



RECOS®

Ulna Shortening and
Radius Reconstruction System

The best is about to get even better!



***Our core competence** is hand surgery, a field where we can offer you much more than just standard treatment solutions for, say, distal radius fractures. Many of our products are intended to help you to achieve outstanding results in difficult, non-everyday situations as well. Products such as our ulnar head prosthesis (UHP) or the Flower Plate for mediocarpal partial arthrodesis are excellent examples of this.*

***Our objective** is to simplify hand surgery interventions through intelligent system solutions, helping you to achieve the best possible results in the interest of the patient. Working in close cooperation with well-known authors and their teams, we have translated new ideas into innovative products that are consistently being developed further in an ongoing process. The result is a wide range of high-quality systems that impress with their clever design along with easy and safe handling.*

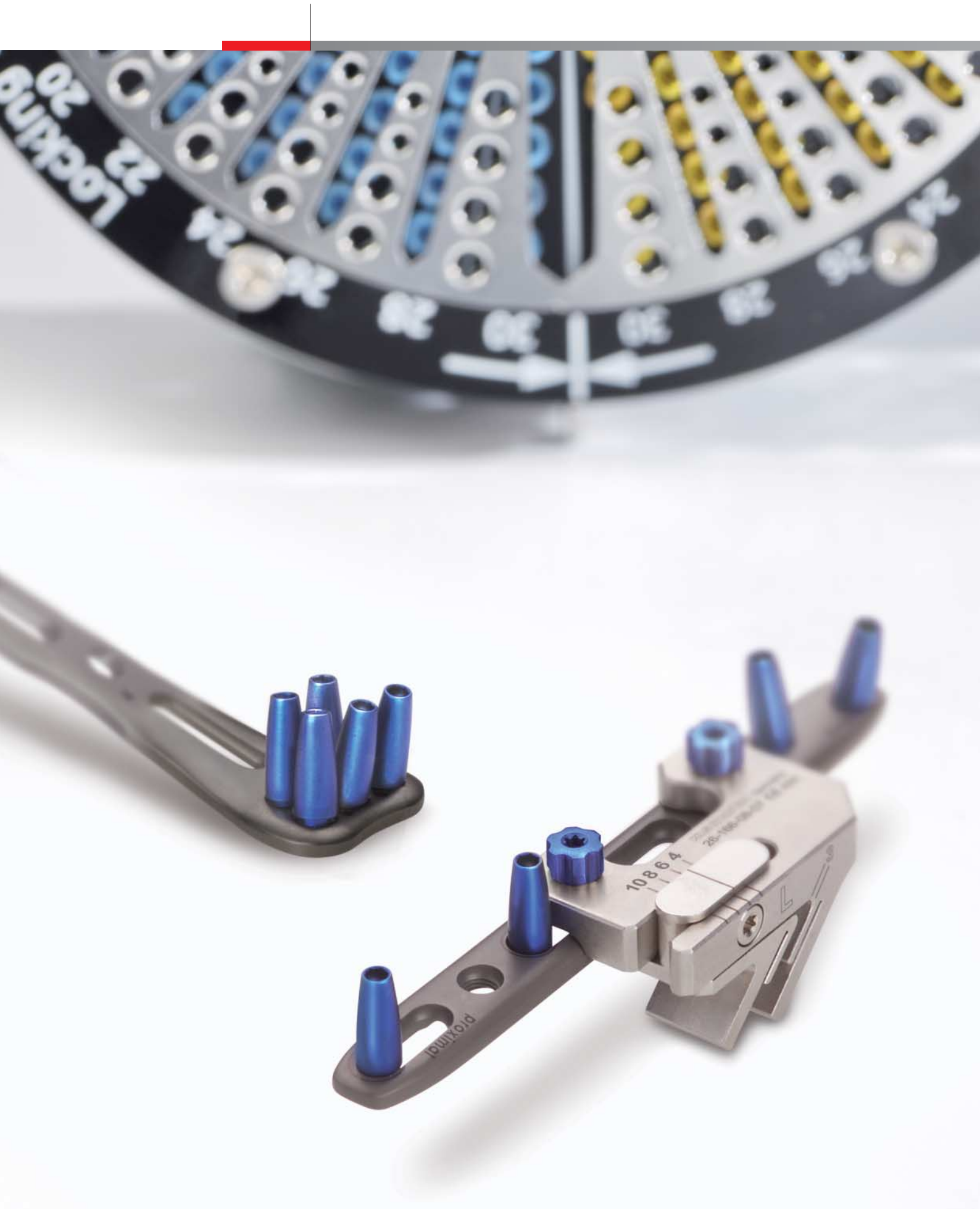
And what's more, we have never lost sight of the economic perspective and service needs of our customers.

***We consider ourselves as a true partner** – to be relied upon for routine tasks and special challenges alike.*

Table of contents

	Pages
RECOS® – product features	6-9
Indications and surgical techniques	10-21
■ Ulna shortening Treatment with a palmar 7-hole plate	
■ Radius reconstruction Treatment with a palmar watershed-line plate	
The product range	
■ RECOS® implants	22-27
■ RECOS® instruments	28-33
■ RECOS® storage system	34-35

RECOS®: *the best is about to get even better!*



RECOS®

Ulna Shortening and Radius Reconstruction System – the best is about to get even better!

Radial fractures are frequently followed by postoperative malalignment that can lead to loss of strength as well as pain. Moreover, the length ratio between the ulna and the radius might have been adversely affected by the intervention, although such dysbalance may also be a genetic condition.

Surgical radius reconstruction and ulna shortening can both be achieved by plate osteosynthesis.

With RECOS®, we have succeeded in uniting these two corrective osteotomies in a single system. The plates are fixed using our proven smartDrive® screws. Only a handful of instruments are required for this application.

Feature, Function and Benefit



The RECOS® plates come in an anatomical design for best possible reconstruction results. For example, the distal holes of the radius reconstruction plate have been arranged so that, thanks to the high stability achieved by the plate, no bone chip is usually required any more. In the case of the ulna shortening plate, the combination of angled distal holes and elongated proximal holes allows you to anchor the system securely in the bone and achieve easy and rotation-stable closure of the osteotomy gap at the same time. All RECOS® plates are finished with the Dotize® surface coating to achieve, among other things, maximum stability with a minimized plate geometry.

Our range of smartDrive® screws provides you with standard as well as locking screws featuring double threads to cut the screw-in time by half. Besides, all screws come with an atraumatic tip. The offer is rounded off by screws with a diameter of 2.5 mm and 3.0 mm, which are available in 1-mm increments across the crucial range of lengths.

