Manufacturer

GOMINA AG

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European Orthopaedics

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Handling brochure

optimys chisel system

***Preservation** in motion*

Building on our heritage
Moving technology forward
Step by step with our clinical partners
Towards a goal of preserving mobility

***Preservation** in motion*

As a Swiss company, Mathys is committed to this guiding principle and pursues a product portfolio with the goal of further developing traditional philosophies with respect to materials or design in order to address existing clinical challenges. This is reflected in our imagery: traditional Swiss activities in conjunction with continuously evolving sporting equipment.

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Remark
Please make yourself familiar with the handling of the instruments, the product-related handling brochure and the warnings, the safety notes as well as the recommendations of the instruction leaflet.

1. Introduction

The introduction of bone preserving short stems has created an associated demand for bone preserving revision instruments to remove these stems. To this end our medical advisors, with the close cooperation of the company Gomina, have developed a chisel system specifically designed to extract optimys stems whilst preserving as much bone as possible.

2. Medical Advisor Team

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(Basel, Switzerland)

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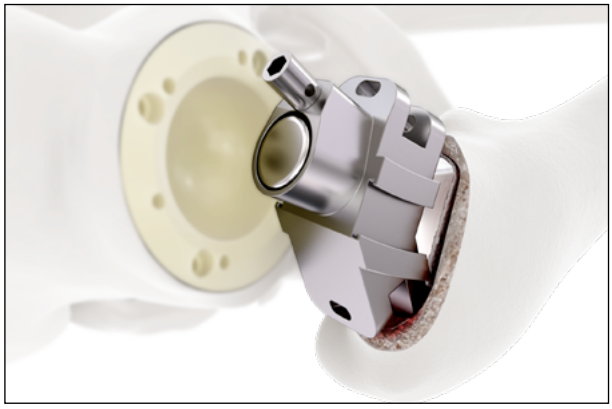
(Wiesbaden, Germany)

3. Surgical technique

The optimys stem can be extracted using various surgical approaches and patient positioning. The decision in favour of a specific technique should be based on the patient's anatomy, the reason for revision and the personal experience and preferences of the operating surgeon.



Step 1
Attachment of the Chuck to the cone of the stem

Step 2
Insertion of the Prestarter Chisels through the guide slots of the Chuck (lateral/medial)

Step 3
Insertion of the Starter Chisels through the guide slots of the Chuck (lateral/ventral/dorsal)

Step 4
Removal of the Chuck

Step 5
Application of the Final Chisel

Step 6
Extraction of the stem

3.1 Surgical steps in detail

Fig. 1

Layer-by-layer preparation of the surgical field and access to the joint.
Dislocate the joint which has the implanted optimys stem.

Clean the cone and the neck of the stem and expose the lateral portion of the stem shoulder (Fig. 1).

Laterally, the shoulder of the stem must be completely free from bone and soft tissue until the Chuck rests flush on the shoulder and the nose of the Chuck rests in the impaction hole of the optimys stem.

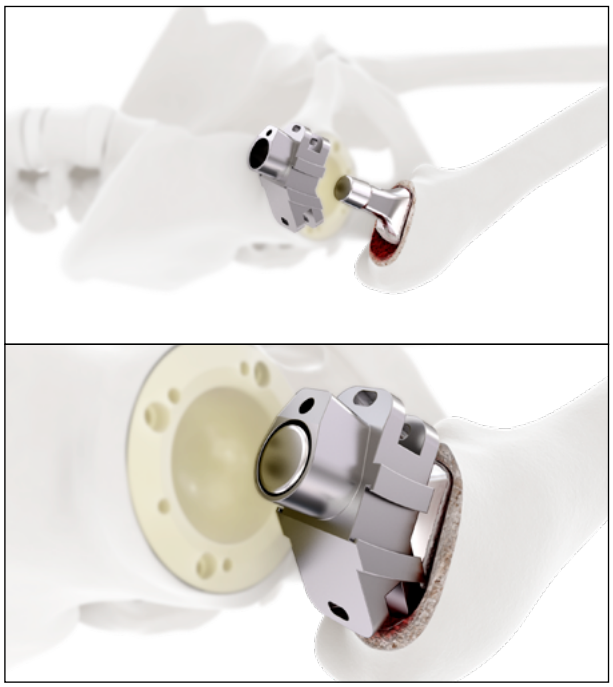


Fig. 2

Place the Chuck that matches the implanted stem (Fig. 2).

