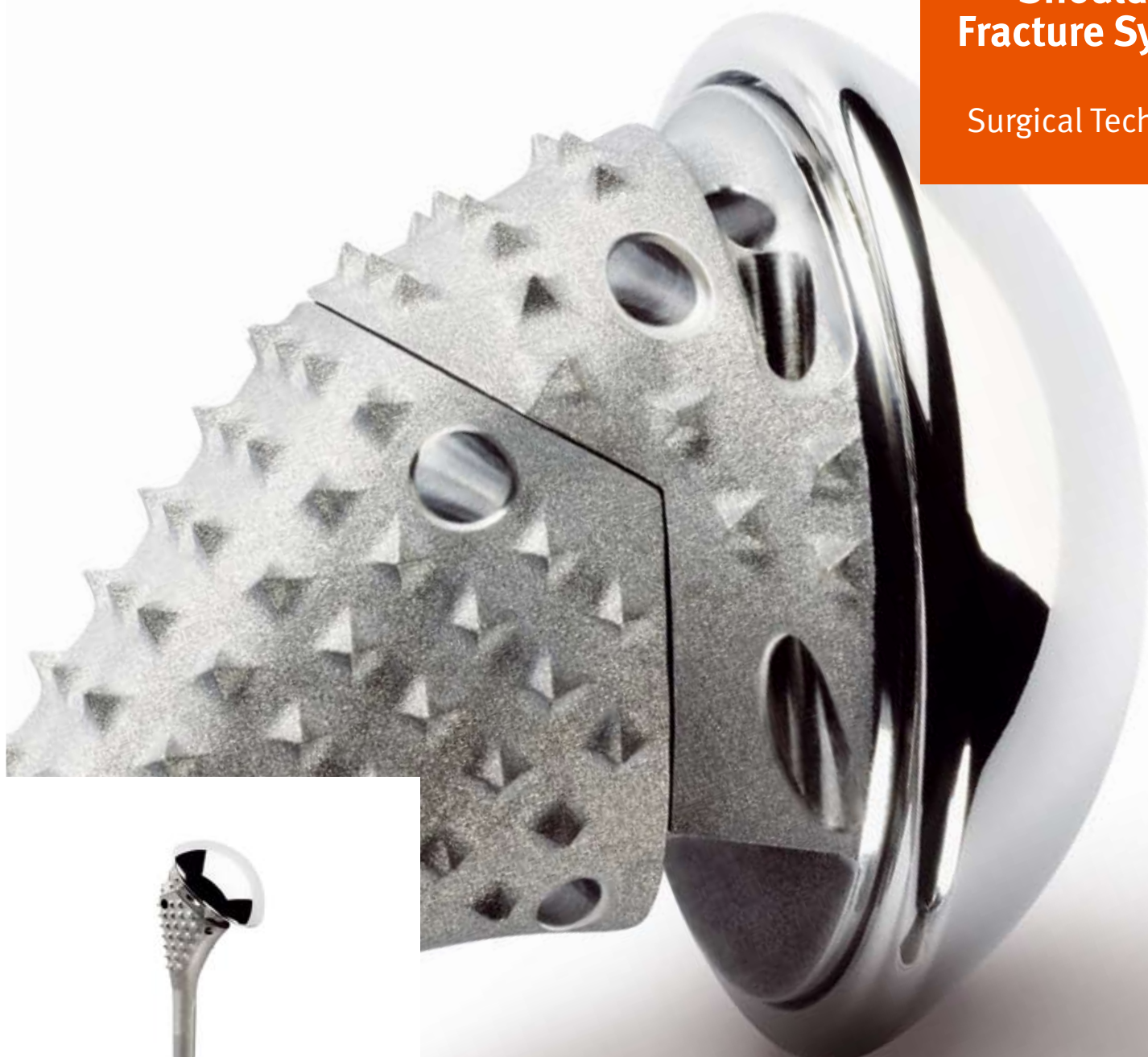




Anatomical Shoulder™ Fracture System

Surgical Technique



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Surgical Technique Anatomical Shoulder Fracture System

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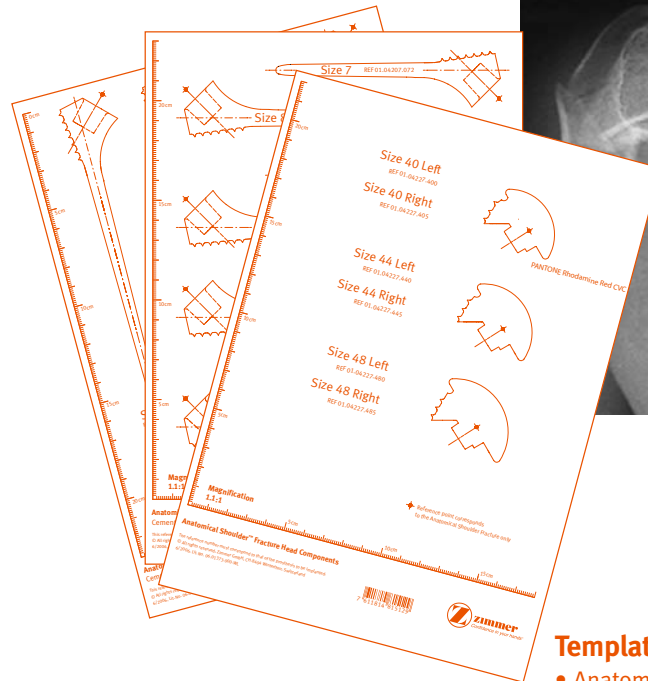
Indications

The *Anatomical Shoulder Fracture System* is intended for use in prosthetic replacement of the proximal humerus and the glenoid articular surface of the scapula during total-, hemi- and fracture shoulder arthroplasty in treatment of the following:

- Complex 3 and 4 part fractures of the proximal humerus with subluxation of the head fragment
- Complex 3 and 4 part fractures of the proximal humerus with loosening of the spongiosa in the head fragment
- Complex 3 and 4 part fractures of the proximal humerus with additional cross split of the head fragment
- Fracture instability after osteosynthesis of 3 and 4 fragments of the proximal humerus
- Posttraumatic necrosis of the humeral head
- Posttraumatic arthrosis after humeral head fracture

The *Anatomical Shoulder Fracture Stem* is intended for cemented or cementless use.

Preoperative Planning

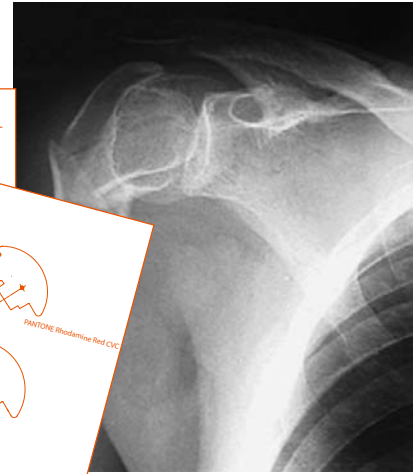


The following radiographic images of the shoulder joint are desired for preoperative planning:

- Full size true anterior-posterior view with neutral rotation (0°), centered on the articular cavity
- Axial view
- Y view
- CT scan

An initial assessment is made of the bone in the superior and inferior aspects of the shoulder, using radiographic and CT imaging in order to determine the suitability of the patient's available bone stock for implant insertion.

Preoperative planning is also carried out using AP and lateral shoulder radiographs of known magnification and using the available templates to confirm the size and alignment of the implant.



Template Options

- Anatomical Shoulder Fracture Head
Lit. No. 06.01373.000
- Anatomical Shoulder Fracture Stem
Lit. No. 06.01357.000
- Anatomical Shoulder Fracture Long Stem
Lit. No. 06.01372.000

Surgical Technique

Patient Positioning and Surgical Approach

The patient should be placed in a beach chair position on the edge of the operating table (Fig. 1).