All screws are color-coded for easy use:

Blue: locking smartDrive® screws

Golden: standard smartDrive® screws

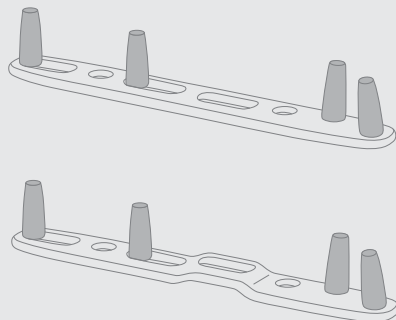
RECOS® implants

Features

Benefits

RECOS®

Ulna shortening plate

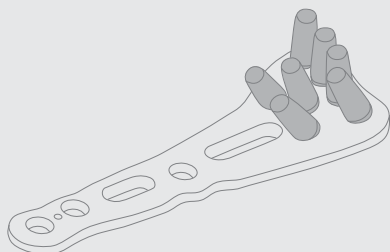


- Pre-angled distal screw holes
- Two elongated holes for closing the osteotomy gap
- Color-coded drill sleeves
- Bridge plate with recess in the osteotomy zone

- Best possible anchorage in the bone
- Standardized, secure closure of osteotomy gaps up to 10 mm
- Unambiguous use of the 2.0-mm smartDrive® core hole drill for smartDrive® screws Ø 2.5 mm
- No contractions between saw blade and plate, safe transection of the periosteum

RECOS®

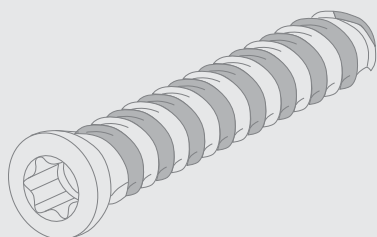
Radius reconstruction plate



- Anatomical, atraumatic plate geometry
- Plate design and screw hole angulation specially adapted to the needs of radial corrections
- Watershed-line concept
- Color-coded drill sleeves

- Best possible embedding in soft tissue
- Optimized distal reduction and support after the osteotomy thanks to ideal screw positioning
- Enables extremely distal plate positioning
- Unambiguous use of the 2.0-mm smartDrive® core hole drill for smartDrive® screws Ø 2.5 mm

smartDrive® screws



- Atraumatic screw tip
- Atraumatic screw head
- Double thread, self-tapping
- T8 with self-retaining function

- Secure and soft tissue-friendly bicortical anchorage
- Maximum range of angulation without causing any soft tissue irritation
- Cuts screw-in time by 50%
- Easy screw pick-up, screw-in, tightening or removal

Feature, Function and Benefit



The KLS Martin Group is committed to providing users with instruments that can be handled most easily and efficiently. Therefore, the reconstruction system comprises just a handful of instruments. No more is required because this instrumentation has been specially adapted to the specific needs of reconstruction.

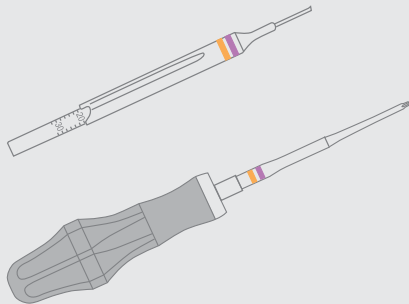
In addition to easy handling, the requirements of sterile processing were given top priority in designing the storage system.

RECOS® instruments and storage system

Features

Benefits

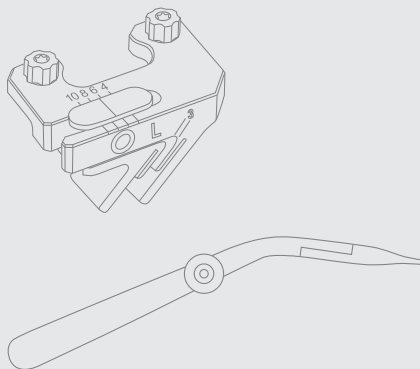
Instruments



- Color-coded instruments
 - smartDrive® Ø 2.5 mm (purple)
 - smartDrive® Ø 3.0 mm (orange)
- Single-part instruments with ergonomically shaped silicone handles

- For easy identification of the respective instruments
- Good tactile feedback, no parts that could get lost, no play in the coupling

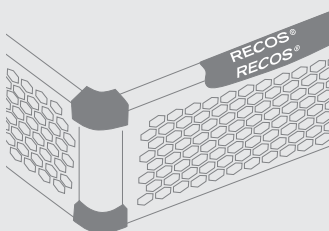
Instruments for ulna shortening



- Plate can be fitted with side-specific saw guides that are infinitely adjustable across a range of 3–10 mm
- Angled compression forceps with diamond-coated pin

- Enables an exactly parallel osteotomy to prevent correction loss
- Facilitates closing the osteotomy gap and allows maintaining the compression during screw insertion

Storage tray



- Stainless steel storage tray in honeycomb design combined with high-performance plastic
- The instruments are arranged in the sequence of use during the surgical procedure

- High stability, but low weight
- Good rinsing results due to large openings
- No water residues
- For easy and efficient instrumentation

Step by Step to optimal Fixation

Indications

RECOS® implants are used for correcting posttraumatic or genetic malalignment and/or differences in length of the radius or ulna.



Ulna shortening

- Ulnar impaction syndrome



Radius reconstruction

- Palmar corrective osteotomy following malunited radial fracture



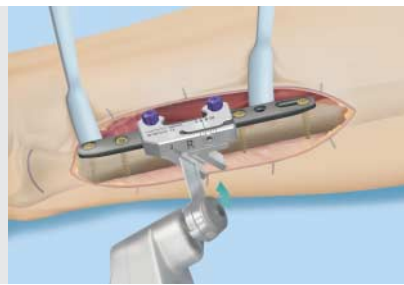
Surgical Techniques

Ulna shortening

Treatment with palmar 7-hole plate

Prof. Krimmer, Dr. Leixnering

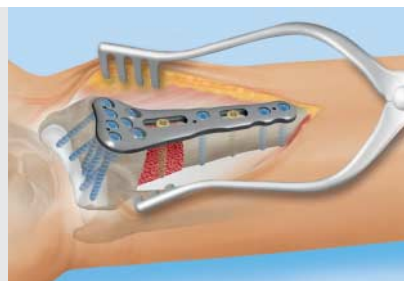
Pages 12-21



Radius reconstruction

Surgical technique to follow

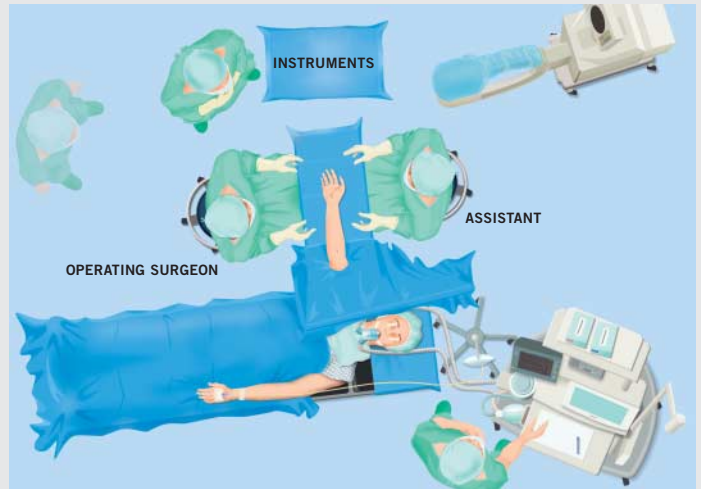
(see "FAROS Recon" brochure, 90-601-02-04)