Remark
An individual chuck size is required for each stem size and offset version.

Fig. 3

Remark

In its final position, the Chuck is flush with the end face of the stem cone (Fig. 3).

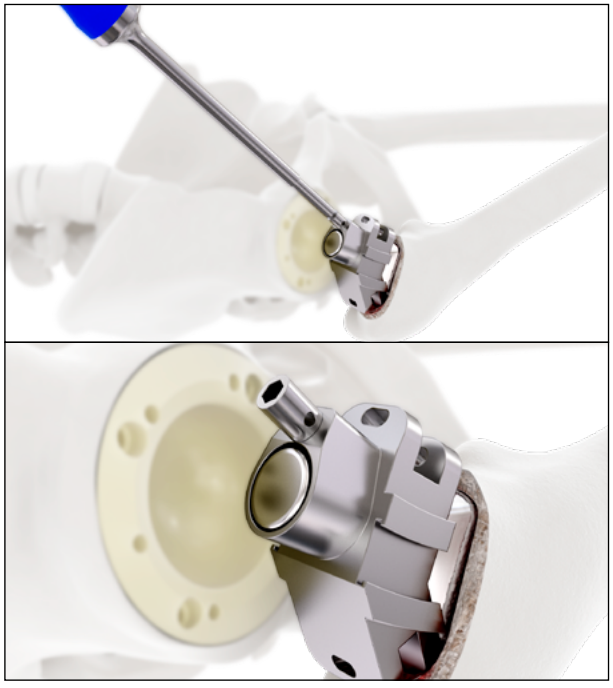


Fig. 4

Tighten the fixation screw on the Chuck with the screwdriver (58.02.4005) until the Chuck is firmly fixed to the implant (Fig. 4).

Remark

A firm connection between the Chuck and the implant is necessary to subsequently allow the guided insertion of the curved Prestarter Chisels and Starter Chisels along the curved stem.

Fig. 5

Always start with the lateral Prestarter Chisel.

Insert the Prestarter Chisel into the Handle (Fig. 5).

Always ensure that the chisels are placed in the Handle with the numbers facing upwards (the numbers must be legible when the clamping lever is closed).

Fig. 6

The Handle provides three different clamping positions. The Prestarter Chisels must always be inserted into clamping position 1 at the beginning of the preparation of the respective contour, to ensure sufficient stability of the chisels. The number ‹1› must be legible through the round borehole of the chisel (Fig. 6).

The chisels must always be inserted flat into the undulating contour of the Handle with the numbers facing upwards.

When closing the clamping lever, make sure that the desired clamping position number (1, 2 or 3) is visible through the borehole of the chisel, and that the clamping lever is completely closed. (Fig. 6)

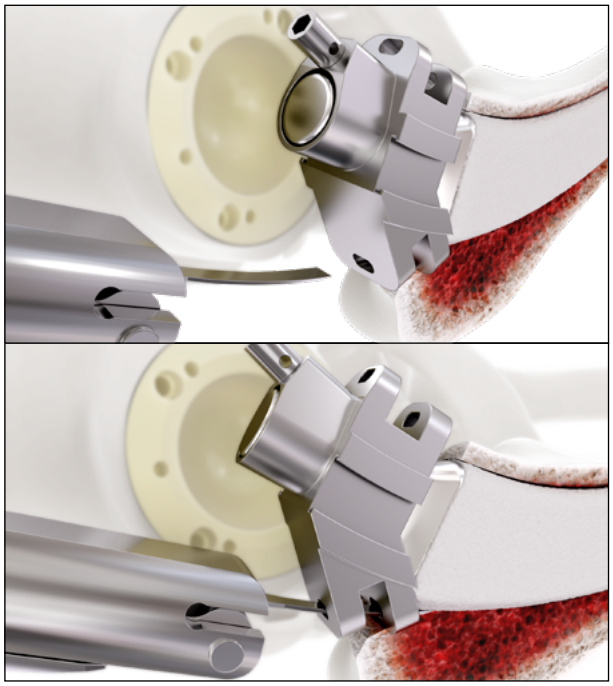


Fig. 7

Insert the chisels into the designated opening of the guide slots of the Chuck by hand until bone contact is made (Fig. 7).