The arm must be freely movable, and it must be able to extend fully. An armrest is optional.



Fig. 1

Delto-Pectoral Approach

Make a skin incision in a straight line starting from the lateral edge of the coracoid as far as the insertion of the deltoid muscle. Seek out the cephalic vein between the deltoid muscle and the pectoralis major muscle. Make the approach medial to the vein to open the deltopectoral groove.

The coracoid process is identified. The clavi-pectoral fascia is incised at the external border of the coracobrachialis. The axillary nerve is then identified before identification of the subscapularis.

In fracture cases, it is especially important to identify and protect the musculocutaneous and the axillary nerves.

Identification of the Lesser and Greater Tuberosities

The glenohumeral joint is exposed by extending the fracture line between the tuberosities, incising the rotator interval over the long head of the biceps tendon. The biceps tendon is an excellent landmark to identify the interval between the lesser and the greater tuberosity. If the biceps tendon has been ruptured, place the scissors in the bicipital groove and use them to open the interval between the subscapularis and the supraspinatus tendon. Next, free up the lesser tuberosity from the underlying humeral head and soft tissues. Now, in a similar manner, carefully identify and free up the greater tuberosity.

The greater and lesser tuberosity fragments must be sufficiently freed up so that they can be easily repaired around the *Anatomical Shoulder Fracture* stem and to each other at the time of closure (Fig. 2).

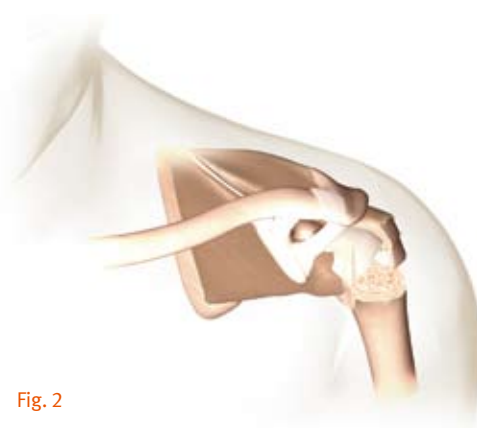


Fig. 2

Humeral Head Excision

With the tuberosities retracted out of the way, use a clamp to retrieve the humeral head.

Humeral Shaft Preparation

Attach the Rasp Handle to the Rasp (Fig. 3).

Manually rasp the humeral canal using progressively larger Rasps in 1mm increments until slight resistance is felt from cortical contact in the canal.

Rasp to the appropriate depth for the selected stem lengths. The depth corresponds to the implant length to be used. If a long *Anatomical Shoulder Fracture Stem* is required, connect a Rasp Extension on the distal end of the Rasp.

Rasp Extensions are available for *Anatomical Shoulder Fracture Stems* sizes 7, 9, 11 and 13.

If additional Rasp stability is necessary, consider inserting the Locking Spring for Rasp into the lateral slot of the Rasp (Fig. 4). The Locking Spring will help maintain height positioning during preparation.



Fig. 3



Fig. 4

Sizing Convention and Consideration

AS Fracture rasp size	Rasp extension	Cemented, implant size and length	Press-fit, implant size and length
7p	yes	–	7-130, 7-170
8p	no	–	8-130
9p/7c	yes	7-130, 7-170	9-130, 9-200
10p/8c	no	8-130	10-130
11p/9c	yes	9-130, 9-200	11-130, 11-200
12p/10c	no	10-130	12-130
13p/11c	yes	11-130, 11-200	13-130, 13-200
14p/12c	no	12-130	14-130
13c	yes	13-130, 13-200	–
14c	no	14-130	–

p = press-fit (uncemented)
c = cemented

Example Convention and Consideration



1. Implant 9 cemented short
2. Implant 9 cemented long
3. Rasp 11p/9c
4. Implant 11 press-fit (uncemented) long
5. Implant 11 press-fit (uncemented) short

Retroversion Adjustment Technique

Insert the Alignment Rod into the appropriate retroversion hole on the Rasp Handle. Use the right or left hole for the corresponding shoulder side and the preferred hole for orientation to the forearm or to the condyles (Fig. 5).

Carry out the rasping with the elbow bent at an angle of 90° parallel to the axis of the epicondyle of the distal humerus. This gives rise to an inclination of 130° and a retroversion of 18° .

Fig. 5



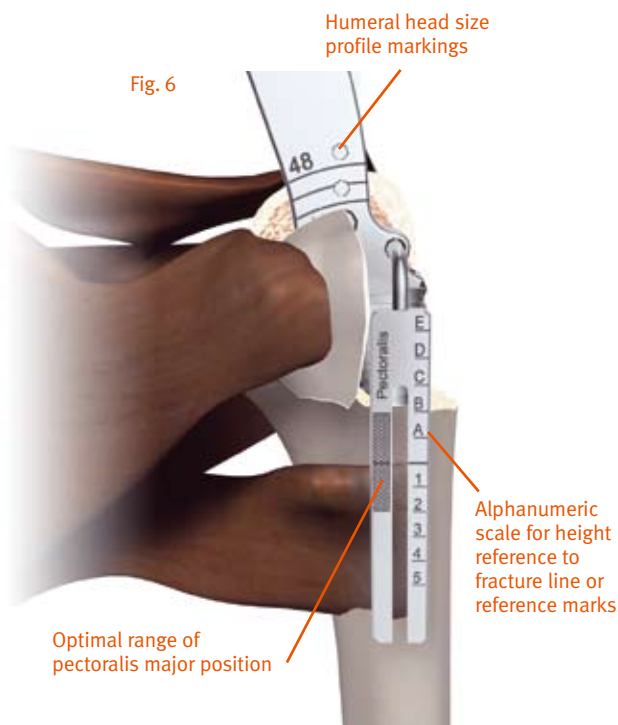
Height Adjustment Technique

The outer-shaped *Anatomical Shoulder Fracture Heads* are laser marked on the Rasp Handle for height orientation during the rasp procedure. The correct Rasp depth is reached if you feel that the lasermarked head is in right height position (Fig. 6).

Attach the *Anatomical Shoulder Fracture Ruler* to the Rasp Handle for height adjustment control. Use the pectoralis for height orientation. On the *Anatomical Shoulder Fracture Ruler* you will find a lasermarked area of the upper border of the pectoralis major tendon (Fig. 6).

Now verify if the lasermarked head on the Handle is placed in the right height and the lasermarked area of the pectoralis corresponds to the upper border of the pectoralis.

Fig. 6



Disconnect the Rasp Handle (Fig. 7).
The Rasp is fixed in the appropriate
position, height and retroversion.

Fig. 7



If additional Rasp stability is necessary, consider inserting a Screw using the 2.5mm Hexagonal Screw Driver through the proximal opening of the Rasp that will press the Locking Spring against the bone (Fig. 7a).



Fig. 7a

Now compare the resected humeral head dimension with one of the three head sizes of the *Anatomical Shoulder Fracture System*. If the size of humeral head is between available prosthetic heads, select the smaller of the two (Fig. 8).

Use the left and right Humeral Trial Head component for the corresponding shoulder side.

Attach the selected Trial Head to the Rasp, which is seated in the humeral shaft.

With the Humeral Head Trial Screw and the 2.5mm Hexagonal Screw Driver, prepare the stable fixation of the trial components (Fig. 9).