Preoperative planning

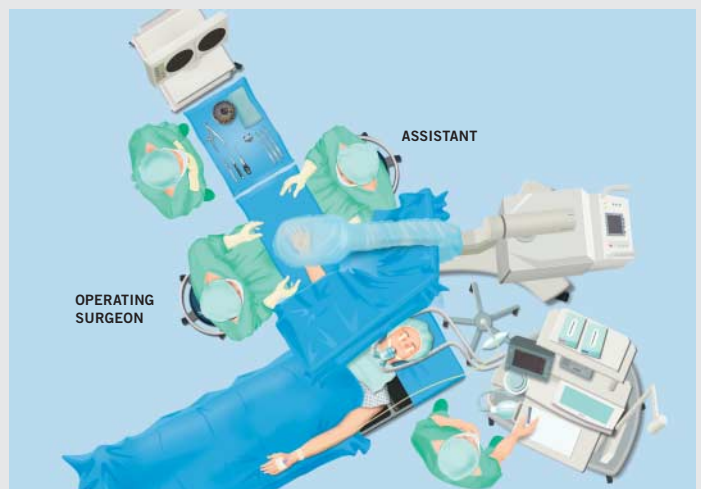
The ulnar impaction syndrome should be assessed using standard X-rays taken in the A/P and lateral planes, with the wrist in neutral position. It is recommended to take an additional X-ray under load with the fist closed against resistance.

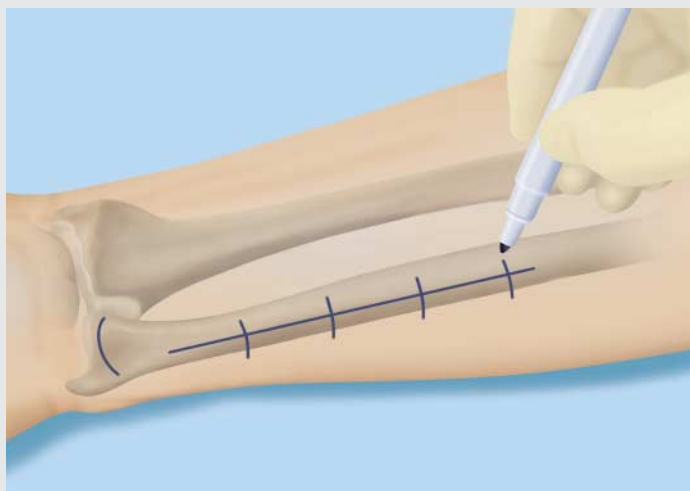


Patient positioning

The patient is placed on the back. The hand that requires surgery is placed on the extension table in full supination position of the forearm and under tourniquet control.

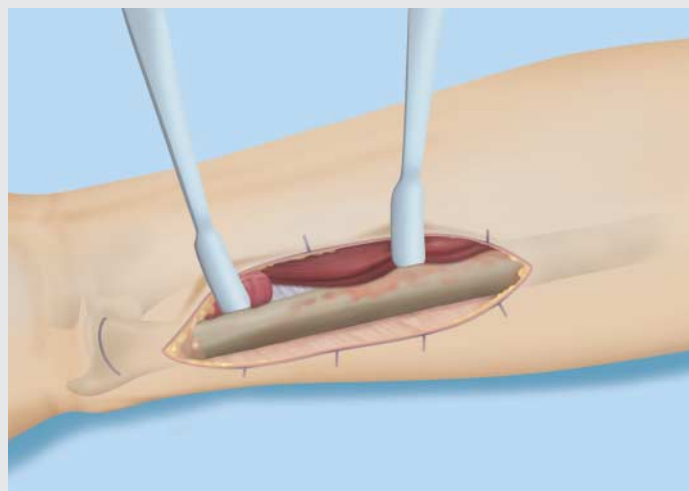
Alternately, before the operation commences the X-ray image converter can be covered with sterile drapes and positioned opposite the operating surgeon so it no longer has to be repositioned between the surgical steps. Once the exact setting has been selected it is thus maintained and reduces the radiation dose for the patient and operating surgeon. For certain indications the use of a horizontal hand extension device can be helpful.





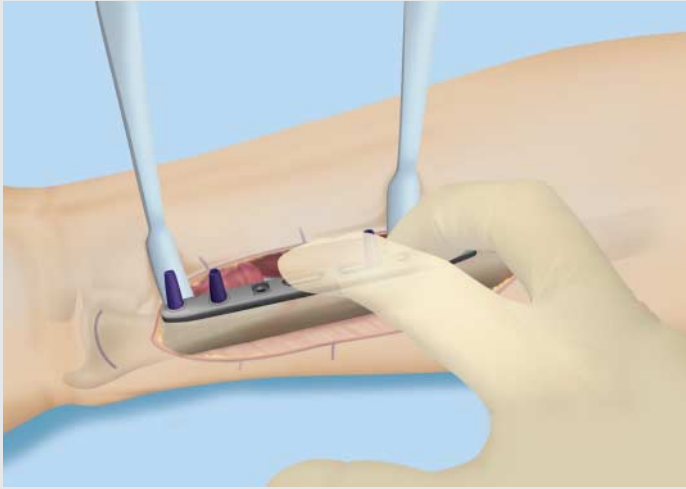
1. Ulnopalmar approach

A skin incision with a length of approx. 9-11 cm is made along the distal ulna. The ulnopalmar approach provides for secure postoperative soft tissue coverage of the plate.



