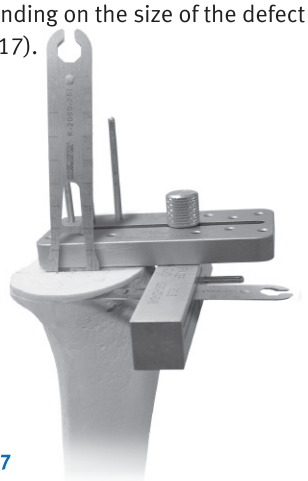

Fig. 17

The Tibial Spacer Trials for the CoCr Baseplate attach to both the Modular Revision Drill Guide and the CoCr Tibial Trial with a captured screw in the Tibial Augment Trial (Figs. 18 & 19).

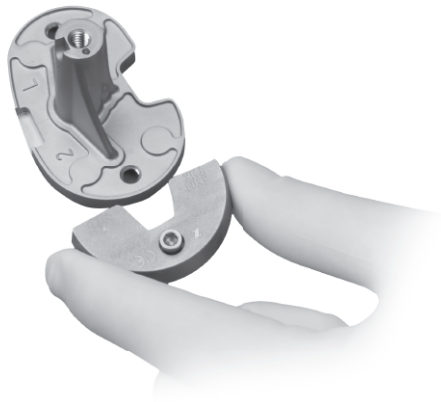

Fig. 18

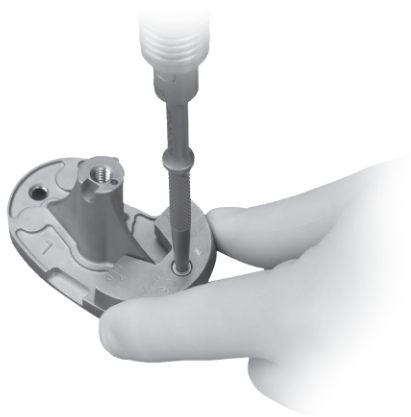

Fig. 19

Trialing

The Stem Trial (and Offset Adapter, if using the 155mm offset stem) (Figs. 20-23) is then attached to the appropriately-sized CoCr Tibial Trial and placed in the tibia.

Fig. 20

Fig. 21

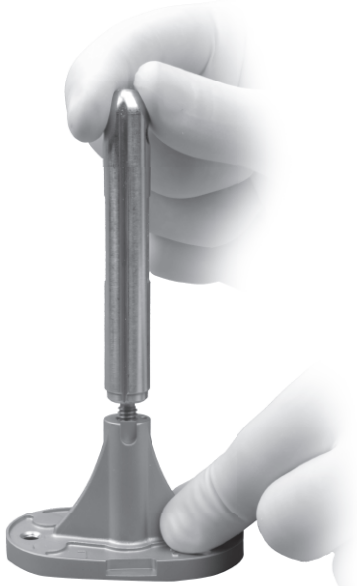

Fig. 22

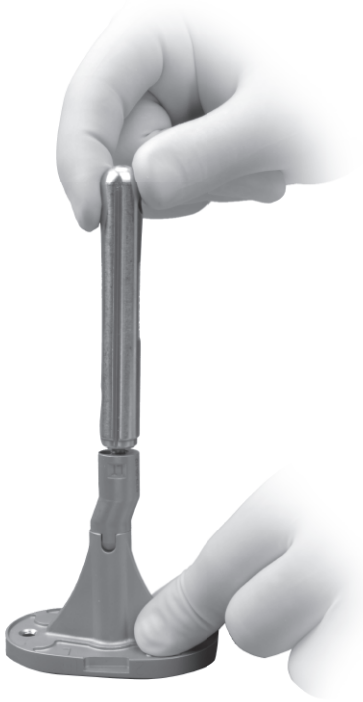

Fig. 23

Implanting Components

For stem use, remove the baseplate's distal plug by unscrewing the "captured" stem / plug screw from the central portion of the superior side of the baseplate with the hex-head screwdriver (Fig. 24).

Fig. 24

The Stem Extension is then impacted onto the Tibial Baseplate using the Stem Impactor. After impacting the stem the "captured" screw is tightened for adjunct fixation using the Hex-Head Screwdriver. If a Tibial Spacer Augment is to be used, the appropriate Spacer Augment is attached to the Baseplate by using the Hex Head Driver to attach the Tibial Spacer Augment to the CoCr Baseplate (Fig. 25).

Fig. 25

Alternatively, the Spacer Augment can be cemented directly to the Baseplate after removing the screws from the augment. After the stem and Tibial Spacer Augment are affixed to the CoCr Baseplate, apply bone cement to the underside of the tibial component. Impact the tibial component onto the tibial surface, pressurizing the cement into the bone.

Please refer to package insert for complete product information, including contraindications, warnings, precautions, and adverse effects.

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