Fig. 8

Remark

Make sure that the chisels are guided through both consecutively arranged guide slots of the Chuck. The chisels must not rest on the stem coating but must have direct contact with the bone before being driven in with light hammer strokes (Fig. 8).

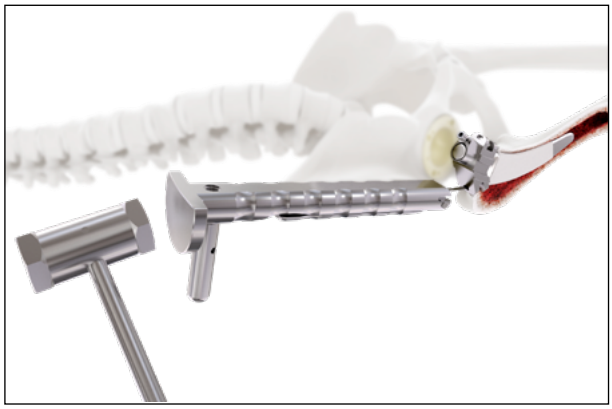


Fig. 9

Subsequently, drive the Prestarter Chisels in along the prosthesis with light hammer strokes (Fig. 9).

Remark
Exercise caution when driving in the chisels, to minimise the risk of fissures.

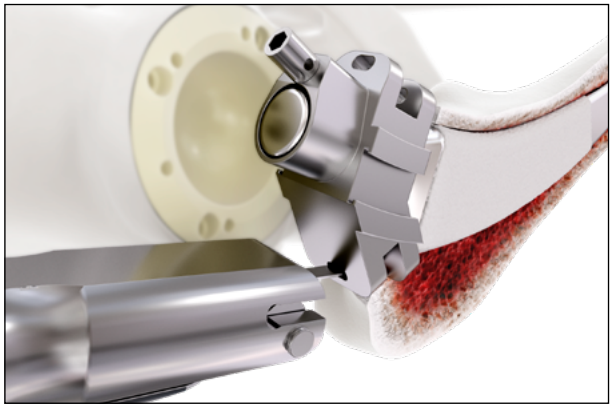


Fig. 10

As soon as the Handle with the clamped chisel reaches the end face of the stem cone (or shortly before, Fig. 10), the clamping position of the chisel must be extended (clamping position 2 or 3).

Remark
Only the Starter Chisels have a mechanical stop and can be driven in down to the end position.

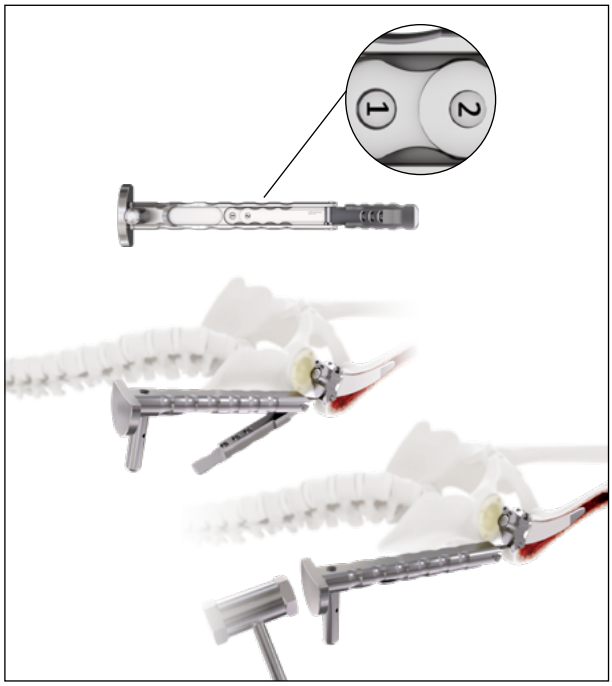


Fig. 11

For re-clamping, completely open the clamping lever of the Handle, and insert the chisel in the next position. Then close the clamping lever again (Fig. 11).

The clamping lever must sit completely flat on the Handle.

Remark

To check whether the chisel runs along the stem, radiography using an image intensifier can be performed during the chiselling process.

