



Humerus Plates
Surgical Technique



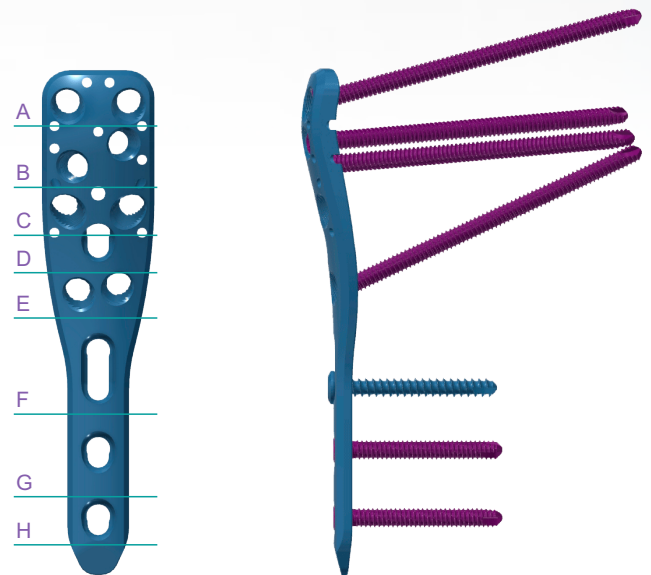
Medical Implants

Astrolabe recognizes that proper surgical procedures and techniques are responsibilities of medical professionals.

The following guidelines are provided for information purposes only. Each surgeon must evaluate the appropriateness of the procedures based on their medical training, experience and condition of the patient. Before using the system, the surgeon must consult the operating instructions for additional warnings, precautions, indications, contraindications and adverse effects.

● Astrolabe Humerus Plates

- Standard and Long Plates;
- 9 proximal screw holes (A-E);
- Ø3.5mm Cortical and Locking Screws;
- Carefully developed to provide high angular stability and to meet situations where it is necessary to reinforce fixation in osteoporotic bones or multifragmentary fractures;
- 10 additional suturing holes in proximal portion;
- Long Plate up to 290mm with reinforced shaft.



● General Indications:

- Fractures and Fractures Dislocations;
- Osteotomies of the proximal Humerus;
- Nonunions of the proximal Humerus.

Humerus Plates

Special Locking Plate - Humerus

05-12 Holes - Proximal
Long



Special Locking Plate - Humerus

03-5 Holes - Proximal



Humerus Screws

Cortical Screw Ø3.5mm



12mm - 30mm, 2mm increments

Locking Screw Ø3.5mm



12mm - 30mm, 2mm increments

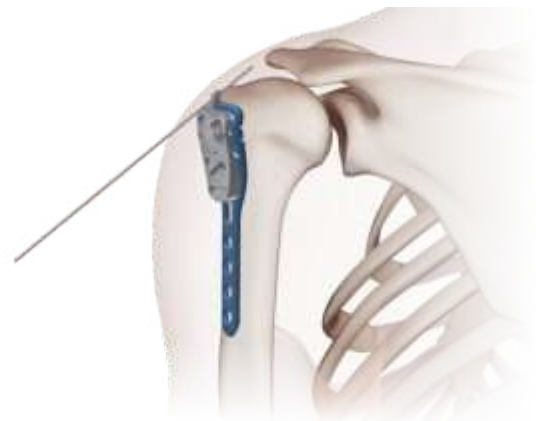
STEP 01

Surgical Technique

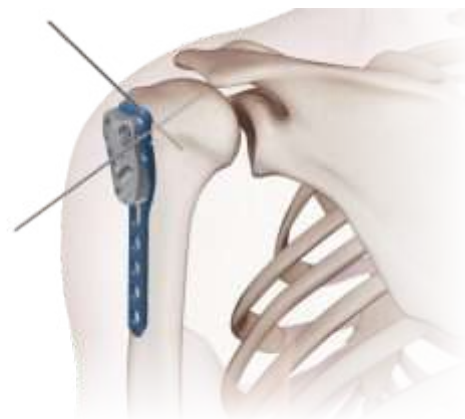
- Once reduction of the bone fragments has been properly done, choose the appropriate plate and, if necessary, it can be moulded to better fit patient's anatomy.
- Attach to the plate proper Insertion Guide (with or without nose) (item 03/04).



- Using Insertion Guide (with nose) (item 04) insert a Kirschner Wire in the proximal guide hole and position approximately 6mm-8mm distal to the rotator cuff.



- Using the Insertion Guide (without nose) (item 03), properly place the plate 3 to 5 mm posterior to the bicipital groove and approximately 5 mm inferior to the top of the greater tuberosity and align it to the humeral shaft.