Fig. 8

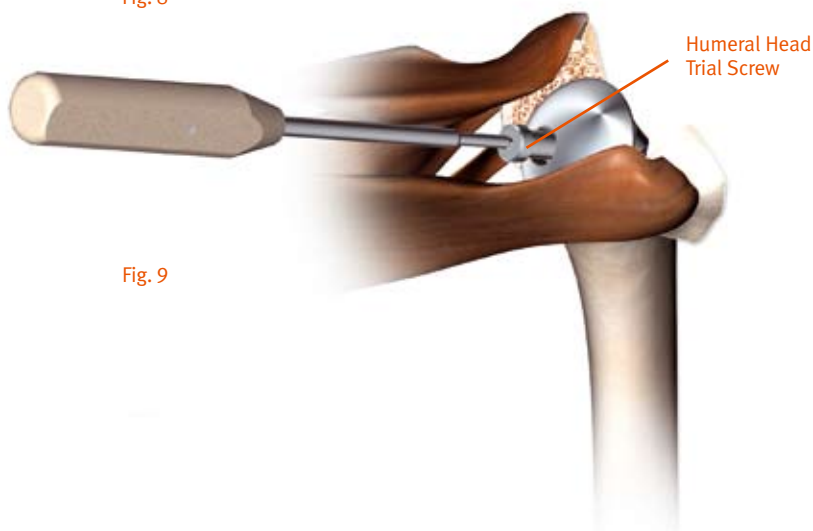


Fig. 9

Mobilizing the Tuberosities

When the proper height and torsion of the trial prosthesis has been determined, mobilize the tuberosities in order to approximate them around the prosthesis, to one another, and to the humeral shaft. Due to the position of the special fracture suture holes, an anatomical repositioning of the tuberosities below the head is possible (Fig. 10).

The primary goal of tuberosity reattachment is to obtain maximum contact with the stem and the proximal humeral shaft while rebuilding them into the anatomical position.

The initial reduction of the greater tuberosity enables both the height and the retroversion to be tested. The greater tuberosity is placed on the diaphysis and the prosthesis. Use the special fracture suture hole for the greater tuberosity and place it in the tuberosity groove under the round-shaped head.



Fig. 10

Determining Definitive Height

The height is evaluated to ensure:

- The tension of the supraspinatus and the long head of biceps which must arch over the *Anatomical Shoulder Fracture Head* and the height of the acromio-humeral space.
- The top of the greater tuberosity should be located below the highest point of the *Anatomical Shoulder Fracture Head*.
- There must be no diastasis, or overlap, between the greater tuberosity and the humeral diaphysis.

Test the retroversion:

- Arm in neutral position – the *Anatomical Shoulder Fracture Head* must face the glenoid.

When the version and height of the *Anatomical Shoulder Fracture Trials* (Rasp and Trial Head) are set, insert the *Anatomical Shoulder Fracture Ruler* into the proximal-lateral suture hole of the Trial Head component and mark the position next to the associated laser mark on the *Anatomical Shoulder Fracture Ruler* to note the desired implant version. Additionally, the alphanumeric character that is closest to the fracture line is noted for reference in final implant placement (Fig. 10a).

Reduce the joint, and perform a final range of motion assessment.

Remove the Rasp by removing the Ruler, unscrewing the *Anatomical Shoulder Fracture Head Trial* with the 2.5mm Hexagonal Screw Driver, removing the Rasp Screw (if it was used attaching the Rasp Handle to the Rasp), and removing the Rasp from the humeral shaft.

Clean the fracture site at the shaft edges and place drill holes through the shaft, two lateral and two medial to the biceps groove. Place sutures through the shaft drill holes (Fig. 11 D/E). These are vertical sutures that go up around the top of the bone segments through the rotator cuff bone junction.



Fig. 10a

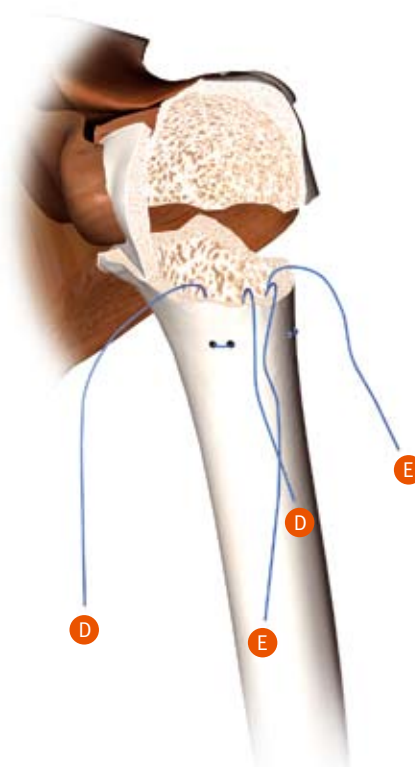


Fig. 11

Assembling the Anatomical Shoulder Fracture Implant

Humeral stem implant size is selected based upon technique and fixation desired. For example, choose for Rasp size 11p/9c the implant stem 9 cemented. If a press-fit is desired, choose for Rasp size 11p/9c the implant stem 11 (refer to Sizing Convention and Consideration section for additional information, page 6). Humeral head implant size is the same size and version (left or right) as the Trial Head chosen.

Connect and assemble the elected *Anatomical Shoulder Fracture Base Plate* to the *Anatomical Shoulder Fracture Stem* with the *Locking Screw* by using the *Torque Wrench Nut* (Fig. 12).

Note: Due to the ability to convert from the *Anatomical Shoulder System* to an *Anatomical Shoulder Inverse/Reverse System*, a gap between Stem and Base Plate will be present.

Connect the distal support to the *Fracture Adapter* (A) (Fig. 13).

Place the assembled stem into the special *Stem Holder* (Fig. 13) and close the *Adapter Arm* (B).

Lock the *Adapter Arm* to the *Stem Holder* by tightening the screw using the *Hexagonal Wrench*.

Connect the *Stem* with *Base Plate* using the *Torque Wrench Nut* connected to the *Torque Wrench* (C) (Fig. 14).

Complete the *Anatomical Shoulder Fracture Implant* by impacting the *Anatomical Shoulder Fracture Head* to the stem (Fig. 15).

Warning: Only use the *Anatomical Shoulder Impactors* (either 01.04236.400 or 72.01.00-01) to assemble the humeral head and humeral stem of the *Anatomical Shoulder Fracture System*. Use of a generic mallet and impactor to assemble the humeral head and humeral stem may result in postoperative loosening of the humeral head from the humeral stem. Either *Anatomical Shoulder Impactor* (Fig. 15) can be found in the *Anatomical Shoulder System Tray 2 (ANS600)*.