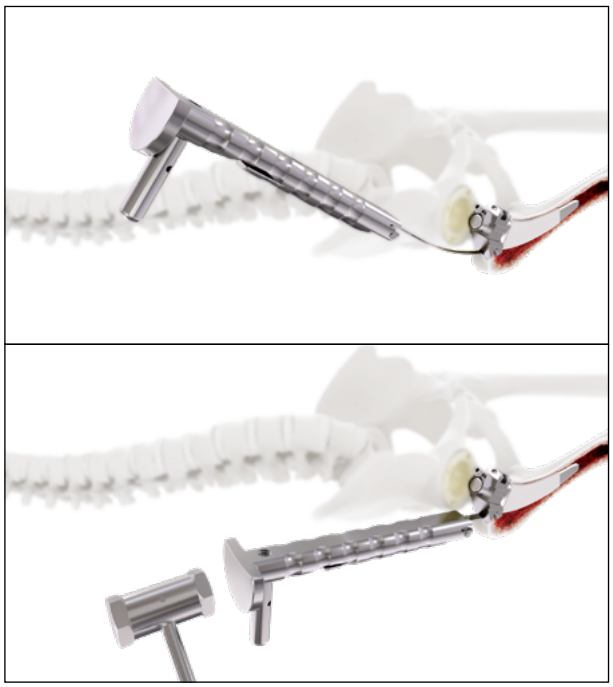


Fig. 12

Once preparation along the lateral side of the stem has been completed with the Prestarter Chisels, continue with the Starter Chisels in the same way (Fig. 12).

Remark

Use of the medial chisels (Prestarter, Starter and Final) is only recommended in cases of good bone quality, and only when the stem cannot be loosened after preparation with the lateral, ventral and dorsal chisels.

Fig. 13

Once the Starter Chisel has reached the stop on the Chuck (Fig. 13), it is recommended to mark the bone with the axis along which this chisel was driven, for later use with the Final Chisels.

Fig. 14

Remove the Starter Chisel from the bone with light backward strokes. The strikeout bolt can assist with this; screw it into the top or bottom of the Handle and strike against it with the mallet (Fig. 14).