NOTE: Bending proximal area of the plate must be avoided intraoperatively in order to maintain the proper alignment between Insertion Guide and the plate.

STEP 02

Surgical Technique

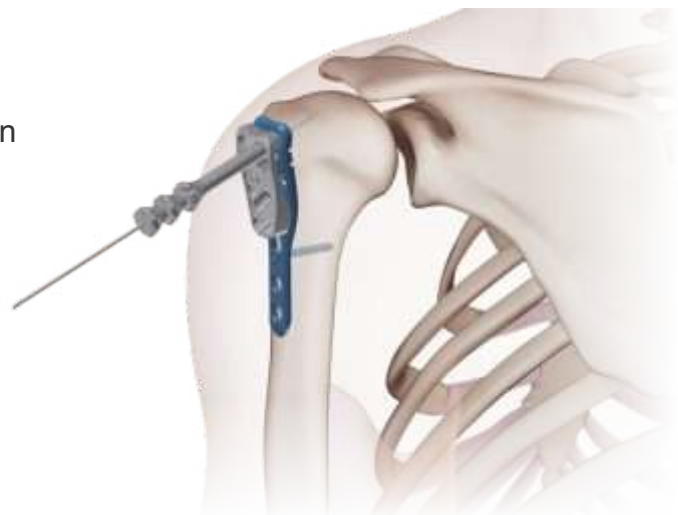
- **Fix the plate temporarily using a 3.5mm cortical Screw in the elongated plate shaft hole**

- Drill both cortices by using the Drill Bit (item 01) with the Universal Drill Guide;
- The reading of the screw measure can be acquired by using the Depth Gauge;
- Use the Shaft Screwdriver to insert 3.5mm cortical screw.



- Alternatively, you can temporarily fix the plate in the humeral head by using Kirschner Wire through the assemblage of the three Sleeves (Outer Sleeve (item 08), Drill Sleeve (item 06), Wire Sleeve (item 07)) on the plate.

NOTE: Care should be taken to avoid the penetration of the Kirschner Wires in joint surface

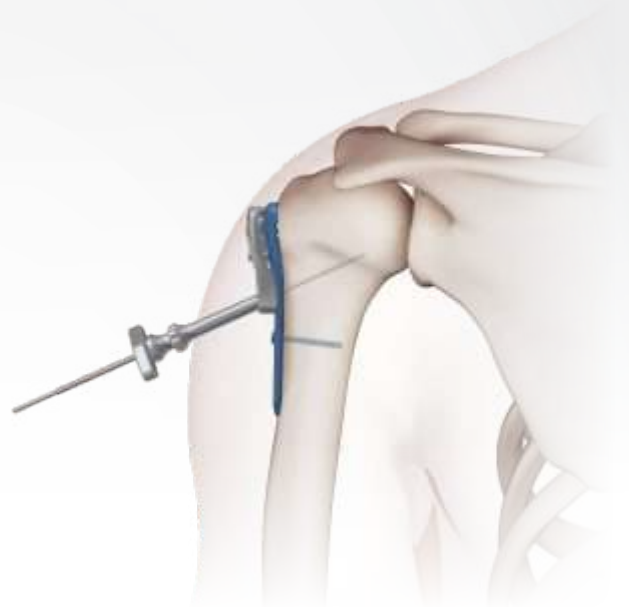


STEP 03

Surgical Technique

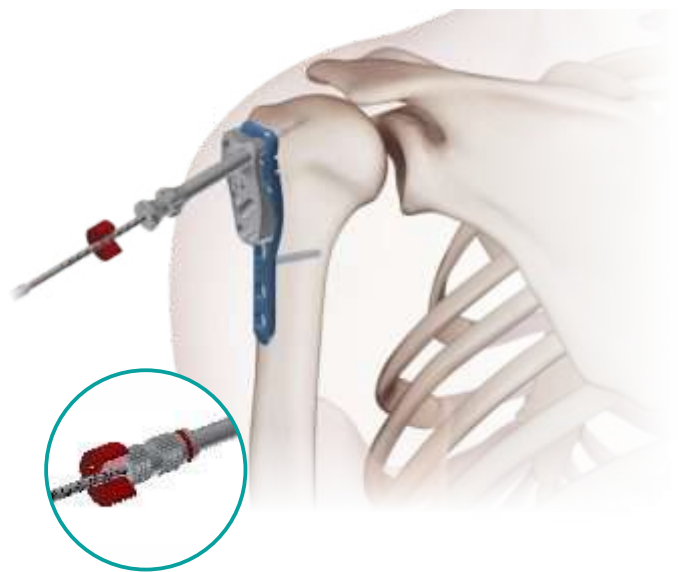
- Good bone stock is required to use the Pulling Device (item 12) for temporary reduction;
 - Use a power tool to insert the Pulling Device through the Drill Sleeve until desired depth;
 - Slide the Wing Nut (item 14) over the Pulling Device and tighten, meanwhile, temporary fracture reduction can be observed.