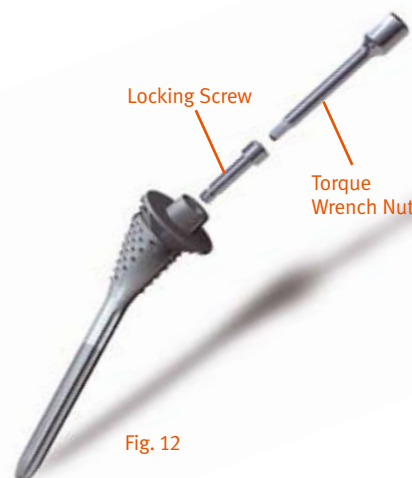


Fig. 12

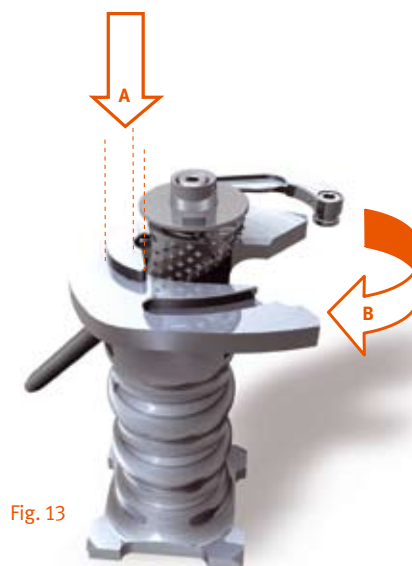


Fig. 13

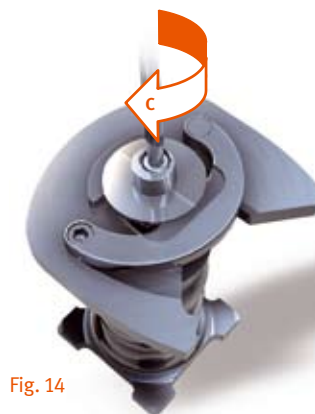


Fig. 14



Fig. 15

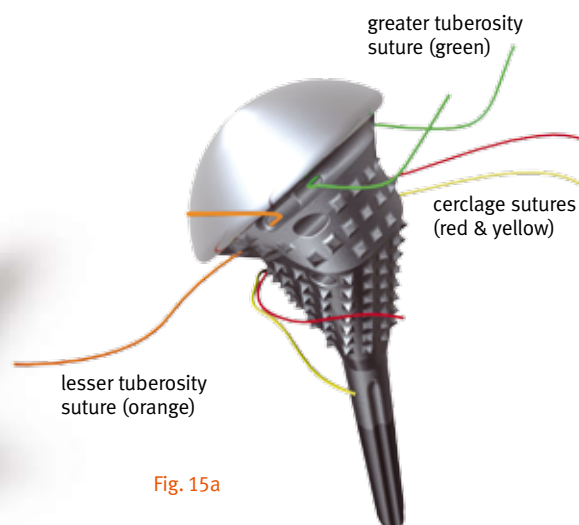


Fig. 15a

Final Suture Preparation of the Anatomical Shoulder Fracture Implant

Insert the lesser tuberosity (orange), the greater tuberosity (green) and the cerclage sutures (red & yellow) (Fig. 15a).

Cementing the Prosthesis

Thoroughly irrigate the medullary canal to remove blood and other debris. Insert a cement plug at the appropriate depth in the medullary canal. If possible, use high-viscosity cement mixed under vacuum, and insert it with a cement gun.

Retroversion and Height Adjustment

Attach the *Anatomical Shoulder Fracture Ruler* onto the *Anatomical Shoulder Fracture Implant* (Fig. 16) by inserting the peg of the Ruler into the superior hole of the Base Plate to establish the proper stem height.

Insert the *Anatomical Shoulder Fracture Implant* by hand into the humeral canal to the same level of the *Anatomical Shoulder Fracture Ruler* relative to the mark, made earlier when the Rasp and the Trial Head were used.

To assess retroversion, attach the pegs of the Control Rod into the superior holes of the Base Plate (Fig. 16a). After removing the Control Rod, use the Head Impactor for final impaction.

If cemented, make sure there is no excess cement extruding from the canal proximally above the humeral stem and into the fracture site. This will interfere with the potential for bony union between the tuberosities, stem, and the diaphyseal fragment. Use a curette to remove any excess cement. It is important to keep the sutures separated to avoid confusion in tying the proper sutures (Fig. 16b).

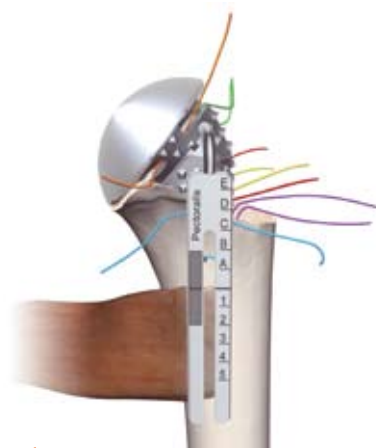


Fig. 16



Fig. 16a

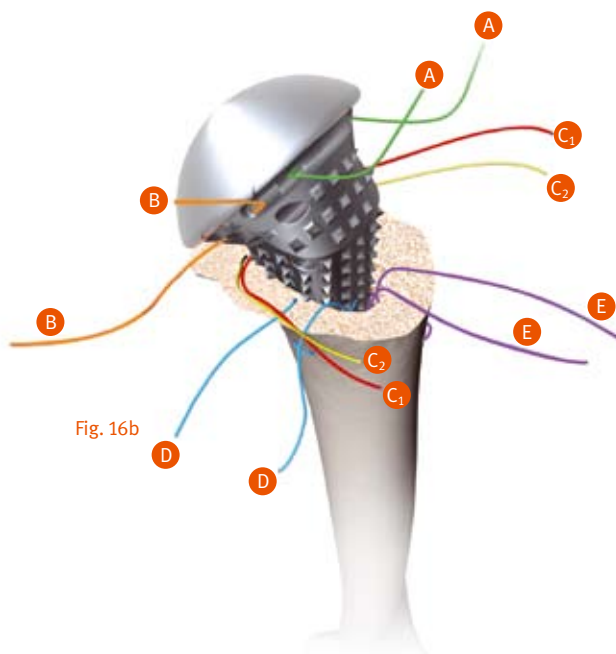


Fig. 16b

Reattaching the Tuberosities

Fixation of the tuberosities is critical to the success of the procedure. Basic principles in fracture repair should be followed to provide stable fixation of the tuberosities to the stem. The following description provides guidelines for using the suture holes to provide proper fixation.

Suture pattern and method can be modified based on the condition of the fracture.

A suture should be placed in the special greater tuberosity suture hole (green: A–A) (Fig. 17a), a second suture in the special lesser tuberosity suture hole (orange: B–B) (Fig. 17c). These sutures will initially be used to position the tuberosities to the shaft in a cerclage fashion (Fig. 17).

The posterior end of the suture, passed to the greater tuberosity suture channel (green: A–A), is passed at the junction between posterior end of the supraspinatus tendon and greater tuberosity. The anterior part is passed inside out at the junction between the greater tuberosity and anterior border of the supraspinatus tendon. This suture is then tied and reduces the greater tuberosity in an anatomic fashion. The cerclage sutures will be passed through the subscapularis tendon (at its insertion), wrapped around the lesser and greater tuberosities and passed through the infraspinatus and teres minor at the tendon insertions. These sutures will be tightened and tied off first.

The suture placed in the humeral shaft lateral to the biceps groove (purple: E–E), will be passed through the supraspinatus tendon at its insertion and used to bring the distal edge of the greater tuberosity back down to the shaft (Fig. 17b).

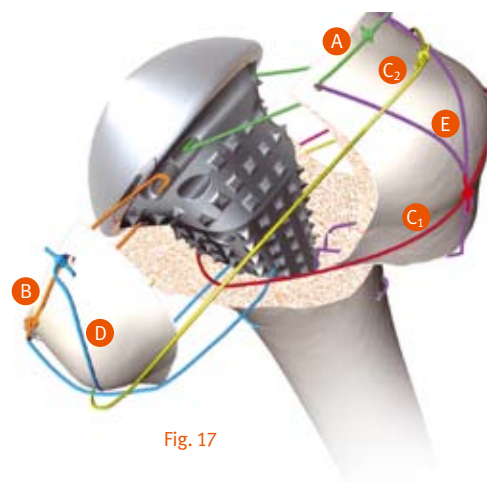


Fig. 17

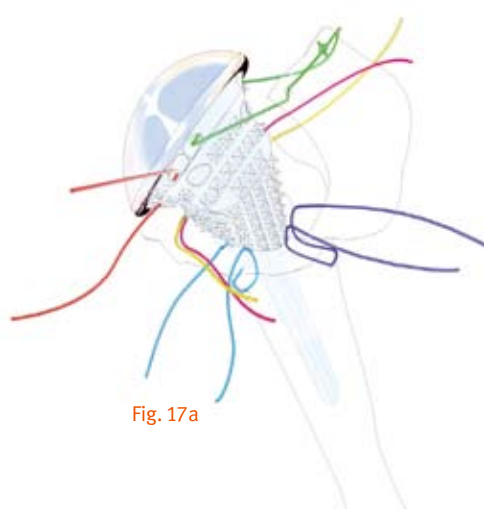


Fig. 17a

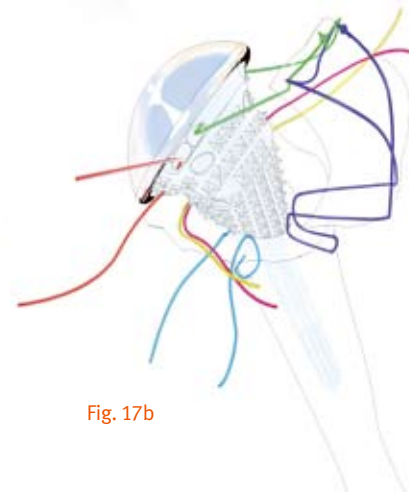


Fig. 17b



Fig. 17c

The suture placed in the humeral shaft medial to the biceps groove (light blue: D–D) will be passed through the subscapularis (at the tendon insertion) and used to bring the distal edge of the lesser tuberosity back down to the shaft. These vertical sutures will be tightened and secured after the cerclage sutures are tied off (Fig. 17c).