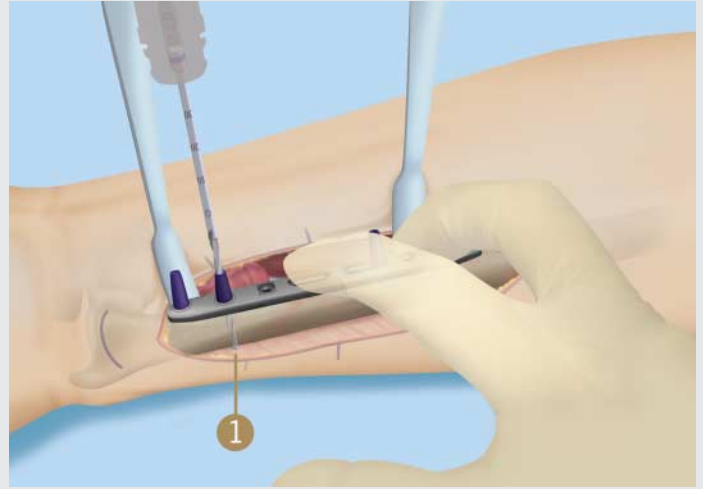
2. Exposure of the ulna

The incision is continued between the flexor and extensor muscles through the intermuscular septum. This is followed by exposure of the ulna, with the quadratus pronator muscle being carefully pushed off the ulna on the distal side.



3. Positioning the plate

The plate is placed as far distally as possible, just below the ulnar head, at the inner edge of the ulna on the palmar side of the available surface. The plate is lettered (distal/proximal) for secure fixation.

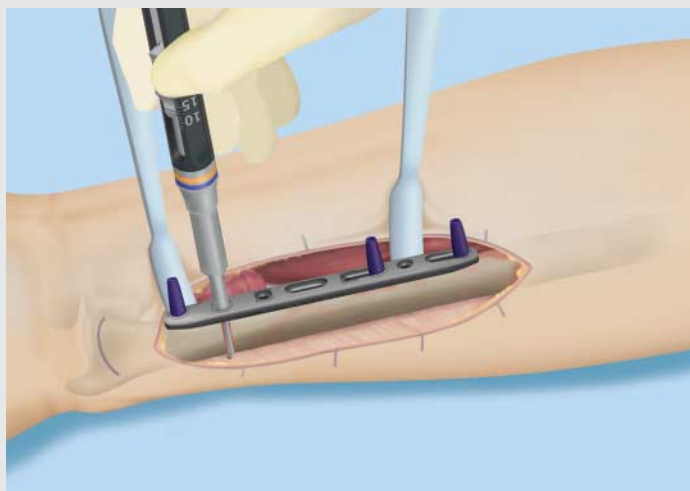


4. Drilling holes

The first core hole (Ø 2.0 mm) is drilled for a smartDrive® standard screw Ø 2.5 mm as illustrated (1). To ensure safe and easy drilling, the screw holes to be filled initially are already provided with drill sleeves that match the screw diameter of 2.5 mm (purple).



Core hole drill
AO fitting
Ø 2.0 mm



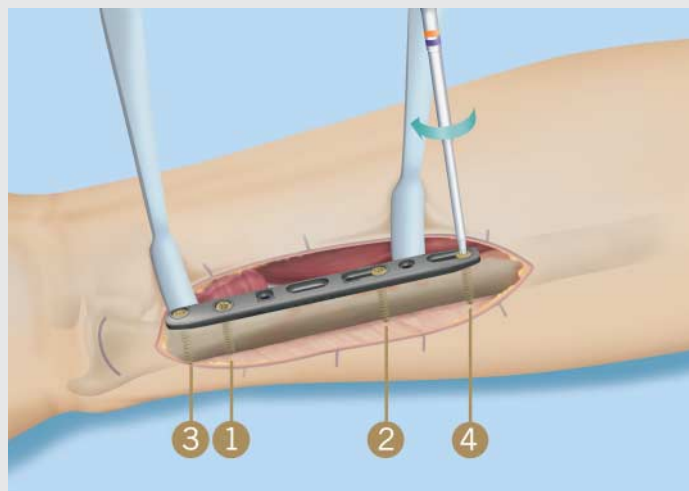
5. Determining screw length

Prior to determining the length of the screw, the premounted drill sleeves must be removed using the screwdriver.

The correct screw length is determined with the depth gauge. This is done with the plate applied to the bone.

Note:

Depending on individual preference, users can choose between the classic and the single-hand depth gauge.



6. Inserting the screws

To fix the plate to the bone, the first four holes are filled with 2.5-mm smartDrive® standard screws of the measured length.

We recommend inserting the screws in the sequence shown above.

Note:

If bone quality is inferior, 3.0 mm dia. smartDrive® screws can also be used. In such a case, use one of the 3.0 drill guides, or alternately the sterile-packed screw-on 3.0 drill sleeves.



Depth gauge,
single-hand principle



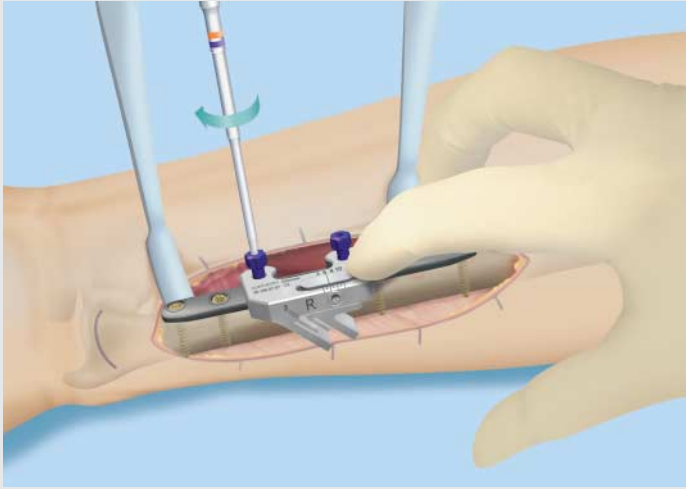
Depth gauge,
AO principle



T8 screwdriver



T8 screwdriver



7a. *Mounting the saw guide*

The side-specific saw guide is mounted according to the marking provided on the plate, using the third distal hole and the distal end of the central elongated hole. To facilitate the process, the screwdriver can be used.

Note:

First, the distal screw is lightly driven into the circular hole but not tightened. As a result, the proximal screw can find its way in the elongated hole more easily. As soon as the two screws have gripped, first the proximal screw and then the distal screw can be finally tightened.



7b. *Mounting the saw guide*

The desired shortening can be set continuously on the saw guide in advance using the screwdriver. The set value is exactly identical with the actual shortening to be achieved.



