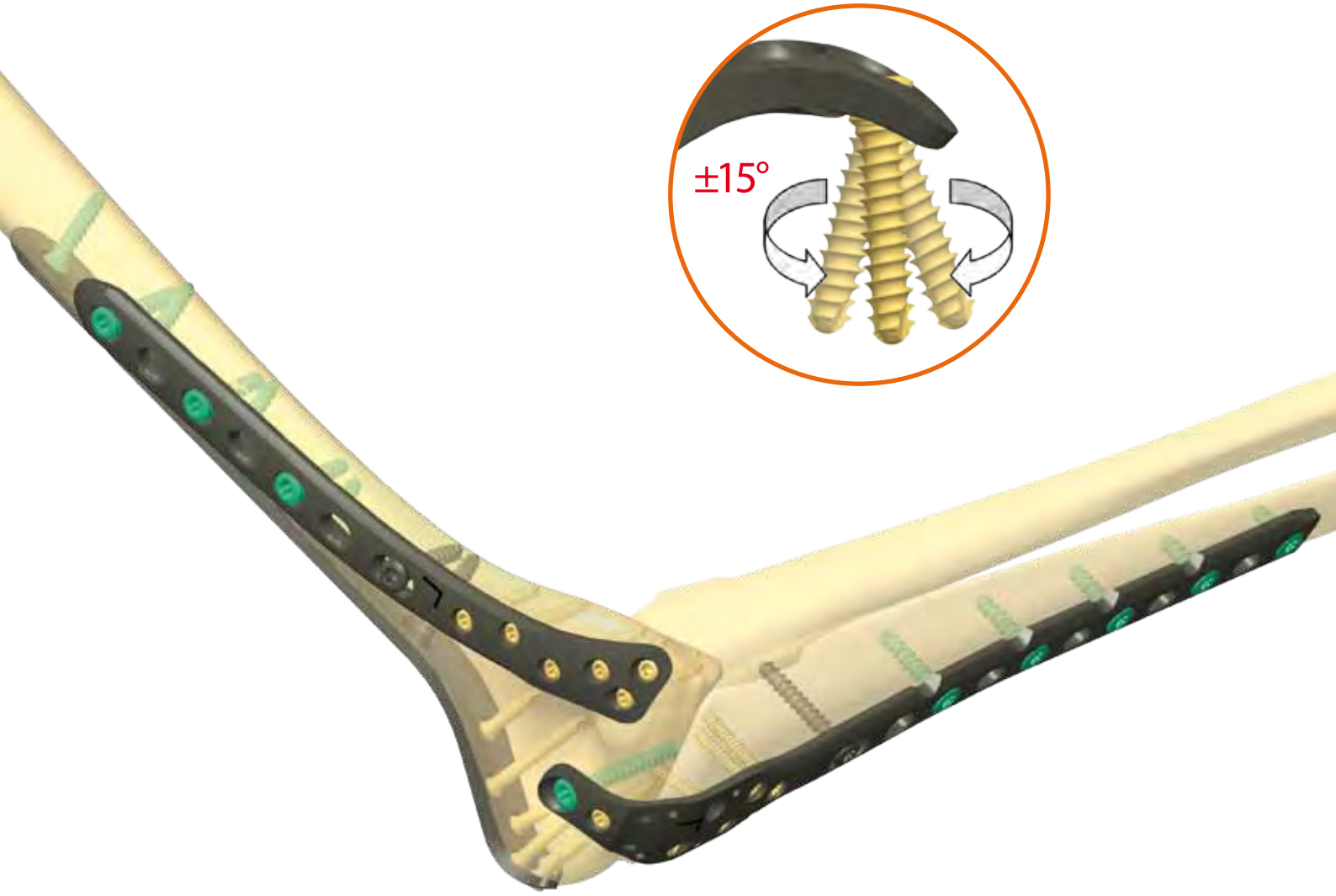
YDFIX Distal Humerus Plate



References

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M.Kemal University

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Canakkale University

Content

1 | Introduction

As part of the Ydfix plate family, Ydfix Distal Humerus (YDH) system is designed to be applied for the fractures of elbow area. The system includes 5 different plates, Dorsolateral (DL, Extraarticular Dorsolateral (EDL), Straight Medial (SM), Bent Medial (M) and Olecranon plates subsequently.
All the above plates share the features of Ydfix family, namely, they are all capable of ensuring ± 15 degree polyaxial movement from the anatomically optimized basis direction. The total range of motion is 30 degrees, step-free.

1.1 | The Implant

- Polyaxial angle stabilized system in step - free ±15 deg angulation of insertion
- Maximum 3 times of correction possibility when misidentifying the correct screw direction
- Optimal, pre-determined screw directions in the holes
- Thinned head, the implant does not interfere with the soft tissues
- Rounded edges to protect nearby soft tissues
- Ability to perform minimally invasive surgery
- Oval hole for plate positioning
- Bending facilitation features on the plates above 7 holes on tail
- Self tapping but blunt ended screws to avoid tissue irritation
- Anodized Titanium raw material
- Torx headed screws

1.2 | Instruments

- Capable of drilling in preset and ±15 deg step - free directions
- Instruments and implants in one tray
- Optimized instruments
- Color coded torque screwdrivers

2.7 mm screw 1 Nm

3.5 mm-es screw 1.5 Nm

1.3 | Indications

- Intraarticular and periarticular distal humerus fractures
- Olecranon fractures

2 | Implant range

2.1 | Ydfix Dorsolateral Plate – DL

Holes on tail	Side
3H	left/right
5H	left/right
7H	left/right
9H	left/right
11H	left/right
13H	left/right

Raw material

Anodized Titanium

2.2 | Ydfix Medial Plate - M

Holes on tail	Side
3H	left/right
5H	left/right
7H	left/right
9H	left/right
11H	left/right
13H	left/right

Raw material

Anodized Titanium

2.5 | YDFIX Olecranon Plate

Holes on tail	Side
3H	left/right
5H	left/right
7H	left/right
9H	left/right
11H	left/right

Raw material

Anodized Titanium

2.3 | Ydfix Extraarticular Dorsolateral Plate - EDL

Holes on tail	Side
3H	left/right
5H	left/right
7H	left/right
9H	left/right
11H	left/right
13H	left/right

Raw material

Anodized Titanium

2.4 | Ydfix Straight Medial Plate – SM

Holes on tail	Side
3H	straight
5H	straight
7H	straight
9H	straight
11H	straight

Raw material

Anodized Titanium

2.6 | Ydfix screw Ø 2.7 mm

Length (mm)

8 - 60

Raw material

Anodized Titanium

Color

Blue

2.7 | Ydfix screw Ø 3.5 mm

Length (mm)

10 - 50

Raw material

Anodized Titanium

Color

Green

2.8 | Cortical screw - TX Ø 3.5 mm

Length (mm)

8 - 60

Raw material

Anodized Titanium

Color

Grey

3 | Surgical description

3.1 | Ydfix distal humerus plate – Dorsolateral plates

3.1.1 | Positioning of the patient

The patient is positioned in prone position with a support of the broken arm. The elbow can be freely moved. Protect the limb with flexible bandage until isolation to prevent swelling.

3.1.2 | Incision

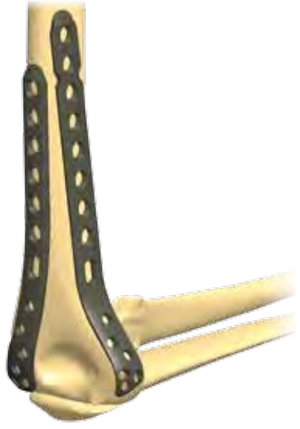
Slightly arched incision on the dorsal surface of the arm at the elbow area until the proximal section of the ulna. After incision separate ulnar nerve and keep it out of the area by using a rubber band.
Pay attention to nervus radialis when using a longer plate.

3.1.3 | Temporary fixation of the fracture

After reposition fix the distal fragments with Kirschner wire.

