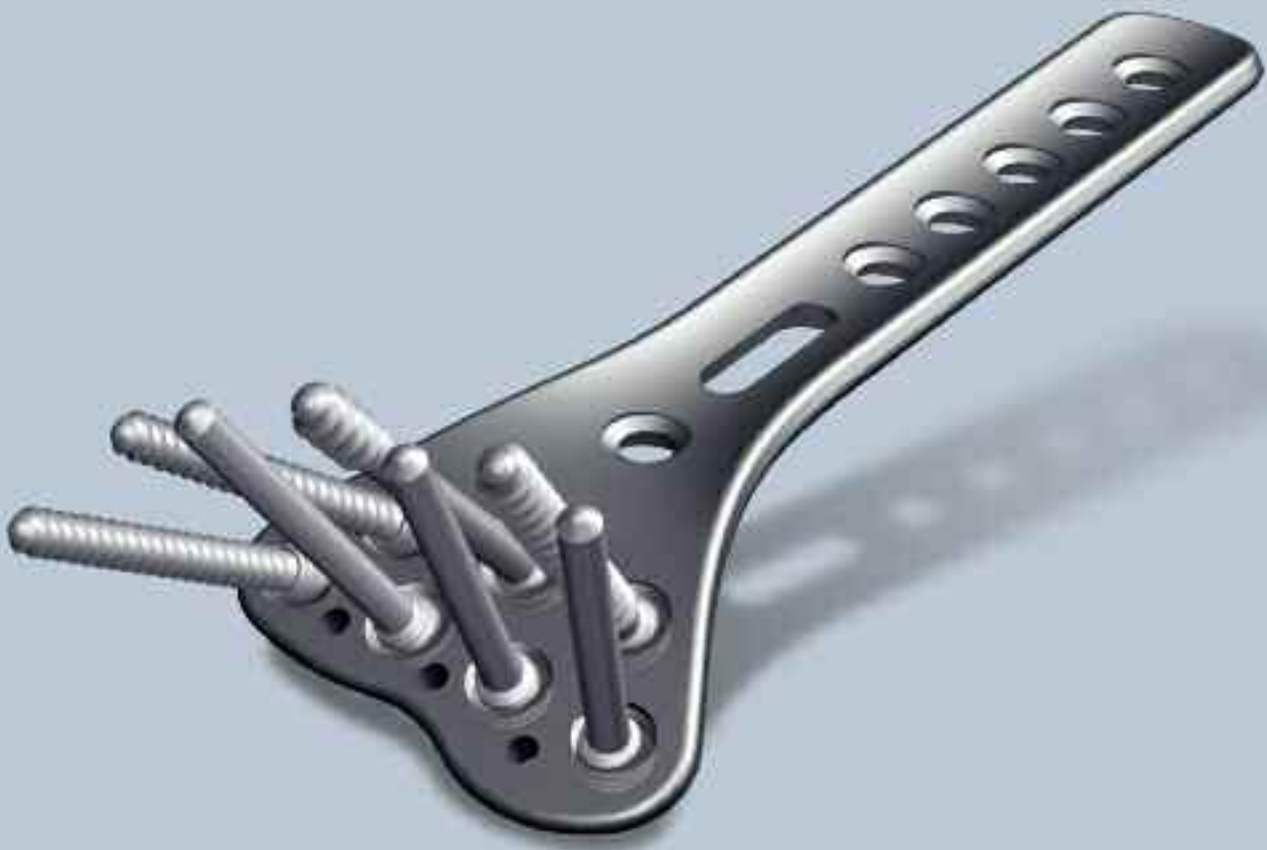


The New Comprehensive Stryker® **VariAx™ Distal Radius** Locking Plate System

Operative Technique

- Anatomical & Universal Volar Plates
- Dorsal Plates
- Fragment Specific Plates



Introduction

The NEW VariAx™ Distal Radius Plating System represents the Next Generation of Bone Fixation for virtually all of your Distal Radius Fracture Needs.

System Features

• Complete Plating System

Providing Anatomical Volar and Dorsal, Universal Volar and Fragment Specific Solutions, even for the most complex distal radius fracture.

• Fixed Angle Drill Guide

Assures placement of screws & pegs in a pre-determined angle.

• Polyaxial Drill Guide

Allows locking with an additional angulation of ± 15 degrees in any hole on the plate.