T8 screwdriver



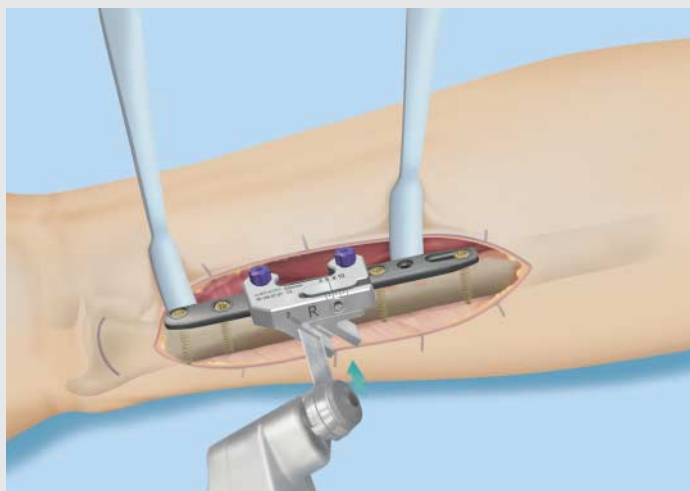
Saw guides



T8 screwdriver



Saw guides



8. Osteotomy

The saw guide ensures a parallel osteotomy directly below the distal elongated hole.

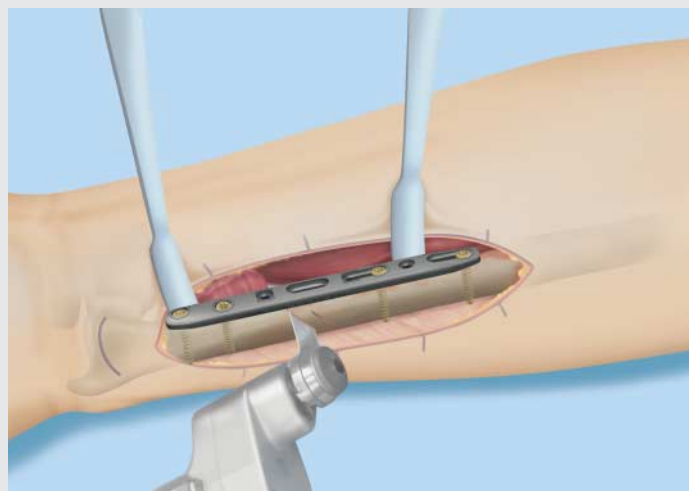
To ensure a safe and precise osteotomy as defined, the sawblade must have the following dimensions:

- Cutting width (thickness): 0.5 mm
- Width of working blade: 15 mm
- Length: 40 mm

It is recommended to cut through the bone but leaving the palmar-side cortical bone directly underneath the plate intact for the time being.

Note:

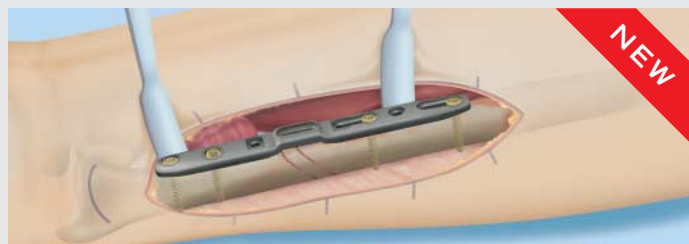
To achieve best results, a powerful motor system and a new sawblade should always be used.



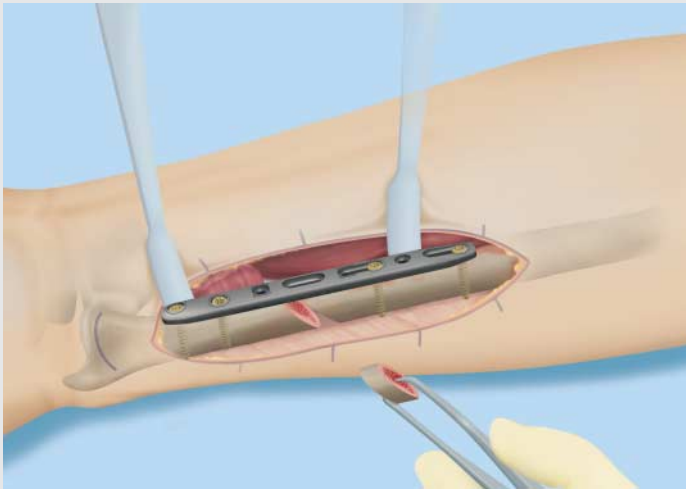
9. Final osteotomy

The final osteotomy is performed under visual control after removing the saw guide.

To perform the osteotomy without contractions between the saw blade and the mounted plate and to safely transect the periosteum, the RECOS bridge plate (26-166-75-09) can be used, which has a recess in the osteotomy zone.

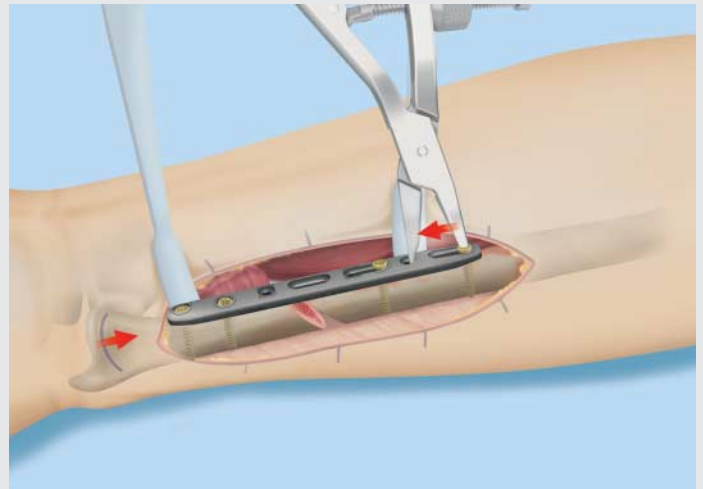


Saw guides



10. Removing the bone chip

The corticocancellous bone chip can now be removed with a pair of forceps.



11a. Closing the osteotomy

To close the osteotomy gap, the two proximal standard screws are loosened by half a turn and the compression forceps are then applied.

Compression forceps are available in two versions left and right. This prevents collision with the screwdriver when tightening the screws.



When applying the forceps, the hook engages with the groove of the proximal elongated hole while the diamond-coated pin engages with the head of the screw inserted into the proximal gliding hole.