3.1.4 | Selecting the plate

To avoid the stress of the diaphysis do not use dorsolateral and medial plates of the same length. E.g.: if the dorsolateral plate is 7 holes in length the medial plate shall be 5 holes long. To ensure adequate stability, use both plates.
The plates could be modellated if needed. Use the plate bending tools (4 mm for the holes of 2.7 mm polyaxial screws and 6 mm for the 3.5 mm screws). Drive the bending tools fully into two neighbouring holes where you wish to bend the plate and make the bending.



3.1.5 | Position of the plate

The plate shall be on the spoon shaped area of the dorsolateral side of the distal humerus not to touch the capitulum and be of secure distance from fossa olecrani.
Move the elbow to check that the plate does not touch the radius head. Keep a 3 mm distance between the edge of the plate and the cartilage.

3.1.6 | Temporary fixation of the plate

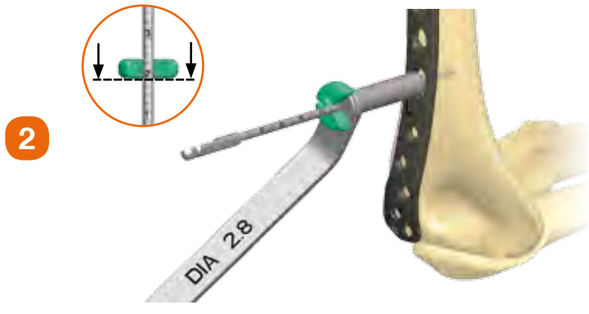
After the positioning of the plate fix it with a Kirschner wire through one of the distal holes. Use the double drill sleeve's straight side to drill for the cortical screw a core hole of 2.8 mm in the oval hole. Use the 2.8 mm drillbit.

Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2) Remove Kirschner wire.

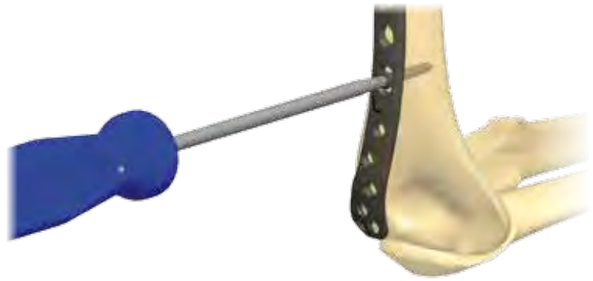
Attention!
The second option cannot be used when drilling through the conical side of the double drill sleeve.



3 | Surgical description

3.1 | Ydfix distal humerus plate – Dorsolateral plates

Drive the 3.5 mm cortical screw in so that the fine positioning of the plate could be made. Use T15 Torx screwdriver. After reaching the final position tighten the cortical screw fully.



3.1.7 | Locking of the distal end of the plate

The distal holes ensure anatomically optimized screw directions. (1)
In case you wish to use these directions for screw placement then drill through the straight side of the 2.0 mm sleeve. The tip of the sleeve fits into the holes of the plate thus giving the optimal direction.
Take precautions to avoid the danger zones of the area and the articular surface.
Use 2.0 mm drillbit for drilling core hole of the 2.7 mm screws.

The plate is capable of polyaxial locking also. Screws can be inserted within ± 15 degrees from the optimal direction. Step free but locking connection could be achieved within this range. (2)
Use the conical side of the 2.0 mm double drill sleeve and the 2.0 mm drillbit. The tip of the sleeve fits into the hole and the axis of the conical sleeve is in the optimal direction. This ensures the ±15 degree deviation from the optimal direction.

When using any of these techniques make sure with image intensifier control that the screws avoid the danger zones of the area and the joint surface.

If you wish to place a screw into the hole where the Kirschner wire is then after the removal of the wire you can drive the screw in with no further drilling.

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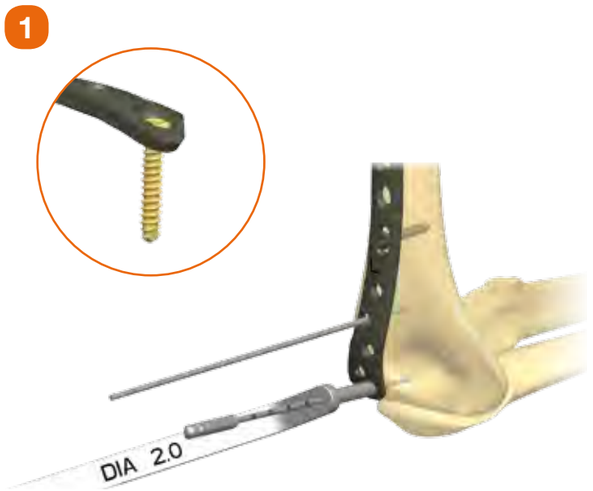

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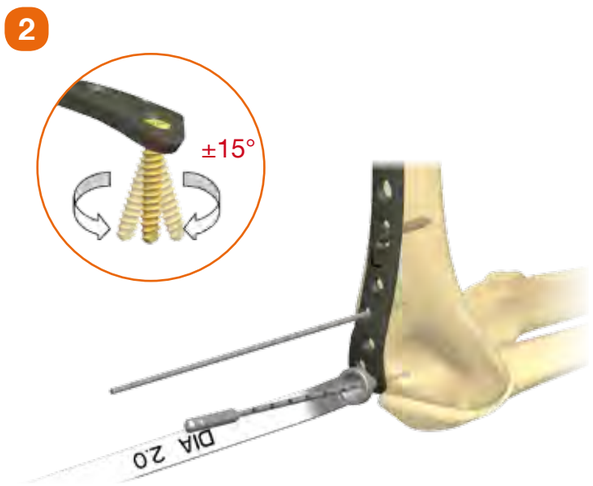


3.1.8 | Screw length gauging

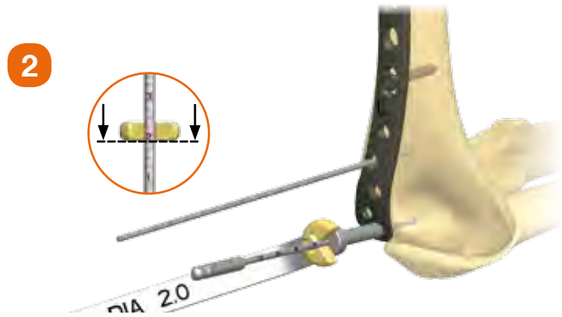
If you drilled through the conical side of the double drill sleeve then use the length gauge without the sleeve as shown on image. (1)

Attention!
When drilling through the conical side of the double drill sleeve the length gauging with the scaled drillbit is not possible.

If you used the straight side of 2.0 mm the double drill sleeve then read the screw length on the bottom part of the yellow drill stop from the scale of the drillbit. Scaling is made by 2 mm steps. (2)

1

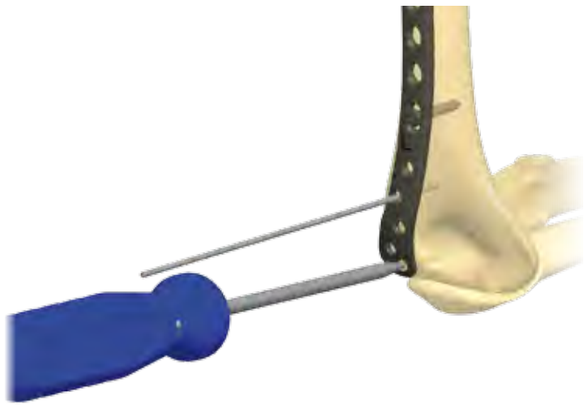
2



3.1.9 | Screw placement

Drive the screw to the final position by using a T9 Torx screwdriver.

Repeat 3.1.7- 3-1-9 steps until all the required screws are in the plate.
When drilling subsequent holes into the capitulum make sure that polyaxial screws do not interfere with each other. Continuously monitor screw positions with image intensifier.
At this point the tail of the plate is not fixed apart from the cortical screw in the oval hole.



3.1.10 | Locking of the tail

It is possible to use both angle stabilized and cortical screws on the tail of the plate. Angle stabilized locking is recommended.