• New Anatomical Volar Plate

Encourages articular support with Locking screws & pegs, provides optimal buttressing to the Distal Radial Ulnar Joint (DRUJ) and stable fixation of radial styloid fragments with two screws.

• Full range of 2.0mm to 2.7mm Locking and Non-Locking screws & pegs

Offering intraoperative solutions for different fracture fixation requirements.

• Anodization Type II

Increases the strength of all VariAx™ Distal Radius Locking Plates and may reduce the incidence of tissue adherence.

SmartLock Locking Technology

• Patented SmartLock Locking Technology

Encourages “locked” screw to plate interface due to combination of Grade II – Ti Plates and Grade V – Ti Screws & Pegs

• SmartLock Locking Screws & Pegs

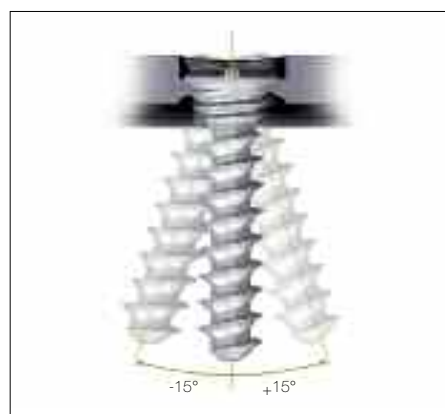
Designed with threads on the underside of the screw head, which upon insertion engage the circular “lip” within any hole on the plate.

• Unique one-step Locking

Achieved by simply inserting a Locking Screw or Peg within the polyaxial locking range of ± 15 degrees, without the need for further steps.

Cross-Pin Screw Head Design

- Optimal axial stability
- Improved friction fit
- Easy screw pick up



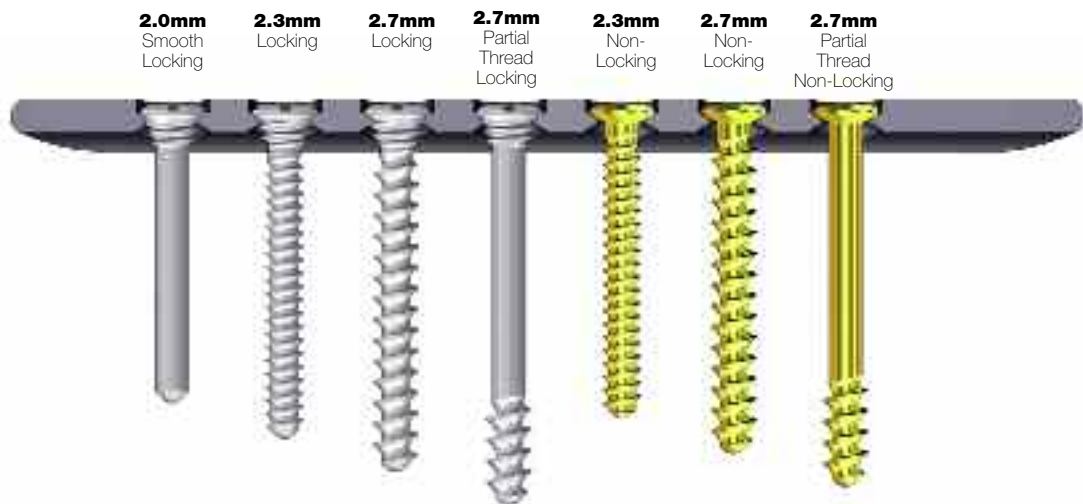
This operative technique was developed with Richard Rogachefsky, MD.

Overview

Plate Options



Screw/Peg Options

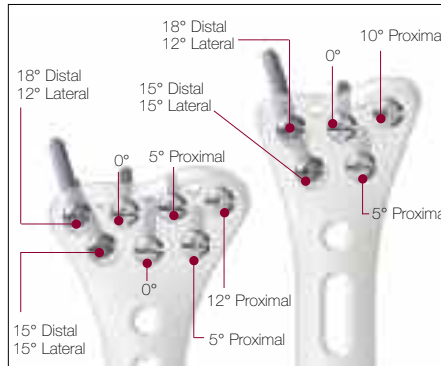


Operative Technique

Fixed Angle Drill Guide

This drill guide will ensure a pre-fixed angle for placement of screw options in every case. It does not allow the flexibility of choosing an angle. It is designed to fit into the pre-tilted lips within the holes on the plate by simply pressing the drill guide into the hole.