Compression forceps

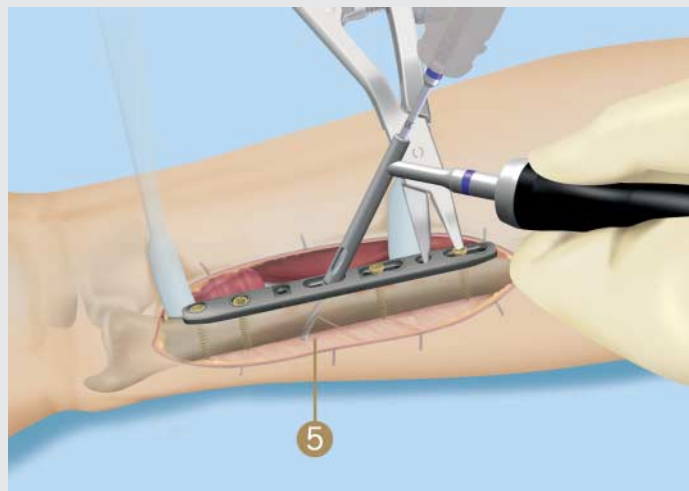


11b. Closing the osteotomy

Once the osteotomy gap has been closed with the compression forceps, the final position is fixed with the knurled screw.

Now the standard screw in the second proximal elongated hole can be securely tightened while leaving the compression forceps in place (see illustration).

If the lag screw technique (see 12) is used to compress the osteotomy gap, the standard screw in the second proximal elongated hole is tightened just a little.



12a. Implantation of a lag screw

The distal elongated hole (5) can be filled with a lag screw.

This requires a hole to be drilled orthogonally to the osteotomy gap using the 2.0-mm smartDrive® core hole drill.

The smartDrive® gliding hole drill Ø 2.5 mm is then used to drill all the way to the osteotomy line.



Compression forceps



T8 screwdriver



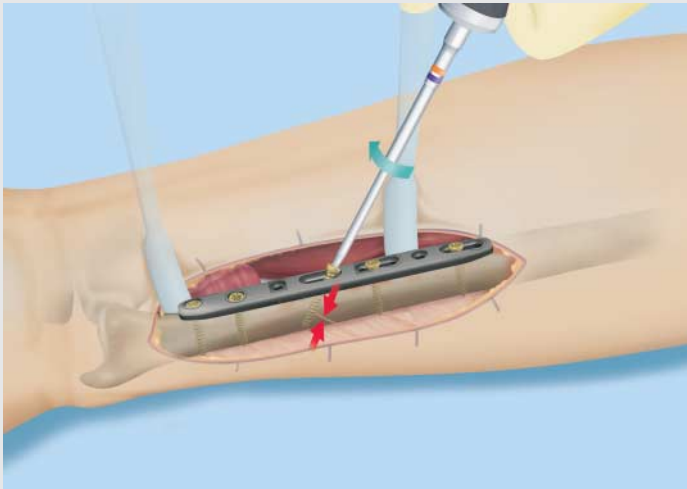
Core hole drill
AO fitting
Ø 2.0 mm



Gliding hole drill
AO fitting
Ø 2.5 mm



Compression forceps



12b. Implantation of a lag screw

A 2.5-mm smartDrive® standard screw can now be implanted as a lag screw.

Immediately afterwards, the screws of the proximal elongated holes are tightened.

Note:

Screw tightening is done from inside to outside, starting with the one closest to the osteotomy.



13. Final fixation

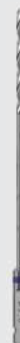
To ensure multidirectional stabilization, the two remaining holes (6, 7) are now filled with standard or locking smartDrive® screws. Locking screws are usually used (see illustration).



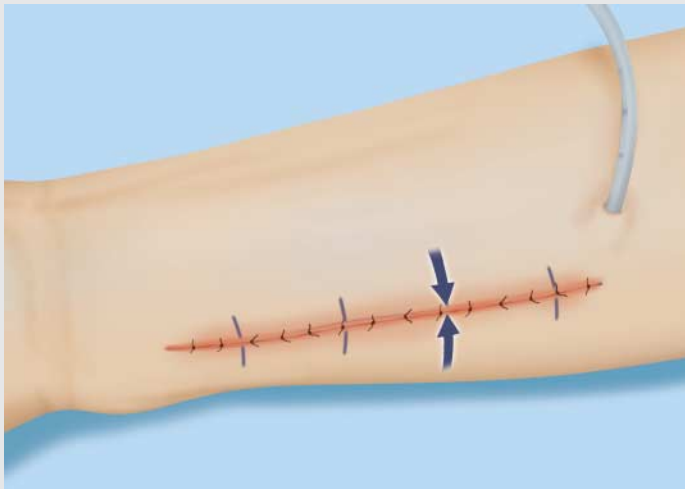
T8 screwdriver



T8 screwdriver

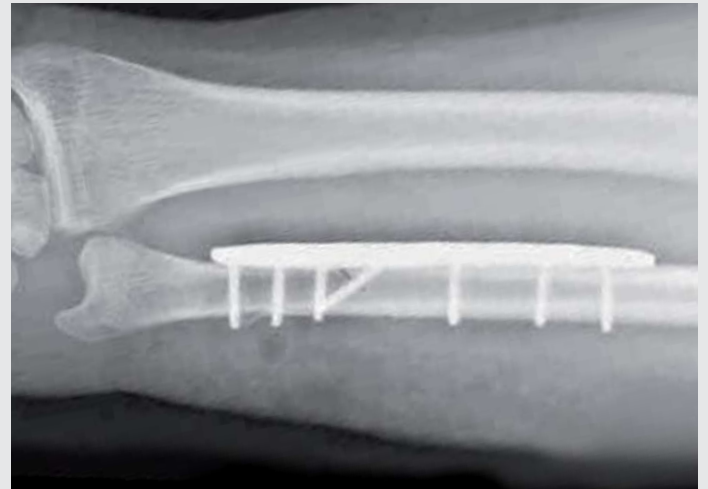


Core hole drill
AO fitting
Ø 2.0 mm



14. Closing the wound

Following wound irrigation and cleaning, the capsular and ligamentous structures are carefully restored.



Postoperative treatment

Following skin closure, a final X-ray is taken.

After that a sterile dressing and a dorsal forearm splint can be applied for 4 weeks.