3.1.10.1 | Drilling on the tail

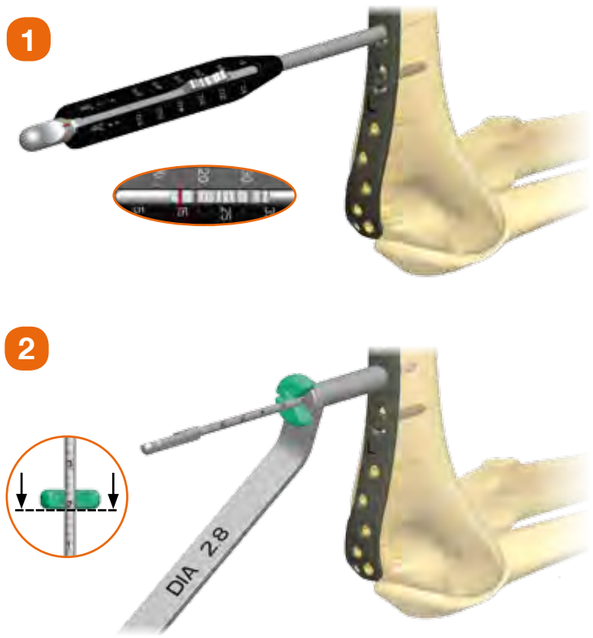
Use the straight side of the 2.8 mm double drill sleeve for the cortical or angle stabilized screws. Place it on the middle of the hole and drill with 2.8 mm drillbit.
Be careful not to interfere with the implants or the screws.

3.1.10.2 | Length gauging

Measure screw length according to point 3.1.6.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

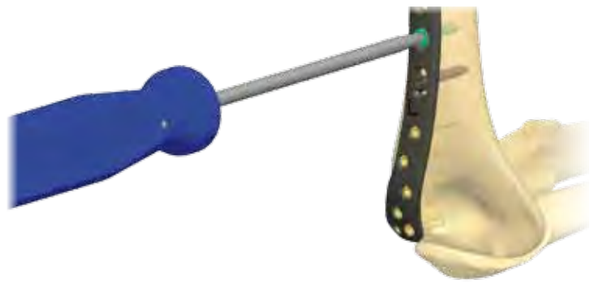
The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)



3.1.10.3 | Screw placement

Use T15 Torx screwdriver to place the screw into the final position.

Repeat steps 3.1.10.1 – 3.1.10.3 until all the desired screws are in position on the tail.



3.2.1 | Positioning of the patient

The patient is positioned in prone position with a support of the broken arm. The elbow can be freely moved. Protect the limb with flexible bandage until isolation to prevent swelling.

3.2.2 | Incision

Slightly arched incision on the dorsal surface of the arm at the elbow area until the proximal section of the ulna. After incision separate ulnar nerve and keep it out of the area by using a rubber band.
Pay attention to nervus radialis when using a longer plate.

3.2.3 | Temporary fixation of the fracture

After reposition fix the distal fragments with Kirschner wire.

3.2.4 | Selecting the plate

To avoid the stress of the diaphysis do not use dorsolateral and medial plates of the same length. E.g.: if the dorsolateral plate is 7 holes in length the medial plate shall be 5 holes long. To ensure adequate stability, use both plates.
The plates could be modellated if needed. Use the plate bending tools (4 mm for the holes of 2.7 mm polyaxial screws and 6 mm for the 3.5 mm screws). Drive the bending tools fully into two neighbouring holes where you wish to bend the plate and make the bending.

3.2.5 | Position of the plate

The medial plate shall be on the medial ridge of the distal humerus or a bit backwards and shall touch the medial (ulnar) collateral tendon's starting point with its distal tip.

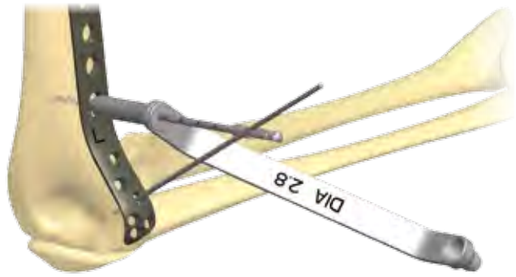
3.2.6 | Temporary fixation of the plate

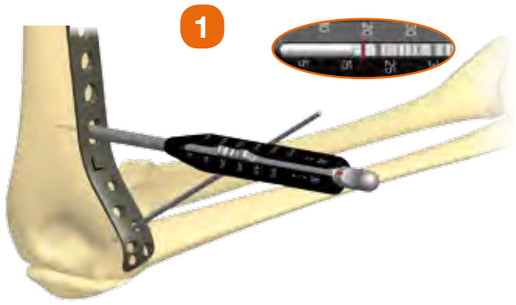
After the positioning of the plate fix it with a Kirschner wire through one of the distal holes. Use the double drill sleeve's straight side to drill for the cortical screw a core hole of 2.8 mm in the oval hole. Use the 2.8 mm drillbit. Drill carefully not to damage the screws that are already in the bone.

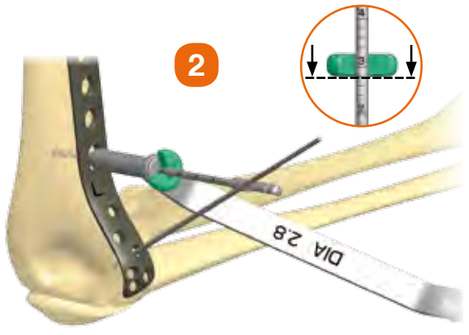
Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. Remove Kirschner wire. (2)

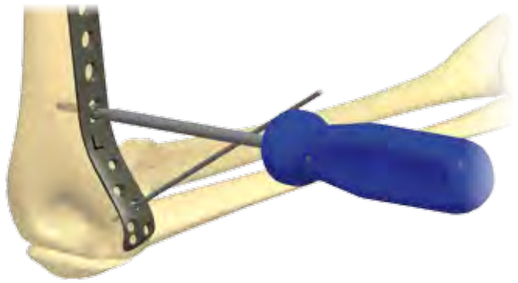






Attention!
The second option cannot be used when drilling through the conical side of the double drill sleeve.

Drive the 3.5 mm cortical screw in so that the fine positioning of the plate could be made. Use T15 Torx screwdriver. After reaching the final position tighten the cortical screw fully.



3.2.7 | Locking of the distal end of the plate

The distal holes ensure anatomically optimized screw directions. (1)
In case you wish to use these directions for screw placement then drill through the straight side of the 2.0 mm sleeve. The tip of the sleeve fits into the holes of the plate thus giving the optimal direction.
Take precautions to avoid the danger zones of the area and the articular surface.
Use 2.0 mm drillbit for drilling core hole of the 2.7 mm screws.

The plate is capable of polyaxial locking also. Screws can be inserted within ± 15 degrees from the optimal direction. Step free but locking connection could be achieved within this range. (2)
Use the conical side of the 2.0 mm double drill sleeve and the 2.0 mm drillbit. The tip of the sleeve fits into the hole and the axis of the conical sleeve is in the optimal direction. This ensures the ± 15 degree deviation from the optimal direction.

When using any of these techniques make sure with image intensifier control that the screws avoid the danger zones of the area and the joint surface and the screws of the dorsolateral plate.

1

2

If you wish to place a screw into the hole where the Kirschner wire is then after the removal of the wire you can drive the screw in with no further drilling.

3.2.8 | Screw length gauging

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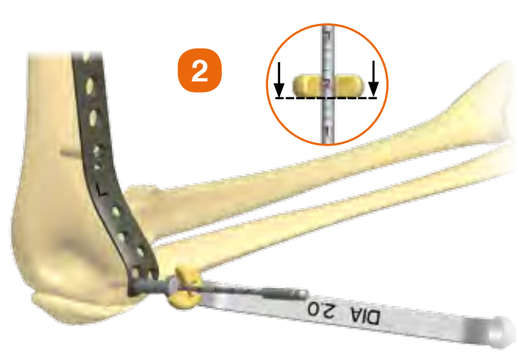
Attention!
When drilling through the conical side of the double drill sleeve the length gauging with the scaled drillbit is not possible.