Note: In order to prevent toggle, this drill guide is designed to fit very tightly into the holes of the plate. When utilizing this instrument follow the same trajectory of the pre-tilted lips to facilitate its placement. This will be important when approaching the radial styloid screw holes.



Pre-determined Screw Pattern



SmartLock Polyaxial Drill Guide

This dual guide allows for ± 15 degrees of custom angulation of screws and pegs and may be used for more complex fractures. A lip on the drill sleeve will engage and allow toggling in the hole. The range in which the drill guide toggles will create a 30 degree cone with every angle in this cone will be a locking position.



This may allow for the surgeon to aim where the screw/peg should be placed.

Note: Fully engage the drill guide into the hole before aiming the drill in the desired direction.



2.3mm Drill Guide/ K-Wire Guide

The K-Wire guide provides an option to assess potential screw positions by inserting a 1.1mm K-Wire prior to any drilling or screw insertion. By using the same technique, this K-Wire guide offers the same 30 degree locking cone as the SmartLock Polyaxial Drill Guide.



It may also be utilized to provide temporary fixation to smaller fragments, while capturing these fragments with adjacent locking screws.

The 2.3mm drill guide can be used as an overdrill to lag 2.3mm screws if compression is desired or as a pilot hole for 2.7mm screws in dense bone. This drill guide can only be used in a fixed angle.

Operative Technique

Anatomical Volar Plates



Step 1

An incision is made approximately 8cm long just radial to the FCR tendon. If more exposure is necessary, the incision can be extended radially at 45 degrees along the wrist flexion creases.



Step 2

The FCR tendon is retracted ulnarly and dissection is carried down through the floor of the FCR sheath. This exposes the FCR muscle belly, which may be retracted ulnarly as well.



Step 3

The Pronator Quadratus is identified and dissected in its entirety off of the volar surface of the radius as an ulnarly based flap.



Step 4

The insertion of the Brachioradialis may be released.



Step 5

The fracture is visualized and reduced.

Step 6

The use of external traction, and/or the use of K-Wires for temporary fixation could be helpful. If necessary, bone graft materials may be used as an adjunct to the plate to provide an optimal bone void filler. The use of AP/Lateral fluoroscopy is helpful to determine correct fracture reduction and plate position.

Operative Technique

Anatomical Volar Plate



Step 7

Choose the appropriate implant according to patient anatomy and fracture pattern.



Step 8

The plate should be placed slightly below the distal edge of the radius to support the volar articular fracture fragments and also to avoid inserting screws or pegs into the joint.



Step 9

Zebra striped K-Wires and/or Olive K-Wires can be used for temporary fixation while evaluating the placement of the plate.

Step 10

The first pilot hole should be drilled in the oval gliding hole using the appropriate drill guide.

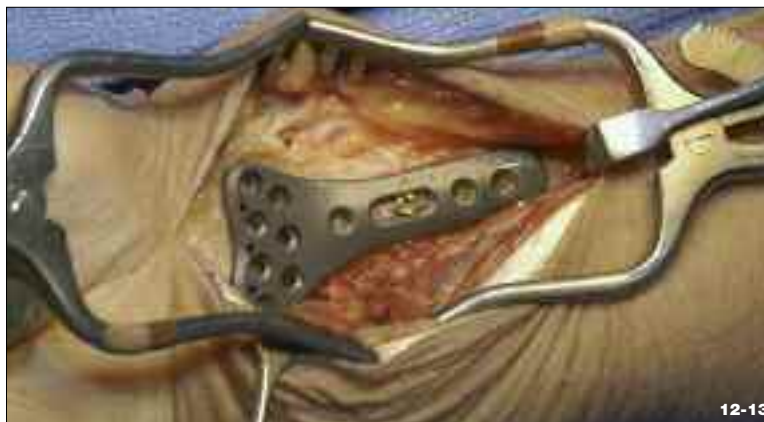


Step 11

Use the depth gauge to determine screw length.

Step 12

A non-locking screw is placed in the oval gliding hole but not completely tightened to allow adjustment of the plate in distal or proximal directions.



Step 13

After confirmation of the correct positioning of the anatomic volar plate by use of fluoroscopy, tighten the first screw.

Operative Technique

Anatomical Volar Plate



Step 14

Once the position of the plate has been determined, it is time to decide which drill guide to use based upon preference and/or fracture pattern.



Step 15

Using the desired drill guide, repeat drilling, measuring and placement of screws/pegs in the distal holes.