RECOS® Implants Palmar Ulna Shortening Plates

*RECOS® ulna shortening
7-hole, short*
Length 80 mm
Width 10 mm

*RECOS® ulna shortening
7-hole, long*
Length 90 mm
Width 10 mm



1/1

26-166-60-09

Ti Dotac® 1 unit(s) = 1.9/3.2 mm

STERILE | 1



1/1

26-166-70-09

Ti Dotac® 1 unit(s) = 1.9/3.2 mm

STERILE | 1



Icon explanations

-  Screw diameter 2.5 mm
-  Titanium, Dotize®
-  1 unit(s)
-  Multidirectional locking screw hole
-  Plate profile

STERILE | Implants in sterile packaging

RECOS® ulna shortening 7-hole, bridge plate

Length 90 mm

Width 10 mm



$\frac{1}{1}$

26-166-75-09

    = 1.9/3.2 mm

STERILE |

RECOS® *Implants*
Palmar Radius Reconstruction Plates

RECOS® radius reconstruction
3/2-hole
Length 70 mm
Width 21 mm



26-166-42-09

right

   = 2.5 mm

STERILE | 

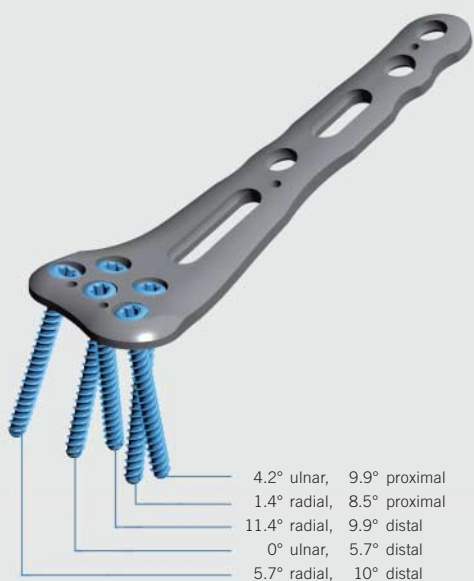


26-166-43-09

left

   = 2.5 mm

STERILE | 



Icon explanations

- Screw diameter 2.5 mm
- Titanium, Dotize®
- Packing unit
- Multidirectional locking screw hole
- Plate profile

STERILE Implants in sterile packaging

RECOS® radius reconstruction
4/3-hole
Length 70 mm
Width 24 mm

Available soon



26-166-40-09

right

= 2.5 mm

STERILE



26-166-41-09

left

= 2.5 mm

STERILE

RECOS® *Implants*
Screws

Screws

Multidirectional
locking screw

Ø 2.5 mm



Length	Item No.
8 mm	26-905-08-09
9 mm	26-905-09-09
10 mm	26-905-10-09
11 mm	26-905-11-09
12 mm	26-905-12-09
13 mm	26-905-13-09
14 mm	26-905-14-09
15 mm	26-905-15-09
16 mm	26-905-16-09
17 mm	26-905-17-09
18 mm	26-905-18-09
19 mm	26-905-19-09
20 mm	26-905-20-09
22 mm	26-905-22-09
24 mm	26-905-24-09
26 mm	26-905-26-09
28 mm	26-905-28-09
30 mm	26-905-30-09

Screws

Standard
cortical screw

Ø 2.5 mm



Length	Item No.
8 mm	26-906-08-09
9 mm	26-906-09-09
10 mm	26-906-10-09
11 mm	26-906-11-09
12 mm	26-906-12-09
13 mm	26-906-13-09
14 mm	26-906-14-09
15 mm	26-906-15-09
16 mm	26-906-16-09
17 mm	26-906-17-09
18 mm	26-906-18-09
19 mm	26-906-19-09
20 mm	26-906-20-09
22 mm	26-906-22-09
24 mm	26-906-24-09
26 mm	26-906-26-09
28 mm	26-906-28-09
30 mm	26-906-30-09



Icon explanations

-  Screw diameter 2.5 mm
-  Screw diameter 3.0 mm
-  Titanium, Dotize®
-  T-Drive
-  Packing unit

Screws

Multidirectional locking screw

Ø 3.0 mm



1/1



Length	Item No.
8 mm	26-908-08-09
9 mm	26-908-09-09
10 mm	26-908-10-09
11 mm	26-908-11-09
12 mm	26-908-12-09
13 mm	26-908-13-09
14 mm	26-908-14-09
15 mm	26-908-15-09
16 mm	26-908-16-09
17 mm	26-908-17-09
18 mm	26-908-18-09
19 mm	26-908-19-09
20 mm	26-908-20-09
22 mm	26-908-22-09
24 mm	26-908-24-09
26 mm	26-908-26-09
28 mm	26-908-28-09
30 mm	26-908-30-09

Screws

Standard cortical screw

Ø 3.0 mm



1/1



Length	Item No.
8 mm	26-909-08-09
9 mm	26-909-09-09
10 mm	26-909-10-09
11 mm	26-909-11-09
12 mm	26-909-12-09
13 mm	26-909-13-09
14 mm	26-909-14-09
15 mm	26-909-15-09
16 mm	26-909-16-09
17 mm	26-909-17-09
18 mm	26-909-18-09
19 mm	26-909-19-09
20 mm	26-909-20-09
22 mm	26-909-22-09
24 mm	26-909-24-09
26 mm	26-909-26-09
28 mm	26-909-28-09
30 mm	26-909-30-09

Instruments **RECOS®**

Standard instruments



26-166-25-07
*Drill guide
classic*
13.5 cm / 5 1/4"



26-166-27-07
*Drill guide
monoaxial*
13.5 cm / 5 1/4"



26-950-20-07
Core hole drill
AO fitting
Ø 2.0 mm
11 cm / 4 1/4"



26-166-21-07
Depth gauge
Single-hand principle
15 cm / 5 3/4"





Icon explanations

-  Screw diameter 2.5 mm
-  Screw diameter 3.0 mm
-  Steel
-  Silicone
-  T-Drive
-  Packing unit

Standard instruments



1/2

26-166-18-07
T8 screwdriver
18 cm / 7"



1/2

26-166-13-07
K-wire dispenser
Ø 1.2 mm
17.5 cm / 6 3/4"



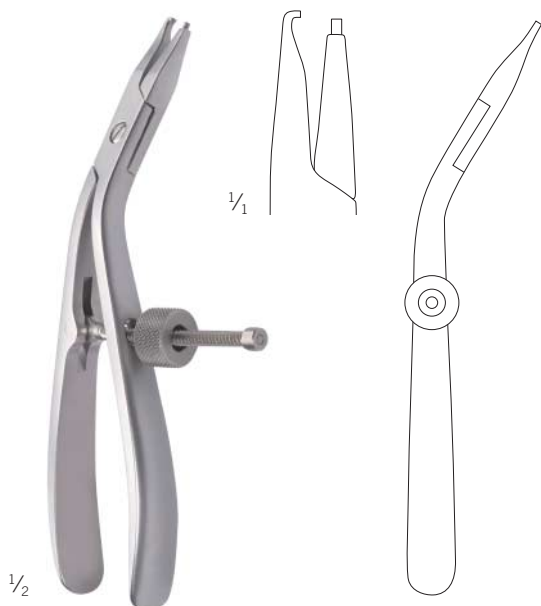
1/2

22-627-12-05
K-wires
Ø 1.2 mm
12 cm / 4 3/4"