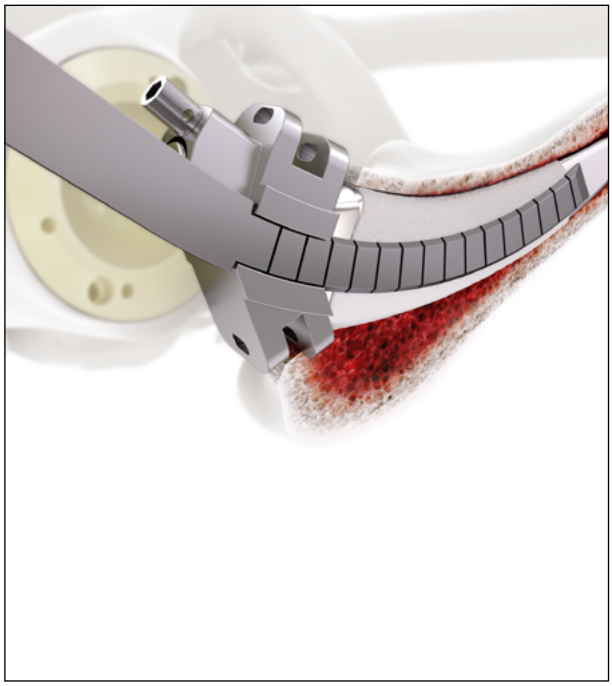


Fig. 15

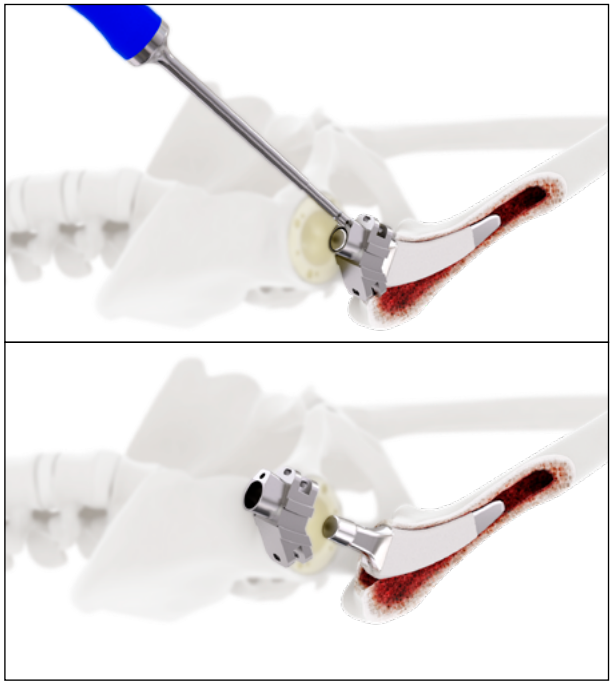
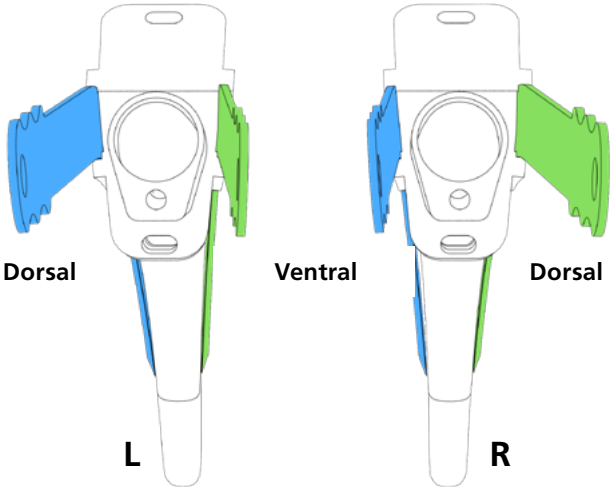


Fig. 16

It is recommended to start laterally with the chisels provided for this purpose and then continue along the ventral and dorsal contours in the same manner as the procedure described above (Fig 15).

Note: The ventral/dorsal chisels are used as ventral or dorsal chisels depending on whether surgery is performed on a left or right hip (see picture below and chapter 4.3 for a detailed overview).



After removing the chisels, detach the Chuck from the cone with the screwdriver and remove it (Fig. 16).

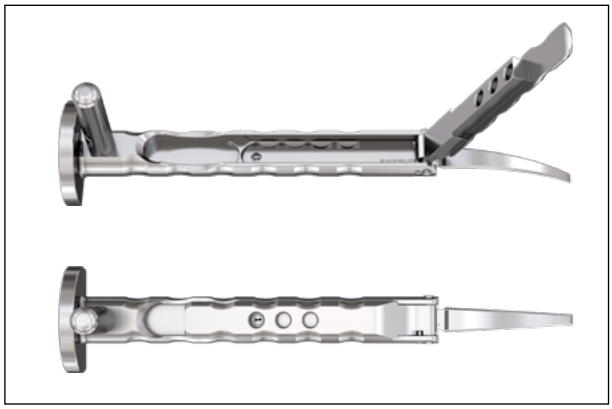


Fig. 17

Fig. 18

Insert the Final Chisel lateral into the Handle. The correct size assignment is shown in Table 1.

Make sure that the chisels are always placed in the Handle with the numbers facing upwards (the numbers must be legible when the clamping lever is closed, Fig. 17).

optimys sizes	Chisel size
1, 2, 3	Final Chisel lateral 01–03
4, 5, 6	Final Chisel lateral 04–06
7,8, 9	Final Chisel lateral 07–09
10, 11, 12	Final Chisel lateral 10–12

Table 1: The size assignment is identical for all the chisels (dorsal, ventral and medial).

Remark

Each chisel can be used for three stem sizes. All the chisels have a size marking that indicates how deep the chisel may be driven into the bone for the respective stem size. The reference point is the proximal lateral corner of the stem (Fig. 18).

The Handle has three different clamping positions. The chisels are always inserted in clamping position 1 at the beginning of the preparation of each respective contour, to ensure sufficient stability of the chisels. The number ‹1› must be legible through the round borehole in the chisels.

Fig. 19

When closing the clamping lever, make sure that the required clamping position (1, 2 or 3) is visible through the borehole in the chisel (Fig. 19).

Fig. 20

Place the Final Chisel on the implant-bone interface, then check that its axial alignment and position are the same as the Prestarter and Starter Chisels (Fig. 20).

Remark

This is necessary to optimise use of the guiding path created with the previous chisels and successfully loosen the prosthesis-bone-interface distally.

Subsequently, drive the Final Chisel in and along the stem in axial alignment using light hammer strokes.

Remark

Exercise caution when driving in the chisels, to minimise the risk of fissures.