The cerclage sutures placed in the *Anatomical Shoulder Fracture Implant* are used to further reduce or compress the fragments against the prosthesis, if necessary.

A suture from each hole will be passed posteriorly through infraspinatus and teres minor insertions, respectively. The suture, exiting anteriorly, will pass around the greater tuberosity fragment and be tied down onto the greater tuberosity (red: C₁–C₁) (Fig. 18).

A second suture will be passed posteriorly around the stem and the medial hole through the subscapularis at its insertion. The suture end, exiting anteriorly, will be wrapped around the lesser tuberosity and tied down against the lesser tuberosity (yellow: C₂–C₂) (Fig. 18 and 19).

Remove and discard any unused sutures. Close the rotator interval from the edge of the supraspinatus to the upper edge of the subscapularis tendon.

Check stability and range of motion. If necessary, place bone graft from the humeral head in and around the tuberosity shaft interface.

Closure

Close the subcutaneous layers and then the skin.

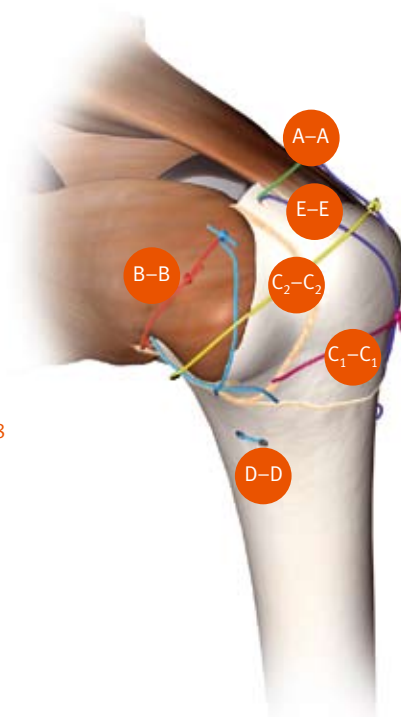


Fig. 18

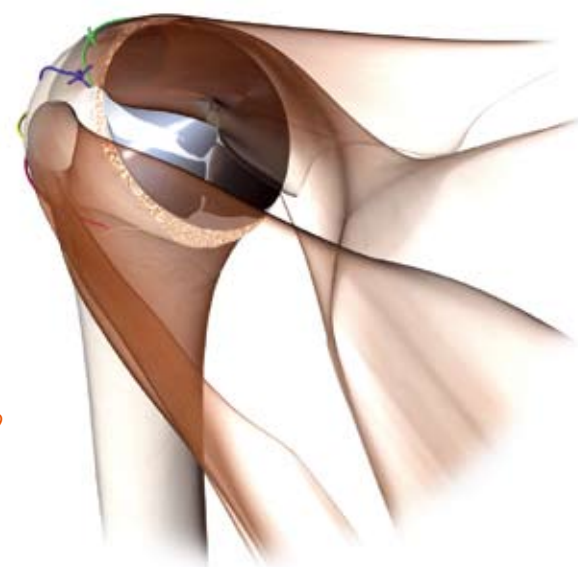


Fig. 19

Revision Steps

Removal of the Anatomical Shoulder Fracture Implant Head

After exposing the axillary nerve, remove the ring retractor and sublux the humerus by externally rotating it. The proximal end of the humerus is now free. Keep the arm adducted, rotated outwards and extended. Place a blunt Hohmann retractor on the calcar and carefully remove all the osteophytes from the anatomical neck using a rongeur. Now expose the attachment of the cartilage to the humeral head by inserting an 8mm hook behind the biceps tendon.

With a cemented humeral stem, use a Lexer Chisel to free the humeral head of cement so that the extraction instrument can be applied.

The Humeral Head Extractor is now applied to the *Anatomical Shoulder Fracture* humeral head and fixed with a two-edged screw. With the aid of the Extractor instrument and the Slide Hammer Weight, the humeral head is separated from the *Anatomical Shoulder Fracture* humeral stem (Fig. 20).

Removal of the Anatomical Shoulder Fracture Base Plate

Once the humeral head has been removed, the Locking Screw is removed by the Hexagonal 4.5mm Wrench (Fig. 21).

Note: Do not use the Torque Wrench. In order to generate the necessary holding force against the torque, the Base Plate must be held by the Forceps.

The Holding Forceps have the contour of the Base Plate and allow a tight contact during the removal procedure (Fig. 21). If necessary, use any adequate chisel in order to fully release the Base Plate.

Removal of the Anatomical Shoulder Fracture Humeral Stem

Once the humeral head and Base Plate have been properly removed, the Adaptor is positioned on the female taper of the stem (Fig. 22).

Using the original Locking Screw, fix the Adaptor to the humeral stem by screwing it into the thread of the stem. The Locking Screw is tightened with the Hexagonal 4.5mm Wrench.

The Extractor with Slide Hammer Weight and Extension Rod can now be screwed onto the Adaptor.

Apply moderate blows to the Extractor with Slide Hammer Weight to remove the implant stem.

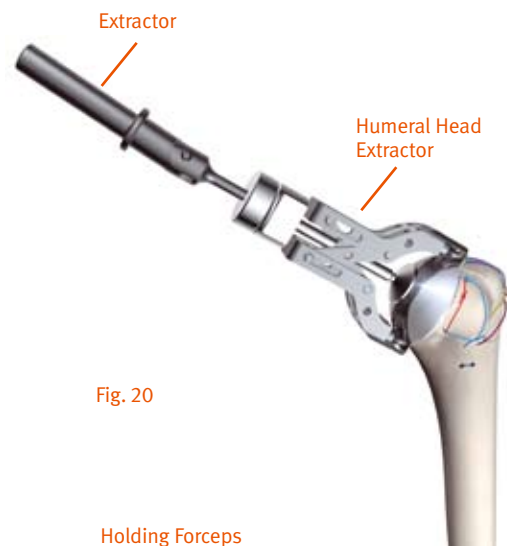


Fig. 20

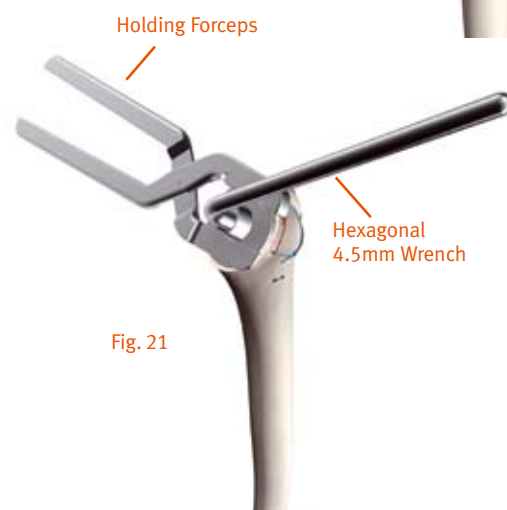


Fig. 21

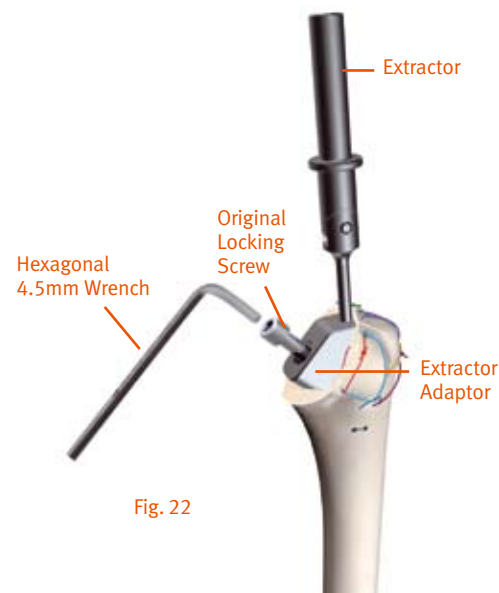


Fig. 22

Further Possibilities

Revision to a New Anatomical Shoulder Fracture Humeral Head

To use a new *Anatomical Shoulder Fracture Humeral Head* once the old humeral head is removed, see page 11.