If you used the straight side of 2.0 mm the double drill sleeve then read the screw length on the bottom part of the yellow drill stop from the scale of the drillbit. Scaling is made by 2 mm steps. (2)

1

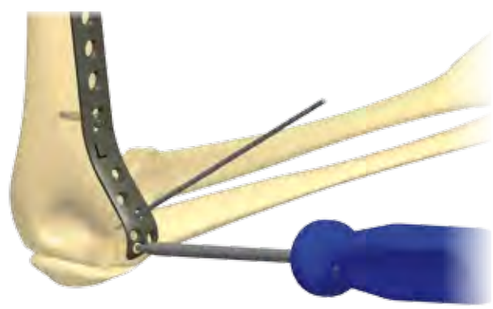
2



3.2.9 | Screw placement

Drive the screw to the final position by using a T9 Torx screwdriver.

Repeat 3.1.7- 3-1-9 steps until all the required screws are in the plate. Continuously monitor screw positions with image intensifier. At this point the tail of the plate is not fixed apart from the cortical screw in the oval hole.



3.2.10 | Locking of the tail

It is possible to use both angle stabilized and cortical screws on the tail of the plate. Angle stabilized locking is recommended.

3.2.10.1 | Drilling on the tail

Use the straight side of the 2.8 mm double drill sleeve for the cortical or angle stabilized screws. Place it on the middle of the hole and drill with 2.8 mm drillbit.
Be careful not to interfere with the implants or the screws.

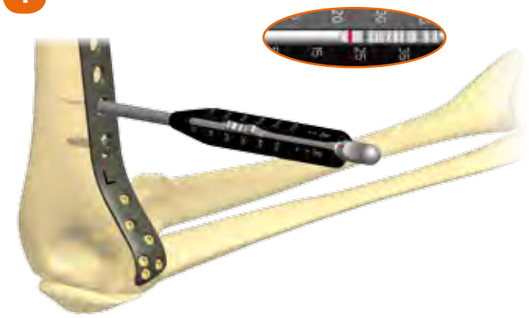
3.2.10.2 | Length gauging

Measure screw length according to point 3.1.6.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

1



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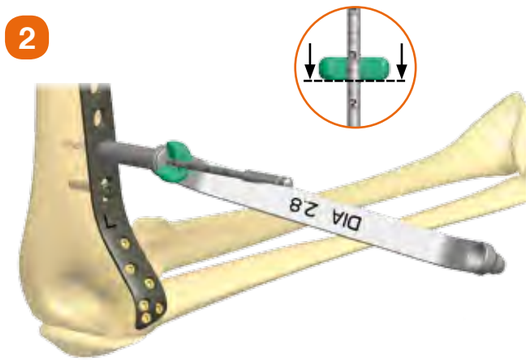
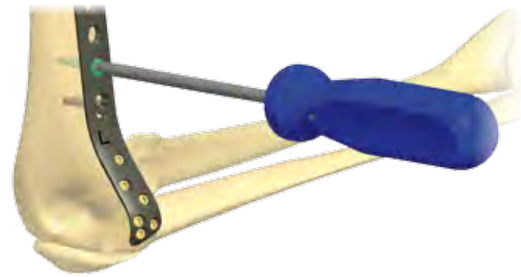


3.2.10.3 | Screw placement

Use T15 Torx screwdriver to place the screw into the final position.

Repeat steps 3.2.10.1 – 3.2.10.3 until all the desired screws are in position on the tail.



3.3.1 | Positioning of the patient

The patient is positioned in prone position with a support of the broken arm. The elbow can be freely moved. Protect the limb with flexible bandage until isolation to prevent swelling.

3.3.2 | Incision

Slightly arched incision on the dorsal surface of the arm at the elbow area until the proximal section of the ulna. After incision separate ulnar nerve and keep it out of the area by using a rubber band.
Pay attention to nervus radialis when using a longer plate.

3.3.3 | Temporary fixation of the fracture

After reposition fix the distal fragments with Kirschner wire.

3.3.4 | The position of the plate

The medial plate shall be on the medial ridge of the distal humerus or a bit backwards and shall touch the medial (ulnar) collateral tendon's starting point with its distal tip.
The plates could be modellated if needed. Use the plate bending tools (4 mm for the holes of 2.7 mm polyaxial screws and 6 mm for the 3.5 mm screws). Drive the bending tools fully into two neighbouring holes where you wish to bend the plate and make the bending.

3.3.5 | Temporary fixation of the plate

After the positioning of the plate fix it with a Kirschner wire through one of the distal holes. Use the double drill sleeve's straight side to drill for the cortical screw a core hole of 2.8 mm in the oval hole. Use the 2.8 mm drillbit.

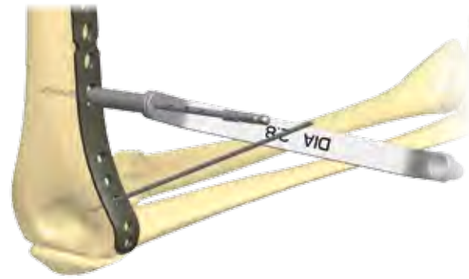
Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

Attention!
The second option cannot be used when drilling through the conical side of the double drill sleeve.

Drive the 3.5 mm cortical screw in so that the fine positioning of the plate could be made. Use T15 Torx screwdriver. After reaching the final position tighten the cortical screw fully.



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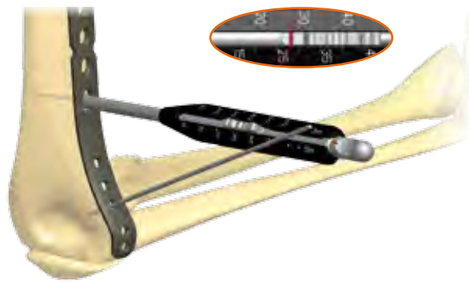

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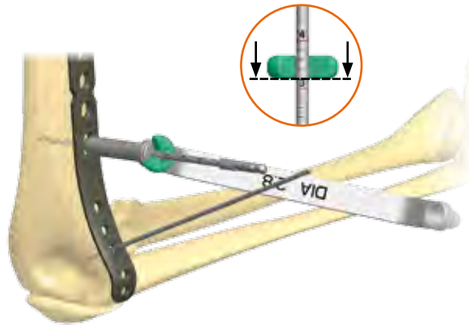
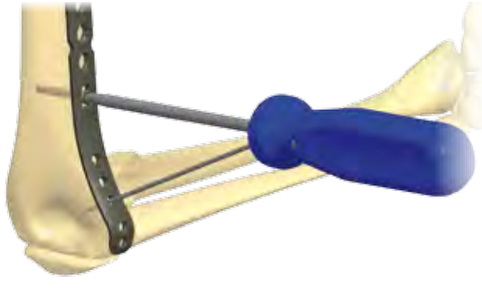




3.3.6 | Locking of the distal end of the plate

The distal holes ensure anatomically optimized screw directions. (1)
In case you wish to use these directions for screw placement then drill through the straight side of the 2.0 mm sleeve. The tip of the sleeve fits into the holes of the plate thus giving the optimal direction.
Take precautions to avoid the danger zones of the area and the articular surface.
Use 2.0 mm drillbit for drilling core hole of the 2.7 mm screws.

The plate is capable of polyaxial locking also. Screws can be inserted within ± 15 degrees from the optimal direction. Step free but locking connection could be achieved within this range. (2)
a Use the conical side of the 2.0 mm double drill sleeve and the 2.0 mm drillbit. The tip of the sleeve fits into the hole and the axis of the conical sleeve is in the optimal direction. This ensures the ± 15 degree deviation from the optimal direction.

When using any of these techniques make sure with image intensifier control that the screws avoid the danger zones of the area and the joint surface. If you wish to place a screw into the hole where the Kirschner wire is then after the removal of the wire you can drive the screw in with no further drilling.

If there are screws in the plate make the drilling carefully not to interfere with the screws implanted earlier.

1

2

3.3.7 | Screw length gauging

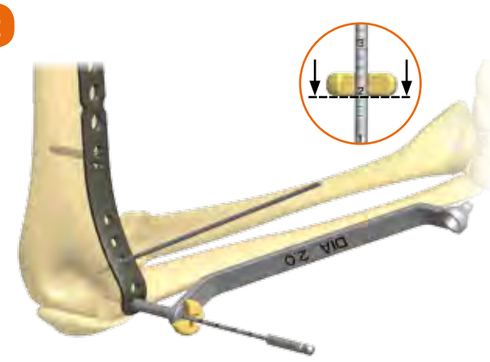
If you drilled through the conical side of the double drill sleeve then use the length gauge without the sleeve as shown on image. (1)

Attention!
When drilling through the conical side of the double drill sleeve the length gauging with the scaled drillbit is not possible.