NOTE: Care should be taken to avoid the penetration of Pulling Device in joint surface.



Proximal Screws Preparation and Insertion

- Attach the Drill Sleeve (item 05/06) on the plate and use the Drill Bit (item 02) to drill approximately 5m-8mm from the joint surface;
 - The reading of the screw measure can be acquired directly on the Drill Bit.
- In **Osteoporotic bone** only drill the lateral cortex:
 - use the Outer Sleeve (item 08) in the desired hole of the Insertion Guide and proceed with drilling using the Drill Bit with Stop (item 02);
 - Alternatively, you can use the Threaded Drill Sleeve (item 06) attached directly on the plate, without Insertion Guide.



STEP 05

Surgical Technique

- The reading of the screw measure can be acquired inserting Depth Probe (item 13) through Outer Sleeve (item 08) and push it into humeral head;
 - For Locking Screws Depth Probe should be positioned 5mm - 8mm bellow joint surface.

NOTE: Care should be taken to avoid the penetration of Depth Probe in joint surface.



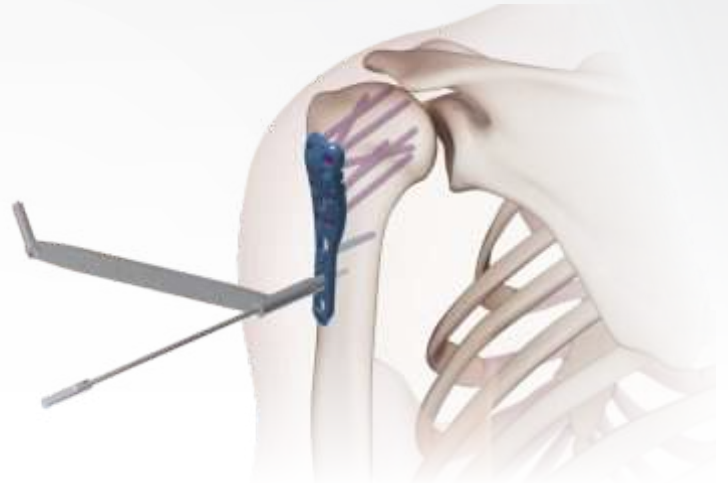
- In order to ensure precise locking of the Locking Screws in the plate, remove Drill Sleeve and use Torque Limiter properly attached to the Shaft Screw Driver through Outer Sleeve.
 - Screws can be positioned manually or with power tool;
 - This procedure of placement of the screws is repeated as many times as necessary.

STEP 06

Surgical Technique

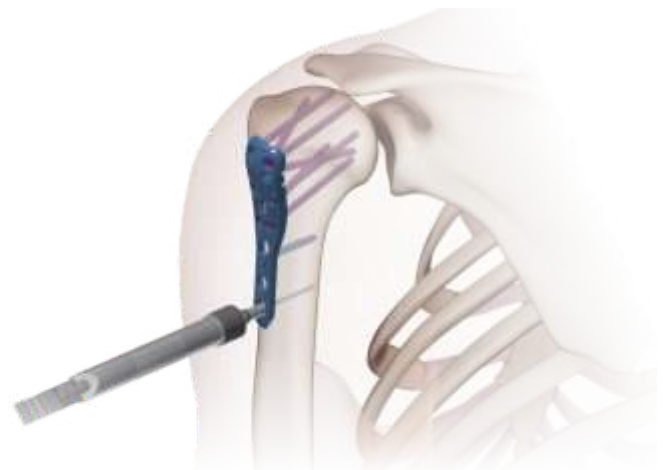
Shaft Screws Insertion

- Determine which Screws will be placed in the shaft of the plate and, if your option is use a combination of Cortical Screws and Locking Screws, Cortical Screw must be placed first to pull the plate to the bone.



Cortical Screw Positioning

- Use the Universal Drill Guide with Drill Bit and proceed with drilling through both cortices
- The reading of the screw measure can be acquired by using the Depth Gauge.