Revision to an Anatomical Shoulder Adjustable Humeral Head

To use an *Anatomical Shoulder adjustable humeral head* with the *Anatomical Shoulder Fracture stem*, remove the humeral head, Locking Screw, and Fracture Base Plate according to the revision technique previously described.

In order to trial the humeral head, the Fracture X-pin, Expansion Cone, Ball-Taper, and Trial Humeral Heads with Grub Screws will be needed (Fig. 23). Insert the Fracture X-pin by hand into the Fracture stem. The Expansion Cone is then gently placed into the Ball-Taper component, using the Insertion Rod, and carefully placed over the top of the Fracture X-pin onto the Fracture stem.

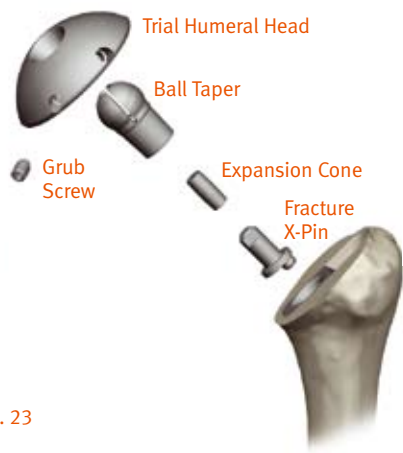


Fig. 23

The Trial Humeral Heads can be used along with the Grub Screws in order to assess the correct size of humeral head needed.

Note: Care should be taken when trialing as the definitive Ball-Taper must NOT be damaged by the Grub Screws or Trial Heads, and the Expansion Cone must NOT be prematurely forced up into the definitive Ball-Taper.

The chosen humeral head is then inserted into the definitive Ball-Taper (with Expansion Cone already placed in the Ball-Taper) (Fig. 24). The humeral head is adjusted so that it covers the resection plane of the humerus. When the head is set parallel with the incision on the humerus and the head covers the resection plane in inclination, retroversion and offset, prefix the head to the Ball-Taper component using three consecutive defined impulses from the Impactor. The prefixed head component is now removed from the stem.



Fig. 24

Note: Care should be taken to ensure that the Expansion Cone does not come out of the Ball-Taper. Before inserting the Set Screw, confirm that the Expansion Cone is in the Ball-Taper.

The Set Screw is inserted from the lower side of the head into the Ball-Taper component using the 4.5mm Nut. The Set Screw is then screwed loosely into the Ball-Taper component until it sticks.

The head implant is then set in the assembly tower and lightly fixed with the Threaded Rod. Connect the Torque Wrench to the 4.5mm Nut. The Set Screw is then fastened with the Torque Wrench, using the 4.5mm Nut, until it is tight. The head prosthesis has now been permanently fixed and can be carefully removed from the assembly block.

Note: Before the head prosthesis can be placed on the stem prosthesis, the cones must be carefully cleaned of blood and possible other residues.

The Fracture X-pin is removed from the Fracture stem by hand. The head prosthesis is now placed on the stem prosthesis, after appropriate rotation. The head prosthesis is then impacted onto the humeral stem with the Humeral Head Impactor.

Please refer to the surgical technique (literature number 06.006.070.12) for complete, detailed instructions.

Converting to an Anatomical Shoulder Inverse/Reverse System

To convert the *Anatomical Shoulder Fracture System* to an *Anatomical Shoulder Inverse/Reverse System*, remove the humeral head, Locking Screw, and Fracture Base Plate according to the revision technique previously described.

The Fracture X-pin is inserted into the Fracture stem. The Fracture X-pin guides the reamer and is essential for directing and fixing the Inverse Humeral Cup.

To prepare the humeral surface for the Inverse Humeral Cup, place a Milling Cutter Bushing onto the Fracture stem. If the Milling Cutter Bushing can not be placed onto the Fracture stem, remove bone or cement with a Lexer Chisel.

Now attach the Revision Humeral Inverse Milling Cutter together with the Cannulated Handle and start reaming the inverse/reverse humeral surface up to the Milling Cutter Bushing in the Fracture stem (Fig. 25).

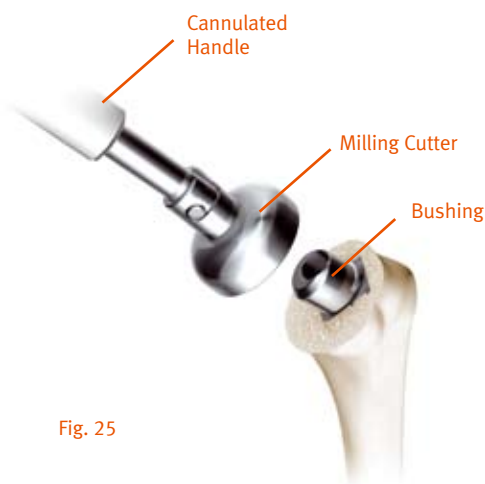


Fig. 25

Note: Care should be taken to ensure that reaming is continued as far as possible up to the Bushing in the Fracture stem.

If necessary for a well prepared humeral resection area, use the oscillating saw for resection of the nonreamed humeral surface area.

Note: The Milling Cutter Bushing comes in five different types (straight, $\pm 10^\circ$ retro and $\pm 20^\circ$ retro version). To set the Milling Cutter Bushing correctly onto the Fracture stem, all bushings have a marking line. This line always needs to face the lateral side of the stem (Fig. 26).