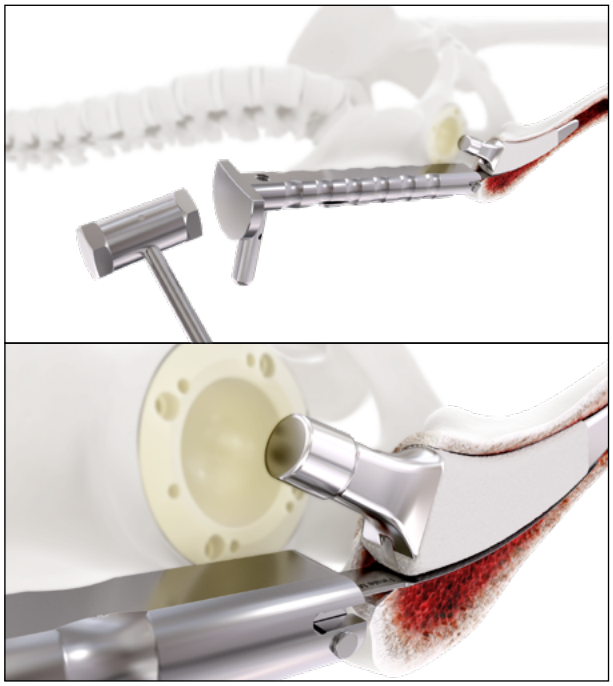


Fig. 21

As soon as the Handle with the clamped chisel reaches the end face of the stem cone (or shortly before, Fig. 19), the clamping position of the chisel must be extended (clamping position 2 or 3), to prevent damage to the Handle.

For re-clamping, completely open the clamping lever of the Handle, insert the chisel in the next position, then close the clamping lever again.

The clamping lever must sit completely flat on the Handle.

Remark

To check whether the chisel runs along the stem, radiography using an image intensifier can be performed during the chiselling process.

Fig. 22

Once the chisel has been driven in down to the marked stopping point (Fig 22), remove the chisel from the bone with light backward hammer strokes, and detach the Handle from the chisel.

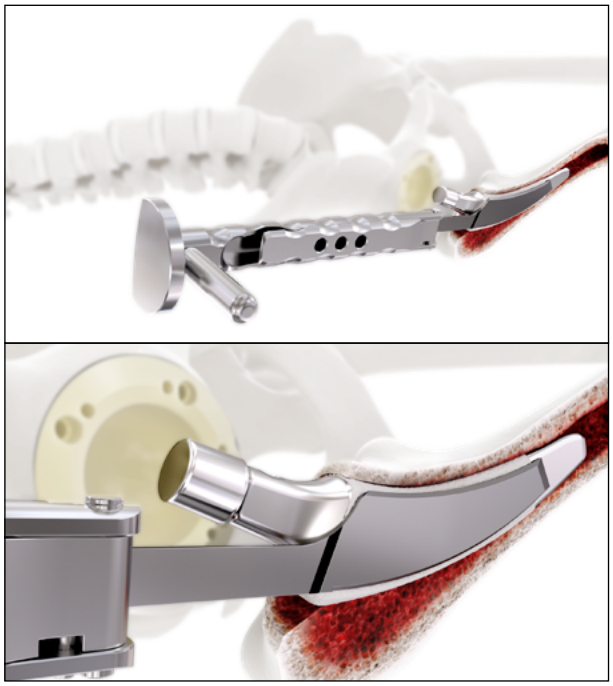


Fig. 23

Other subsequent Final Chisels are driven in the same way.

It is recommended to start laterally with the chisels provided for this purpose and then work on the ventral and dorsal contours. (Fig 23)

Remark
The ventral/dorsal chisels are used as ventral or dorsal chisels depending on whether surgery is performed on a left or right hip (see chapter 4.3 for a detailed overview).

After each of the required Final Chisels has been used and the stem has been sufficiently loosened, a universal extraction instrument can be attached to the prosthesis neck, and the stem may be removed from the femur with strong hammer strokes.

After removal of the prosthesis, check the femur for possible fissures, fix it if necessary, and remove foreign debris, before implanting a new prosthetic system using the implant-specific surgical technique.