If you used the straight side of 2.0 mm the double drill sleeve then read the screw length on the bottom part of the yellow drill stop from the scale of the drillbit. Scaling is made by 2 mm steps. (2)

1

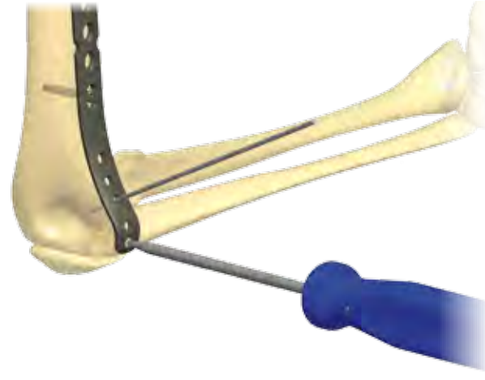
2



3.3.8 | Screw placement

Drive the screw to the final position by using a T9 Torx screwdriver.

Repeat 3.3.6- 3.3.8 steps until all the required screws are in the plate. Continuously monitor screw positions with image intensifier.
At this point the tail of the plate is not fixed apart from the cortical screw in the oval hole.

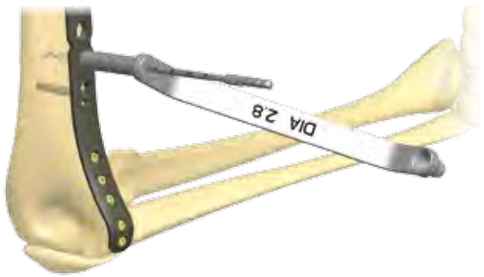


3.3.9 | Locking of the tail

It is possible to use both angle stabilized and cortical screws on the tail of the plate. Angle stabilized locking is recommended.

3.3.9.1 | Drilling on the tail

Use the straight side of the 2.8 mm double drill sleeve for the cortical or angle stabilized screws. Place it on the middle of the hole and drill with 2.8 mm drillbit.
Be careful not to interfere with the implants or the screws.



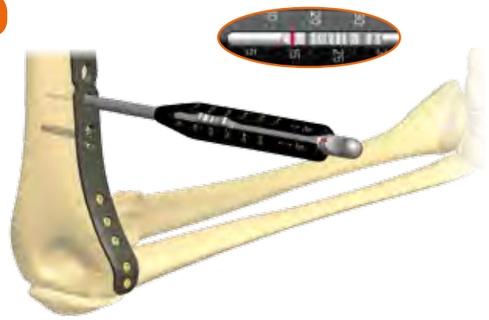
3.3.9.2 | Length gauging

Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

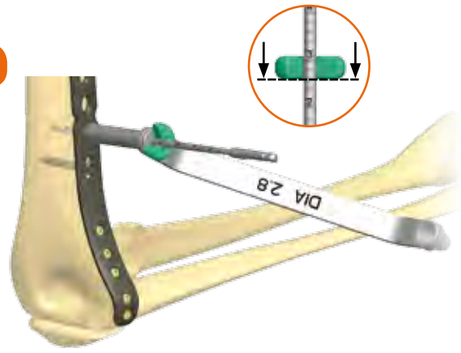
As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

1



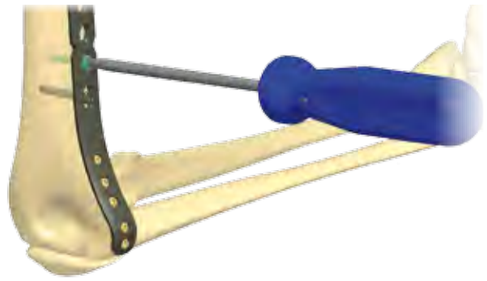
2



3.3.9.3 | Screw placement

Use T15 Torx screwdriver to place the screw into the final position.

Repeat steps 3.3.9.1 – 3.3.9.3 until all the desired screws are in position on the tail.



This system is capable for handling pseudoarthros on the distal humerus, extra-articular fractures and non-unions as a standalone implant as well.

3.4.1 | Positioning of the patient

The patient is in lateral position with the affected limb upwards. The limb is supported at shoulder height in such a way that a free 120 degree flexion of the elbow is possible.

3.4.2 | Incision

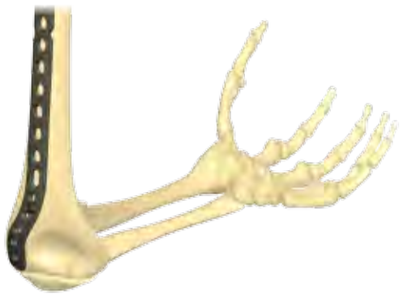
Slightly arched incision on the dorsal surface of the arm at the elbow area until the proximal section of the ulna. After incision separate ulnar nerve and keep it out of the area by using a rubber band.
Pay attention to nervus radialis when using a longer plate.

3.4.3 | Temporary fixation of the fracture

After reposition fix the distal fragments with Kirschner wire.

3.4.4 | Position of the plate

The tail of the plate shall be on the dorsolateral side of the bone while the distal end follows the lateral column's curvature. The plate shall be of adequate distance from the fossa olecrani. Make sure that while moving the elbow the plate does not reach the radius head and does not hinder the movement of the joint.
To conform personal anatomy the plate can be bent. Use the plate bending tools (4 mm for the holes of 2.7 mm polyaxial screws and 6 mm for the 3.5 mm screws). Drive the bending tools fully into two neighbouring holes where you wish to bend the plate and make the bending.



3.4.5 | Temporary fixation of the plate

After the positioning of the plate fix it with a Kirschner wire through one of the distal holes. Use the double drill sleeve's straight side to drill for the cortical screw a core hole of 2.8 mm in the oval hole. Use the 2.8 mm drillbit.

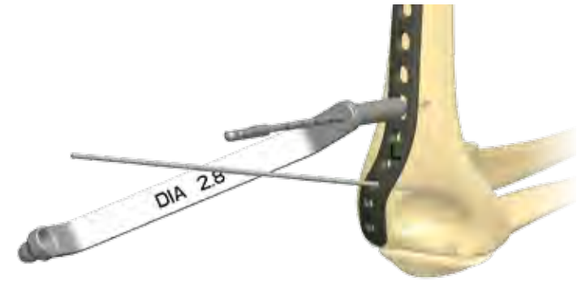
Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

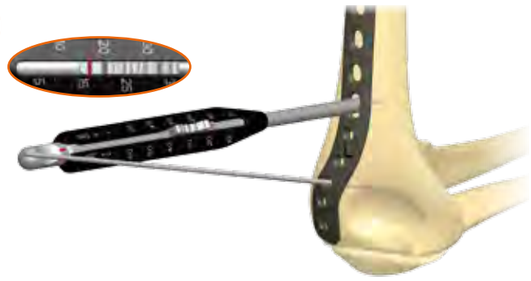
The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

Attention!
The second option cannot be used when drilling through the conical side of the double drill sleeve.

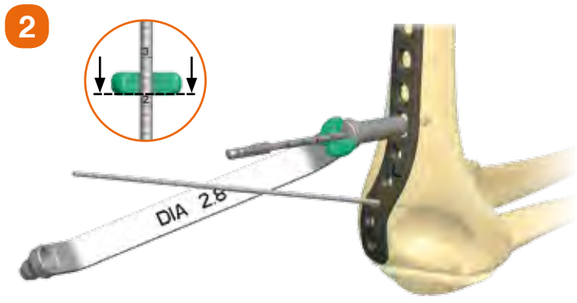
Drive the 3.5 mm cortical screw in so that the fine positioning of the plate could be made. Use T15 Torx screwdriver. After reaching the final position tighten the cortical screw fully.