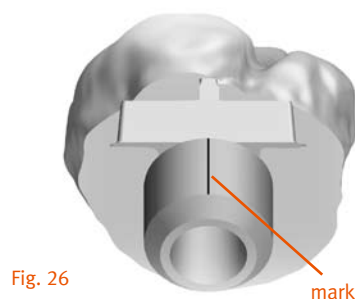


Fig. 26

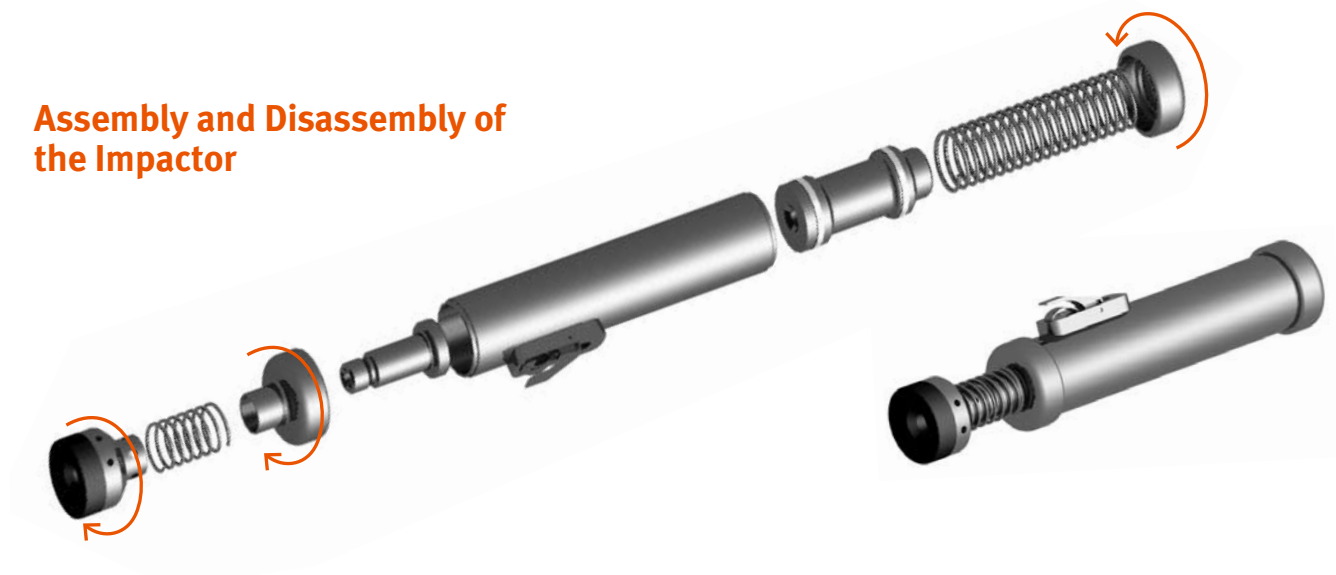
The Fracture X-pin is removed from the Fracture stem. The plane of the humeral resection can be protected with a disk-shaped protector (Fig. 27). Disks of three different diameters (40, 44 and 48mm) are available. The pins of the lower side of the disks are inserted at the level of the incision.



Fig. 27

For complete, detailed instructions, including trialing and implantation of the humeral cup, PE inlays, and glenoid components, please see *Anatomical Shoulder Inverse/Reverse Surgical Technique* (97-4223-102-00).

Assembly and Disassembly of the Impactor

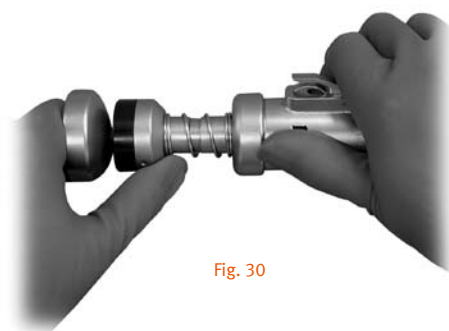
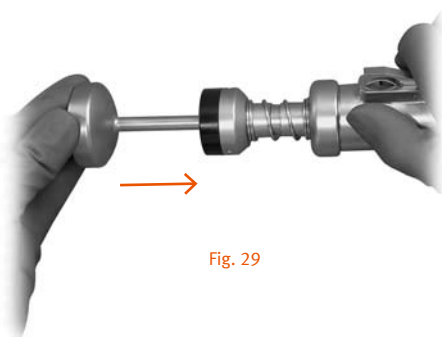
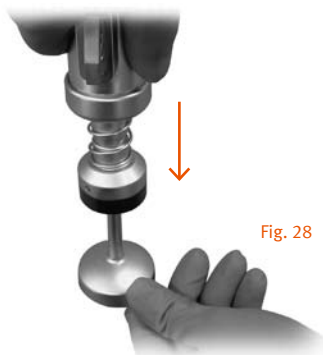


Charging the Impactor

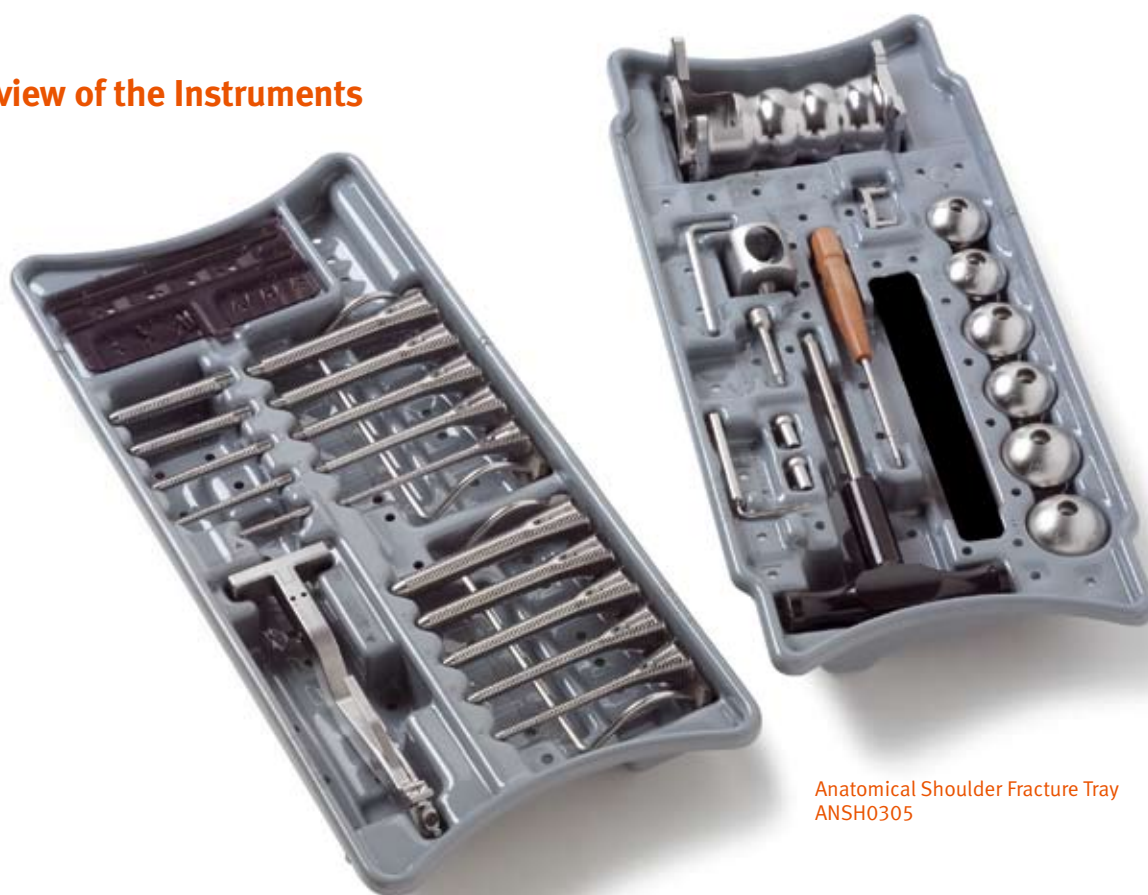
Tense the Impactor with the help of the loading aid (Charger).

The Impactor is connected through the shaft of the Charger.

There are two possible procedures: Either the Charger is placed on the table (Fig. 28), or the Charger is held in one hand, the Impactor in the other (Fig. 29, 30), while the shaft of the Charger is inserted into the Impactor and tenses the Impactor.



Overview of the Instruments



Anatomical Shoulder Fracture Tray
ANSH0305

The preparation and implantation of the *Anatomical Shoulder Fracture System* should be carried out in a standardized manner. The set of instruments has been logically developed and the required instruments have been limited to a minimum. The correct use and handling of these special devices are a requirement of the success of the surgery.

To convert an *Anatomical Shoulder Fracture System* into an *Anatomical Shoulder Inverse/Reverse System*, without the need for stem removal, additional instruments are required:

- *Anatomical Shoulder Inverse/Reverse Tray* ANSH800
- *Anatomical Shoulder Instrument Tray I and II* ANSH500 and ANSH600
- *Anatomical Shoulder Glenoid Tray* ANSH0100
- *Anatomical Shoulder Fracture Revision Tray* KTANSH0310

Please see the *Anatomical Shoulder Inverse/Reverse System Surgical Technique* for additional information.