STEP 07

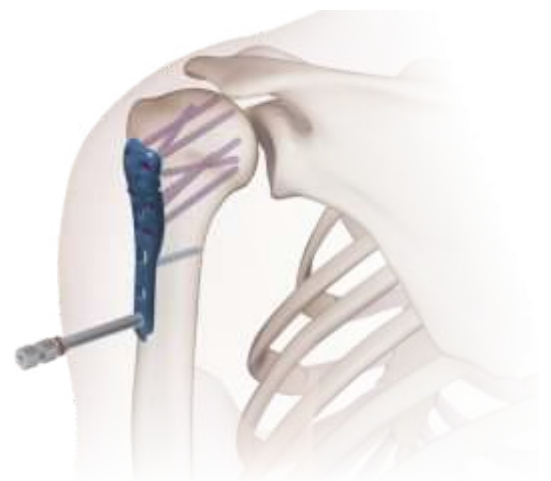
Surgical Technique

- Use the Shaft Screwdriver to insert Cortical Screw



Locking Screw Positioning

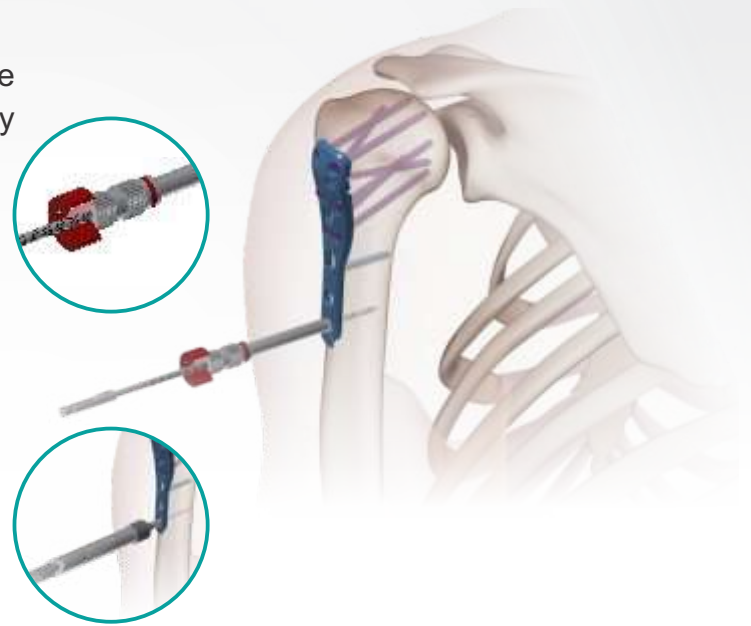
- Properly place the Threaded Drill Sleeve (item 06) by turning it into the threaded hole until its fully seated, then proceed with drilling using the Graduated Drill Bit (item 02), through both cortices.



STEP 08

Surgical Technique

- The reading of the screw measure can be acquired directly on the scale of the Drill Bit or by using the Depth Gauge.



- Use Torque Limiter properly attached to the Shaft Screw Driver and position the Locking Screws manually or with power tool.

NOTE: It is highly recommended to reduce the speed of the power tool when tightening the head of the Locking Screw into the plate.

01 Drill Bit - Ø2.8 x 125mm
 AO Coupling - Barrel Ø6.5mm
 Cod.: 09.01.12.28125



02 Graduated Drill Bit Ø2.8 x 165mm
 AO Coupling with Drill Stop
 Red Code
 Cod.: 09.01.13.28165



03 Insertion Guide
 Proximal Humerus Plate
 Cod.: 09.05.06.00000



04 Insertion Guide
 Proximal Humerus Plate
 With Nose
 Cod.: 09.05.06.00010



05 Drill Sleeve - Ø2.8mm
 Cod.: 09.06.00.28000



06 Drill Sleeve - Ø2.8mm
 Threaded
 Cod.: 09.06.01.28000



07 Wire Sleeve - Ø1.6mm
 Cod.: 09.06.02.16000



08 Outer Sleeve - Ø5.3mm
 Cod 09.06.09.53000



09 Bending Template
 For Humerus Proximal Plate - 3H
 Cod 09.15.03.35003



10 Bending Template
 For Humerus Proximal Plate - 5H
 Cod 09.15.03.35005



11 Bending Template
 For Humerus Proximal Plate - 8H
 Cod 09.15.03.35008



12 Pulling Device - Ø2.6 x 160mm
 Without Nut
 Cod.: 09.28.00.26160



13 Depth Probe
 Humerus Plate
 Cod.: 09.37.00.00000



14 Wing Nut
 For Pull Reduction Device
 Cod.: 09.38.02.00000





Humerus Plates

Surgical Technique

Rua José Gomes Ferreira nº 2 - Armazém 1
2660-517 São Julião do Tojal, Loures, Portugal
Tlf.: (+351) 219 672 298 | info@astrolabe-medical.com
www.astrolabe-medical.com