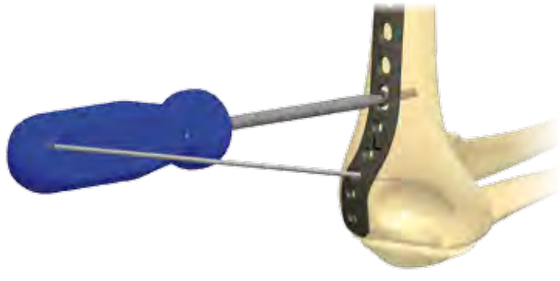


1



2





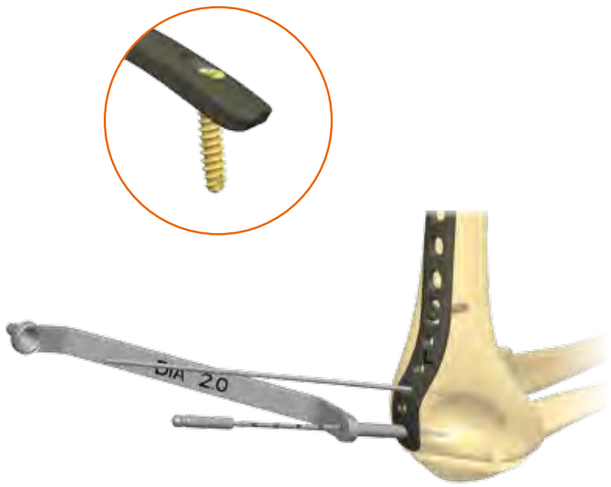
3.4.6 | Locking of the distal end of the plate

The distal holes ensure anatomically optimized screw directions. (1)
In case you wish to use these directions for screw placement then drill through the straight side of the 2.0 mm sleeve. The tip of the sleeve fits into the holes of the plate thus giving the optimal direction.
Take precautions to avoid the danger zones of the area and the articular surface.
Use 2.0 mm drillbit for drilling core hole of the 2.7 mm screws.

The plate is capable of polyaxial locking also. Screws can be inserted within ± 15 degrees from the optimal direction. Step free but locking connection could be achieved within this range. (2)
Use the conical side of the 2.0 mm double drill sleeve and the 2.0 mm drillbit. The tip of the sleeve fits into the hole and the axis of the conical sleeve is in the optimal direction. This ensures the ± 15 degree deviation from the optimal direction.
When using any of these techniques make sure with image intensifier control that the screws avoid the danger zones of the area and the joint surface.

If you wish to place a screw into the hole where the Kirschner wire is then after the removal of the wire you can drive the screw in with no further drilling.

1



2

3.4.7 | Screw length gauging

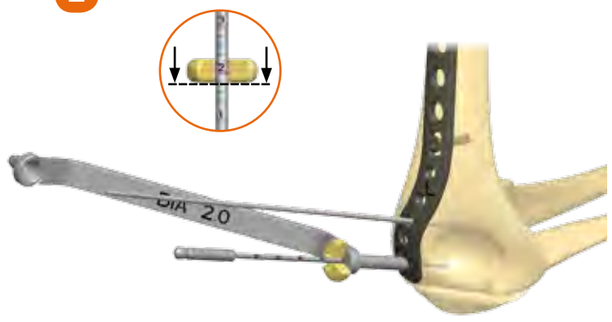
If you drilled through the conical side of the double drill sleeve then use the length gauge without the sleeve as shown on image. (1)

Attention!
When drilling through the conical side of the double drill sleeve the length gauging with the scaled drillbit is not possible.

If you used the straight side of 2.0 mm the double drill sleeve then read the screw length on the bottom part of the yellow drill stop from the scale of the drillbit. Scaling is made by 2 mm steps. (2)

1

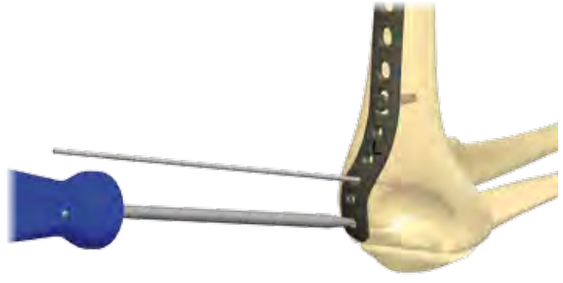
2



3.4.8 | Screw placement

Drive the screw to the final position by using a T9 Torx screwdriver.

IRepeat 3.4.6- 3.4.8 steps until all the required screws are in the plate. Continuously monitor screw positions with image intensifier.
At this point the tail of the plate is not fixed apart from the cortical screw in the oval hole.

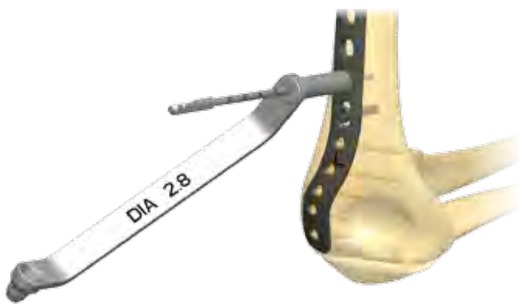


3.4.9 | Locking of the tail

It is possible to use both angle stabilized and cortical screws on the tail of the plate. Angle stabilized locking is recommended.

3.4.9.1 | Drilling on the tail

Use the straight side of the 2.8 mm double drill sleeve for the cortical or angle stabilized screws. Place it on the middle of the hole and drill with 2.8 mm drillbit.
Be careful not to interfere with the implants or the screws.



3.4.9.2 | Length gauging

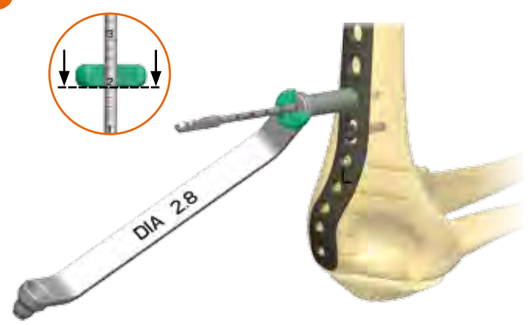
Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

1

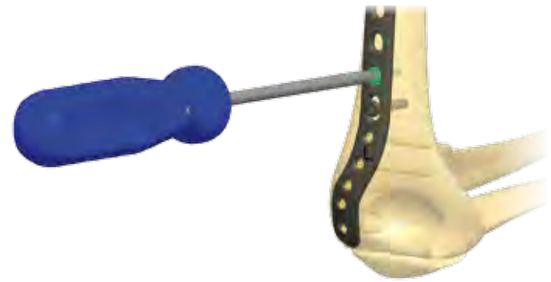
2



3.4.9.3 | Screw placement

Use T15 Torx screwdriver to place the screw into the final position.

Repeat steps 3.4.9.1 – 3.4.9.3 until all the desired screws are in position on the tail.



3.5.1 | Positioning of the patient

The patient is positioned in prone position with a support of the broken arm. The elbow can be freely moved.

Alternative solution: the patient is in supine position with the arm – after isolation – resting on the chest.

3.5.2 | Incision

Slightly arched incision on the backside of the arm in distal direction from the supracondylar region towards the proximal third of the forearm.

3.5.3 | Temporary fixation of the fracture

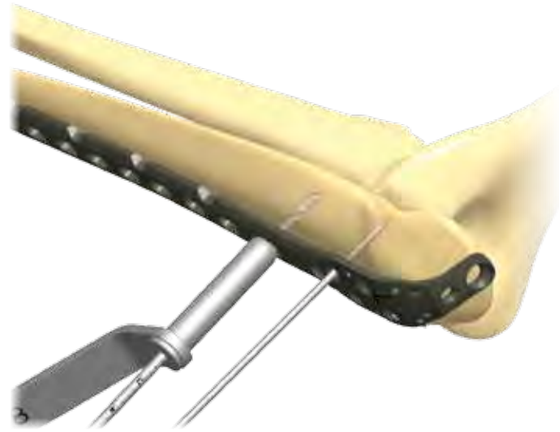
After reposition fix the distal fragments with Kirschner wire.

3.5.4 | Selecting the plate

In order to achieve optimal fit the tail of the plate is slightly arched. There are further bending possibilities on the plane of the tail. Use the plate bending tools (4 mm for the holes of 2.7 mm polyaxial screws and 6 mm for the 3.5 mm screws). Drive the bending tools fully into two neighbouring holes where you wish to bend the plate and make the bending.
In case the fracture needs the tab can also be bent. If you implant screws in the tab pay attention to avoid other screws.