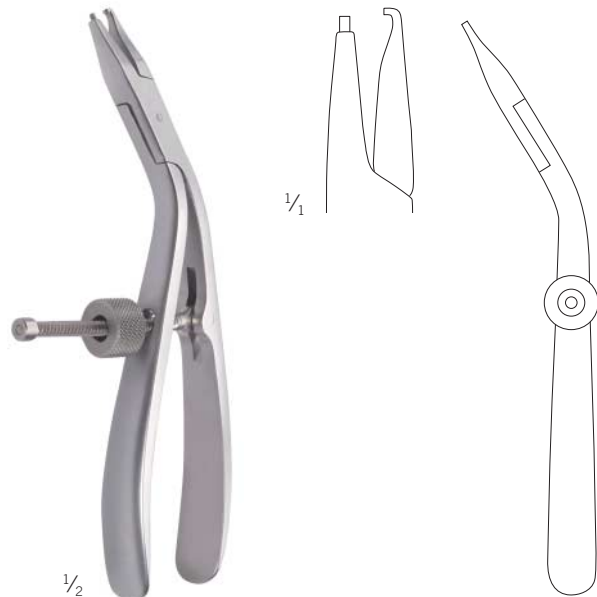


Instruments
RECOS®

Special instruments for ulna shortening



26-166-11-07
Compression forceps
left
15 cm / 6"



26-166-10-07
Compression forceps
right
15 cm / 6"





Icon explanations

-  Steel
-  T-Drive
-  Packing unit

Picture shows left-side ulna / left-side compression forceps



26-166-08-07
Saw guide
left

-  St
-  1 unit(s)



26-166-07-07
Saw guide
right

-  St
-  1 unit(s)

Instruments
RECOS®

Optional instruments



1/2

26-166-20-07
Depth gauge
AO principle
15 cm / 5 3/4"



1/2

26-166-30-07
Drill guide classic
13.5 cm / 5 1/4"



1/2

26-166-32-07
Drill guide mono
13.5 cm / 5 1/4"



1/1

26-166-33-71
Drill sleeves 3.0

STERILE ↓



1/2

26-166-19-07
Screwdriver T8
rotary
19 cm / 7 1/2"





Icon explanations

-  Screw diameter 2.5 mm
-  Screw diameter 3.0 mm
-  Steel
-  Silicone
-  T-Drive
-  Packing unit

STERILE  Implants in sterile packaging

Drill bits / sawblades



1/2

St 1 unit(s)

Screw	Ø	Non-sterile	STERILE 
smartDrive®	2.5 mm 		
Core hole	2.0 mm	26-950-20-07	26-950-21-07
Gliding hole	2.5 mm	26-950-25-07	26-950-26-07
smartDrive®	3.0 mm 		
Core hole	2.5 mm	26-950-30-07	26-950-30-71
Gliding hole	3.0 mm	26-950-31-07	26-950-31-71



1/2

St 1 unit(s)

Fitting	STERILE 
A0	26-166-15-71
Stryker	26-166-16-71
madriMed	26-166-17-71

Storage System **RECOS®**

The RECOS® storage system consists of various modules.

All instruments that are absolutely imperative for a surgery are stored separately in the instrument tray.

Optional instruments such as the instrument set required for smartDrive® screws Ø 3.0 mm can also be stored separately in the storage cage.

The double-sided circular screw rack additionally provides the opportunity to store locking and standard screws with a diameter of 3.0 mm. The circular screw rack can be stocked individually.



Storage system

55-910-10-04 Storage set consisting of:
lid, instrument insert, storage cage, circular screw rack Ø 2.5 mm, single-sided

55-910-11-04 Storage set consisting of:
lid, instrument insert, storage cage, circular screw rack Ø 2.5/3.0 mm, double-sided



55-910-59-04
Lid

1
unit(s)



55-910-13-04
Instrument insert
for storage system

1
unit(s)



55-910-14-04
Storage cage

1
unit(s)



55-910-39-04
smartDrive® Ø 2.5 mm
circular screw rack,
single-sided

1
unit(s)



55-910-12-04
smartDrive® Ø 2.5/3.0 mm
circular screw rack,
double-sided

1
unit(s)

KLS Martin Group

Karl Leibinger Medizintechnik GmbH & Co. KG
78570 Mühlheim · Germany
Tel. +49 7463 838-0
info@klsmartin.com

KLS Martin GmbH + Co. KG
79224 Umkirch · Germany
Tel. +49 7665 98 02-0
info@klsmartin.com

Stuckenbrock Medizintechnik GmbH
78532 Tuttlingen · Germany
Tel. +49 7461 165880
verwaltung@stuckenbrock.de

Rudolf Buck GmbH
78570 Mühlheim · Germany
Tel. +49 7463 99516-30
info@klsmartin.com

KLS Martin France SARL
68200 Mulhouse · France
Tel. +33 3 89 51 31 50
france@klsmartin.com

Martin Italia S.r.l.
20864 Agrate Brianza (MB) · Italy
Tel. +39 039 605 67 31
italia@klsmartin.com

Martin Nederland/Marned B.V.
1271 AG Huizen · The Netherlands
Tel. +31 35 523 45 38
nederland@klsmartin.com

KLS Martin UK Ltd.
Reading RG1 3EU · United Kingdom
Tel. +44 1189 000 570
uk@klsmartin.com

Nippon Martin K.K.
Osaka 541-0046 · Japan
Tel. +81 6 62 28 90 75
nippon@klsmartin.com

KLS Martin L.P.
Jacksonville, FL 32246 · USA
Tel. +1 904 641 77 46
usa@klsmartin.com

KLS Martin do Brasil Ltda.
CEP 04.531-011 São Paulo · Brazil
Tel.: +55 11 3554 2299
brazil@klsmartin.com

KLS Martin Australia Pty Limited
Artarmon NSW 2064 · Australia
Tel.: +61 2 9439 5316
australia@klsmartin.com

KLS Martin Malaysia Sdn. Bhd.
10200 Penang · Malaysia
Tel. +604 263 2566
malaysia@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
121471 Moscow · Russia
Tel. +7 499 792-76-19
russia@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
201203 Shanghai · China
Tel. +86 21 2898 6611
china@klsmartin.com

Gebrüder Martin GmbH & Co. KG
Representative Office
Dubai · United Arab Emirates
Tel. +971 4 454 16 55
middleeast@klsmartin.com

**1923
2013
YEARS** | **SURGICAL
INNOVATION**

Gebrüder Martin GmbH & Co. KG
A company of the KLS Martin Group
KLS Martin Platz 1 · 78532 Tuttlingen · Germany
Postfach 60 · 78501 Tuttlingen · Germany
Tel. +49 7461 706-0 · Fax +49 7461 706-193
info@klsmartin.com · www.klsmartin.com