Instruments

Article REF
**Anatomical Shoulder
 Fracture Instrument Tray**
 (complete set) ANSH0305

Tray Cover 01.00029.031

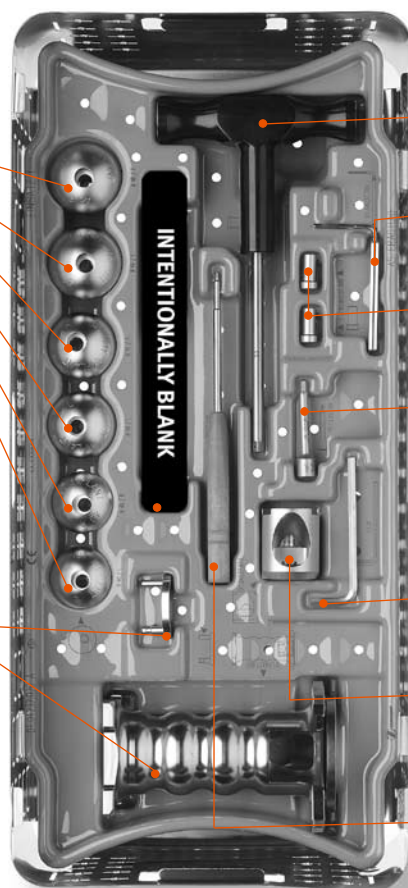
Anatomical Shoulder Fracture Tray
 (empty) 01.04237.010

**Anatomical Shoulder Fracture Tray
 Insert I** (empty) 01.04237.020

Anatomical Shoulder Fracture Humeral Trial Heads

Left 48	01.04237.480
Right 48	01.04237.485
Left 44	01.04237.440
Right 44	01.04237.445
Left 40	01.04237.400
Right 40	01.04237.405

Anatomical Shoulder Fracture Adapter
 01.04237.600



Article REF
Torque Wrench for Humeral Head
 72.11.20-06

Anatomical Shoulder Fracture Ruler
 01.04237.700

**Anatomical Shoulder Fracture Humeral
 Trial Head Screws (2)** 01.04237.500

Torque Wrench Nut, 4.5mm
 72.11.20-09

Hexagonal Wrench, 5mm
 5331

**Anatomical Shoulder Fracture
 Humeral Stem Setting Instrument**
 01.04237.610

Hexagonal Screwdriver, 2.5mm
 109.02.020

Article	REF
Anatomical Shoulder Fracture Tray	
Insert II (empty)	01.04237.030

Anatomical Shoulder Fracture Rasps

(Set 1)

Size 7.5 [8p]	01.04237.075
Size 9.5 [10p/8c]	01.04237.095
Size 11.5 [12p/10c]	01.04237.115
Size 13.5 [14p/12c]	01.04237.135
Size 15.5 [14c]	01.04237.155

Anatomical Shoulder Fracture Rasps

(Set 2)

Size 6.5 [7p]	01.04237.065
Size 8.5 [9p/7c]	01.04237.085
Size 10.5 [11p/9c]	01.04237.105
Size 12.5 [13p/11c]	01.04237.125
Size 14.5 [13c]	01.04237.145

Anatomical Shoulder Fracture**Rasp Springs (5)**

01.04237.180

Article

REF

**Anatomical Shoulder Fracture
Rasp Handle**

01.04237.200

**Anatomical Shoulder Fracture
Rasp Extensions**

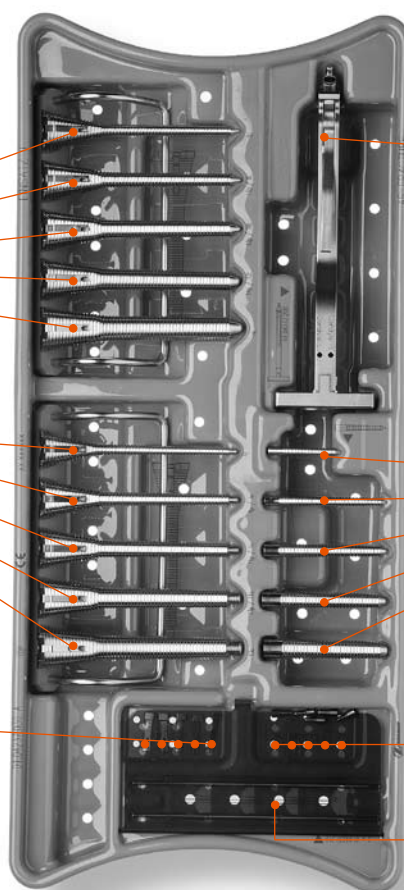
Size 6.5 [7p]	01.04237.066
Size 8.5 [9p/7c]	01.04237.086
Size 10.5 [11p/9c]	01.04237.106
Size 12.5 [13p/11c]	01.04237.126
Size 14.5 [13c]	01.04237.146

**Anatomical Shoulder Fracture
Rasp Screws (5)**

01.04237.190

**Anatomical Shoulder Fracture
Alignment Rods (2)**

01.04237.310



Anatomical Shoulder Fracture Revision Instrument Set

Article REF
**Anatomical Shoulder
 Fracture Revision Instrument Set**
 (complete set) KTANSH0310

Anatomical Shoulder Tray Lid
 01.00029.031

Anatomical Shoulder Fracture Revision Tray
 (empty) 01.04237.011

Fracture Humeral Stem Extractor Adapter
 01.04237.730

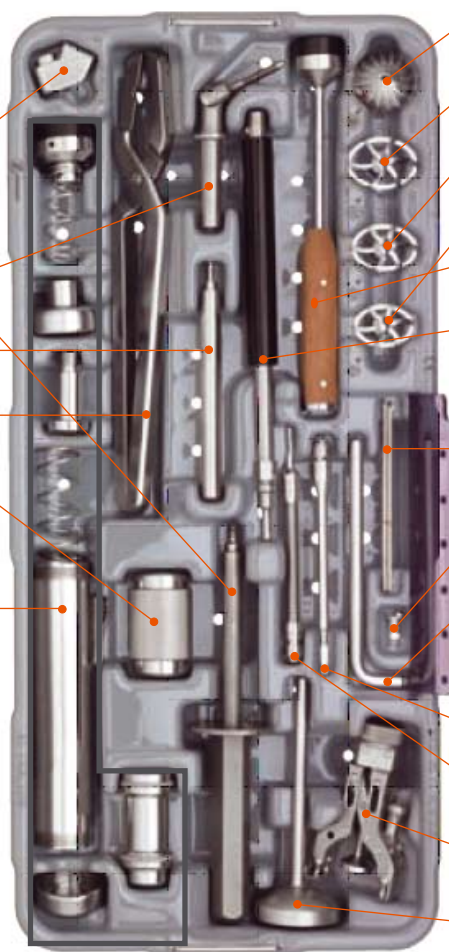
Humeral Provisional Extractor
 72.01.00.02

Extension Rod 01.04236.115

Fracture Holding Forceps 01.04237.706

Slide Hammer Weight 01.04235.120

Anatomical Impactor 01.04236.400



Sclerotic Reamer 72.11.10.34

Large Glenoid Reamer 01.04236.540

Medium Glenoid Reamer 01.04236.537

Small Glenoid Reamer 01.04236.534

Humeral Head Impactor 72.01.00.01

Cannulated Milling Handle 72.09.01.30

Glenoid K-wire (2) 72.09.01.20

Fracture X-Pin 01.04237.186

Fracture Hexagonal 4.5mm Wrench
 01.04237.720

Rigid Shaft 75.80.08

Flexible Shaft 75.80.04

Humeral Head Extractor 01.04235.010

Anatomical Charging Device 01.04236.410



Anatomical Shoulder Portfolio

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

The CE mark is valid only if it is also printed on the product label.

Contact your Zimmer representative or visit us at www.zimmer.com



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