3.5.5 | Temporary fixation of the plate

After the positioning of the plate fix it with a Kirschner wire through one of the distal holes. Use the double drill sleeve's straight side to drill for the cortical screw a core hole of 2.8 mm in the oval hole. Use the 2.8 mm drillbit.

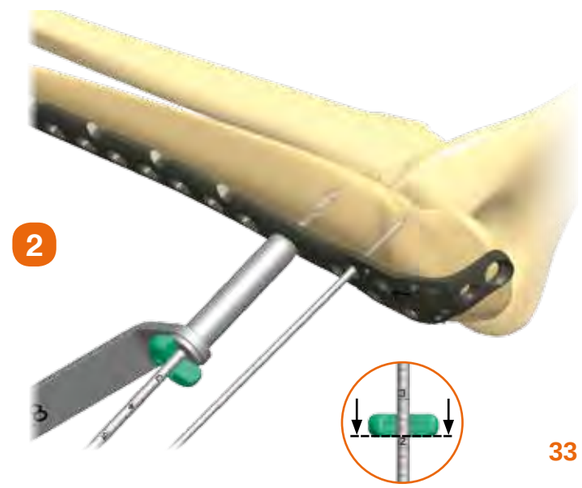


Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

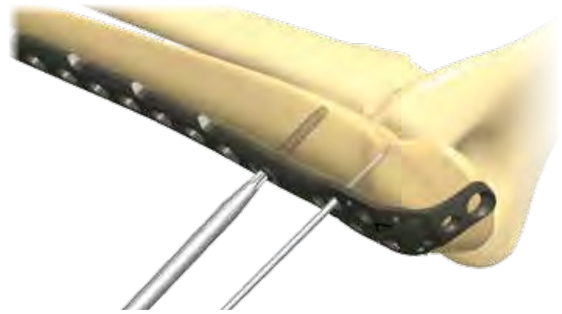
As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)

Attention!
The second option cannot be used when drilling through the conical side of the double drill sleeve.



Drive the 3.5 mm cortical screw in so that the fine positioning of the plate could be made. Use T15 Torx screwdriver. After reaching the final position tighten the cortical screw fully.

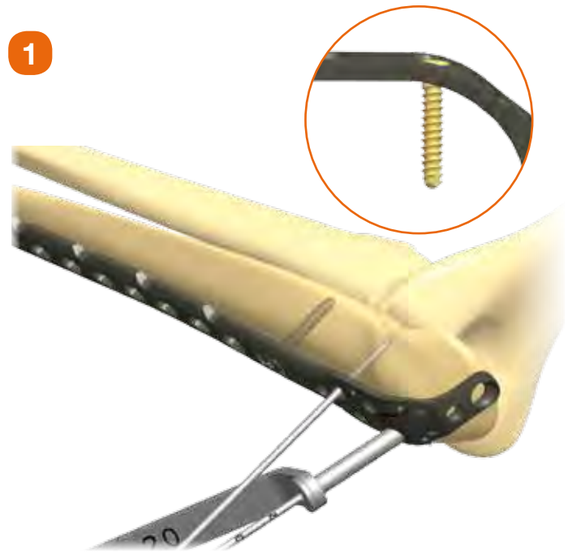


3.5.6 | Locking of the proximal end of the plate

The proximal holes ensure anatomically optimized screw directions. (1)
In case you wish to use these directions for screw placement then drill through the straight side of the 2.0 mm sleeve. The tip of the sleeve fits into the holes of the plate thus giving the optimal direction. Take precautions to avoid the danger zones of the area and the articular surface. Use 2.0 mm drillbit for drilling core hole of the 2.7 mm screws.

The plate is capable of polyaxial locking also. Screws can be inserted within ± 15 degrees from the optimal direction. Step free but locking connection could be achieved within this range. (2)
Use the conical side of the 2.0 mm double drill sleeve and the 2.0 mm drillbit. The tip of the sleeve fits into the hole and the axis of the conical sleeve is in the optimal direction. This ensures the ± 15 degree deviation from the optimal direction.

When using any of these techniques make sure with image intensifier control that the screws avoid the danger zones of the area and the joint surface.

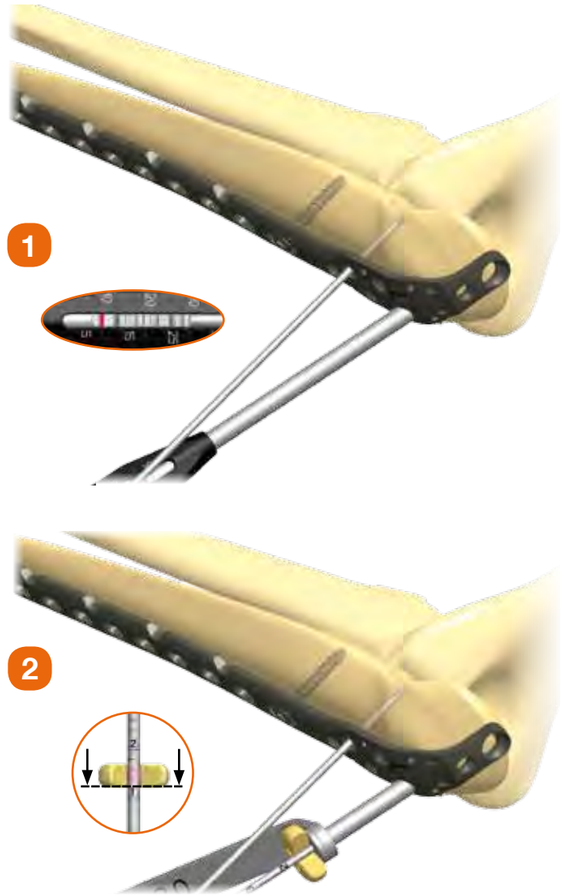


3.5.7 | Screw length gauging

If you drilled through the conical side of the double drill sleeve then use the length gauge without the sleeve as shown on image. (1)

Attention!
When drilling through the conical side of the double drill sleeve the length gauging with the scaled drillbit is not possible.

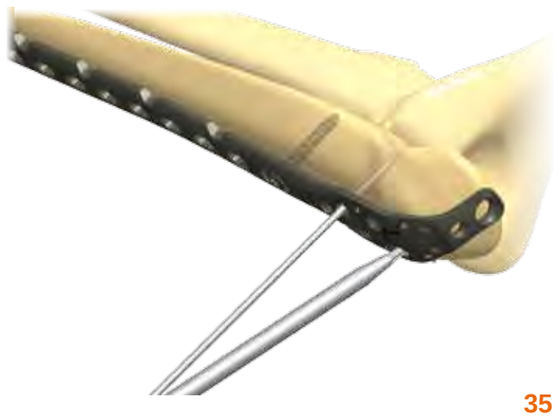
If you used the straight side of 2.0 mm the double drill sleeve then read the screw length on the bottom part of the yellow drill stop from the scale of the drillbit. Scaling is made by 2 mm steps. (2)



3.5.8 | Screw placement

Drive the screw to the final position by using a T9 Torx screwdriver.

Repeat 3.5.6- 3.5.8 steps until all the required screws are in the plate. Continuously monitor screw positions with image intensifier.
At this point the tail of the plate is not fixed apart from the cortical screw in the oval hole.



3.5.9 | Locking of the tail

It is possible to use both angle stabilized and cortical screws on the tail of the plate. Angle stabilized locking is recommended.