4. Instruments

4.1 Basic instr. set for optimys stem removal 51.34.1173A – Configuration

Item no.	Description
400.001	Handle

Item no.	Description
411.921	Chuck standard 01
411.922	Chuck standard 02
411.923	Chuck standard 03
411.924	Chuck standard 04
411.925	Chuck standard 05
411.926	Chuck standard 06
411.927	Chuck standard 07
411.928	Chuck standard 08
411.929	Chuck standard 09
411.930	Chuck standard 10
411.931	Chuck standard 11
411.932	Chuck standard 12
411.901	Chuck lateral 01
411.902	Chuck lateral 02
411.903	Chuck lateral 03
411.904	Chuck lateral 04
411.905	Chuck lateral 05
411.906	Chuck lateral 06
411.907	Chuck lateral 07
411.908	Chuck lateral 08
411.909	Chuck lateral 09
411.910	Chuck lateral 10
411.911	Chuck lateral 11
411.912	Chuck lateral 12

Item no.	Description
400.101	Fixation screw M4 x 11.5

4.2 Detail Instrument List
(re-usable instruments)

Item no.	Description
400.001	Handle

Item no.	Description
411.921	Chuck standard 01
411.922	Chuck standard 02
411.923	Chuck standard 03
411.924	Chuck standard 04
411.925	Chuck standard 05
411.926	Chuck standard 06
411.927	Chuck standard 07
411.928	Chuck standard 08
411.929	Chuck standard 09
411.930	Chuck standard 10
411.931	Chuck standard 11
411.932	Chuck standard 12
411.901	Chuck lateral 01
411.902	Chuck lateral 02
411.903	Chuck lateral 03
411.904	Chuck lateral 04
411.905	Chuck lateral 05
411.906	Chuck lateral 06
411.907	Chuck lateral 07
411.908	Chuck lateral 08
411.909	Chuck lateral 09
411.910	Chuck lateral 10
411.911	Chuck lateral 11
411.912	Chuck lateral 12

Item no.	Description
400.101	Fixation screw M4x11.5

4.3 Detail Instrument List
(single use instruments)

Item no.	Description
411.201S	Prestarter Chisel lateral
411.202S*	Prestarter Chisel medial

*Use of the medial Prestarter chisel is only recommended in cases of good bone quality.

Item no.	Description
411.210S	Starter Chisel lateral 01–03
411.211S	Starter Chisel lateral 04–06
411.212S	Starter Chisel lateral 07–09
411.213S	Starter Chisel lateral 10–12
411.214S*	Starter Chisel medial 01–03
411.215S*	Starter Chisel medial 04–06
411.216S*	Starter Chisel medial 07–09
411.217S*	Starter Chisel medial 10–12

*Use of the medial Starter Chisel is only recommended in cases of good bone quality.

Item no.	Description	right hip		left hip	
		ventral	dorsal	ventral	dorsal
411.401S	Starter Chisel ventral/dorsal 01–03	X	–	–	X
411.402S	Starter Chisel ventral/dorsal 01–03	–	X	X	–
411.403S	Starter Chisel ventral/dorsal 04–06	X	–	–	X
411.404S	Starter Chisel ventral/dorsal 04–06	–	X	X	–
411.405S	Starter Chisel ventral/dorsal 07–09	X	–	–	X
411.406S	Starter Chisel ventral/dorsal 07–09	–	X	X	–
411.407S	Starter Chisel ventral/dorsal 10–12	X	–	–	X
411.408S	Starter Chisel ventral/dorsal 10–12	–	X	X	–

Item no.	Description
411.218S	Final Chisel lateral 01–03
411.219S	Final Chisel lateral 04–06
411.220S	Final Chisel lateral 07–09
411.221S	Final Chisel lateral 10–12
411.222S*	Final Chisel medial 01–03
411.223S*	Final Chisel medial 04–06
411.224S*	Final Chisel medial 07–09
411.225S*	Final Chisel medial 10–12

*Use of the medial final Chisels is only recommended in cases of good bone quality.

Item no.	Description	right hip		left hip	
		ventral	dorsal	ventral	dorsal
411.409S	Final Chisel ventral/dorsal 01–03	X	–	–	X
411.410S	Final Chisel ventral/dorsal 01–03	–	X	X	–
411.411S	Final Chisel ventral/dorsal 04–06	X	–	–	X
411.412S	Final Chisel ventral/dorsal 04–06	–	X	X	–
411.413S	Final Chisel ventral/dorsal 07–09	X	–	–	X
411.414S	Final Chisel ventral/dorsal 07–09	–	X	X	–
411.415S	Final Chisel ventral/dorsal 10–12	X	–	–	X
411.416S	Final Chisel ventral/dorsal 10–12	–	X	X	–

5. Symbols


Manufacturer


Caution

Notes

Notes

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