3.5.9.1 | Drilling on the tail

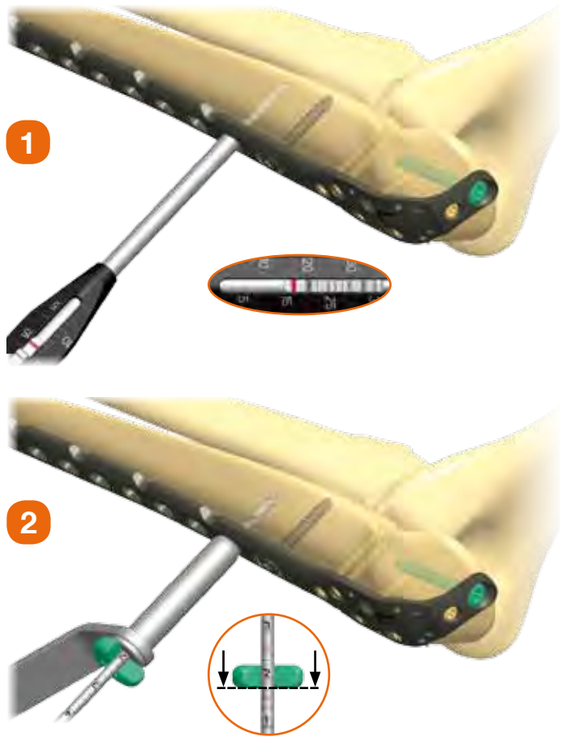
Use the straight side of the 2.8 mm double drill sleeve for the cortical or angle stabilized screws. Place it on the middle of the hole and drill with 2.8 mm drillbit.
Be careful not to interfere with the implants or the screws.

3.5.9.2 | Length gauging

Measure the necessary screw length.
The YDH system offers two possibilities of screw length measuring when using the straight side of the double drill sleeve.

As per the first method, remove the 2.8 mm sleeve and use the traditional length gauge. Fix the hook on the distant edge of the hole and push the moving part to the bone surface. Read the value and select screw accordingly. (1)

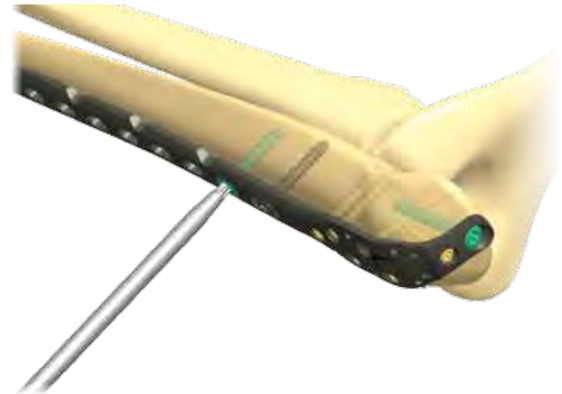
The other method uses the scaled drillbit. Place the green drill stop on the stem of the 2.8 mm drillbit just above the spiral part. Drill through the straight sleeve. Read screw length on the bottom side of the stop. (2)



3.5.9.3 | Screw placement

Use T15 Torx screwdriver to place the screw into the final position.

Repeat steps 3.5.9.1 – 3.5.9.3 until all the desired screws are in position on the tail.



4 | Implant list

4.1 | Ydfix Dorsolateral Plate – DL

Anodized Titanium

Cat. No	Size
3026402003	Left 3H
3026402005	Left 5H
3026402007	Left 7H
3026402009	Left 9H
3026402011	Left 11H
3026402013	Left 13H
3026401003	Right 3H
3026401005	Right 5H
3026401007	Right 7H
3026401009	Right 9H
3026401011	Right 11H
3026401013	Right 13H

4.2 | Ydfix Medial Plate – M

Anodized Titanium

Cat. No	Size
3024402003	Left 3H
3024402005	Left 5H
3024402007	Left 7H
3024402009	Left 9H
3024402011	Left 11H
3024402013	Left 13H
3024401003	Right 3H
3024401005	Right 5H
3024401007	Right 7H
3024401009	Right 9H
3024401011	Right 11H
3024401013	Right 13H

4.5 | Ydfix Olecranon Plate

Anodized Titanium

Cat. No	Size
3007402003	Left 3H
3007402005	Left 5H
3007402007	Left 7H
3007402009	Left 9H
3007402011	Left 11H
3007401003	Right 3H
3007401005	Right 5H
3007401007	Right 7H
3007401009	Right 9H
3007401011	Right 11H

4.3 | Ydfix Extra-articular Dorsolateral Plate – EDL

Anodized Titanium

Cat. No	Size
3025402003	Left 3H
3025402005	Left 5H
3025402007	Left 7H
3025402009	Left 9H
3025402011	Left 11H
3025402013	Left 13H
3025401003	Right 3H
3025401005	Right 5H
3025401007	Right 7H
3025401009	Right 9H
3025401011	Right 11H
3025401013	Right 13H

4.4 | Ydfix Straight Medial Plate – SM

Anodized Titanium

Cat. No	Size
3023400003	3H
3023400005	5H
3023400007	7H
3023400009	9H
3023400011	11H

4.6 | Ydfix screw Ø 2.7 mm

Anodized Titanium

Cat. No	Size
1017427008	8 mm
1017427010	10 mm
1017427012	12 mm
1017427014	14 mm
1017427016	16 mm
1017427018	18 mm
1017427020	20 mm
1017427022	22 mm
1017427024	24 mm
1017427026	26 mm
1017427028	28 mm
1017427030	30 mm
1017427032	32 mm
1017427034	34 mm
1017427036	36 mm
1017427038	38 mm
1017427040	40 mm
1017427042	42 mm
1017427044	44 mm
1017427046	46 mm
1017427048	48 mm
1017427050	50 mm
1017427052	52 mm
1017427054	54 mm
1017427056	56 mm
1017427058	58 mm
1017427060	60 mm

4.7 | Ydfix screw Ø 3.5 mm

Anodized Titanium

Cat. No	Size
1017435010	10 mm
1017435012	12 mm
1017435014	14 mm
1017435016	16 mm
1017435018	18 mm
1017435020	20 mm
1017435022	22 mm
1017435024	24 mm
1017435026	26 mm
1017435028	28 mm
1017435030	30 mm
1017435032	32 mm
1017435034	34 mm
1017435036	36 mm
1017435038	38 mm
1017435040	40 mm
1017435042	42 mm
1017435044	44 mm
1017435046	46 mm
1017435048	48 mm
1017435050	50 mm

4.8 | Cortical screw Ø 3.5 mm

Anodized Titanium

Cat. No	Size
1032435010	10 mm
1032435012	12 mm
1032435014	14 mm
1032435016	16 mm
1032435018	18 mm
1032435020	20 mm
1032435022	22 mm
1032435024	24 mm
1032435026	26 mm
1032435028	28 mm
1032435030	30 mm
1032435032	32 mm
1032435034	34 mm
1032435036	36 mm
1032435038	38 mm
1032435040	40 mm
1032435042	42 mm
1032435044	44 mm
1032435046	46 mm
1032435048	48 mm
1032435050	50 mm

5.1 | Filled-up tray

Screwdriver	T9	1	5210720009
Screwdriver	T15	1	5210720015
Torque limiting screwdriver	T9/1 Nm	1	5210510036
Torque limiting screwdriver	T15/1.5 Nm	1	5210510044
Double drill sleeve	2 mm	1	5280114902
Double drill sleeve	2.8 mm	1	5280122903
Length gauge	2.7-3.5 mm	1	5233900008
Bending tool	6 mm	2	5280122907
Bending tool	4 mm	2	5280122901
Spiral drill with quick connecting end	2x125mm	1	5280114904
Spiral drill with quick connecting end	2.8x135 mm	1	5280122905
Screw forceps		1	5939999002
Drill stop	2 mm	2	5210510223
Drill stop	2.8 mm	2	5210510227
Kirschner wire	2x150 mm	5	5937520150
Tray (empty) YDH		1	5233800017
Filled-up tray (YDH)			5233800016

5.2 | Instruments

Screwdriver (T9)	 5210720009
Screwdriver (T15)	 5210720015
Torque limiting screwdriver (T9/1Nm)	 5210510036
Torque limiting screwdriver (T15/1.5Nm)	 5210510044
Double drill sleeve (2 mm)	 5280114902
Double drill sleeve (2.8 mm)	 5280122903
Length gauge	 5233900008

5.2 | Instruments

Bending tool (6 mm)	 5280112907
Bending tool (4 mm)	 5280114901
Spiral drill with quick connecting end (2x125 mm)	 5280122904
Spiral drill with quick connecting end (2.8x135 mm)	 5280122905
Screw forceps	 5939999002
Drill stop (2 mm)	 5210510223
Drill stop (2.8 mm)	 5210510227

5.2 | Instrments

Kirschner wire (2x150 mm)	5937520150

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