Step 16

Place locking or non-locking screws in the proximal end of the plate.*

***Note:** In very dense bone it is recommended to use the 2.3mm drill bit in conjunction with the 2.3mm drill guide for a 2.7mm screw.



Step 17

Verify proper placement of screws/pegs by use of fluoroscopy to ensure that neither penetrate the joint.

Step 18

Close the incision.



Operative Technique

Universal Volar Plate



Step 1

An incision is made approximately 8cm long just radial to the FCR tendon. If more exposure is necessary, the incision can be extended radially at 45 degrees along the wrist flexion creases.



Step 2

The FCR tendon is retracted ulnarly and dissection is carried down through the floor of the FCR sheath. This exposes the FCR muscle belly, which may be retracted ulnarly as well.



Step 3

The Pronator Quadratus is identified and dissected in its entirety off of the volar surface of the radius as an ulnarly based flap.



Step 4

The insertion of the Brachioradialis may be released.

Operative Technique

Universal Volar Plate

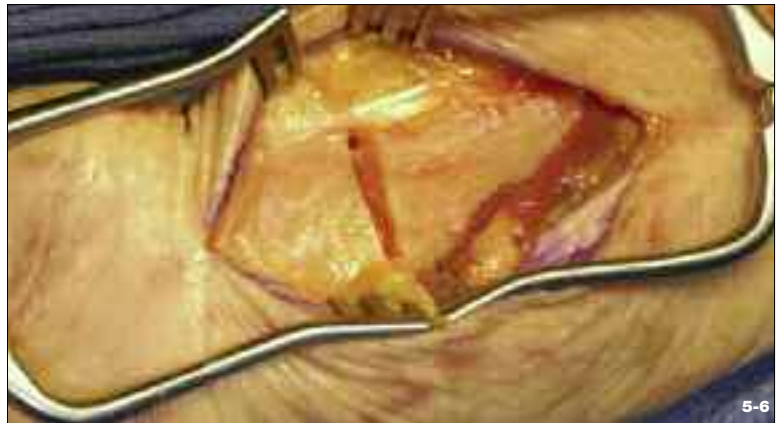


Step 5

The fracture is visualized and reduced.

Step 6

The fracture is reduced. The use of external traction, and/or the use of K-Wires for temporary fixation could be helpful. If necessary, bone graft materials may be used as an adjunct to the plate to provide an optimal bone void filler.



Step 7

The plate should be placed slightly below the distal edge of the distal radius to avoid inserting screws or pegs into the joint. The use of AP/Lat fluoroscopy is helpful to determine correct fracture reduction and plate position.



Step 8

K-Wires can be used for temporary fixation.

Step 9

The first pilot hole should be drilled in the oval gliding hole using the appropriate drill guide.

Step 10

Measure the depth of the hole to determine screw length.

Step 11

The screw is placed in the oval gliding hole but not completely tightened to allow adjustment of the plate in distal or proximal directions.



Operative Technique

Universal Volar Plate



Step 12

After confirmation of the correct positioning of the volar plate by use of fluoroscopy, tighten the first screw.



Step 13

Repeat drilling, measuring and placing of screws/pegs in the distal holes of the plate. The position and number of screws applied depends on the type of fracture.



Step 14

Place the bone or locking screws in the proximal end of the plate.

Step 15

Verify proper placement of screws and pegs by use of fluoroscopy to ensure that neither penetrates the joint.

Step 16

Close the incision.



Operative Technique

Dorsal Plate



Step 1

Longitudinal incision is made just ulnar to Lister's tubercle at the distal radius region.



Step 2

Dissection is performed down to the extensor retinaculum. The third compartment is opened and the extensor pollicis longus is displaced radially.



Step 3

The second compartment wrist extensors are subperiosteally elevated radially and the fourth compartment is subperiosteally elevated ulnarly. The dorsal interosseous nerve might be cut off for pain reduction.



Step 4

The fracture is reduced. The use of an external traction device and/or K-Wires for temporary fixation may be helpful. If necessary, bone graft materials may be used as an adjunct to the plate to provide an optimal bone void filler.

Step 5

If necessary, adapt the plate for correct anatomical position. Removal of Tuberculum Listeri might be necessary.



Operative Technique

Dorsal Plate



Step 6

The plate should be placed slightly below the distal edge of the distal radius to avoid inserting screws/pegs into the joint. Correct positioning of the plate should be confirmed by use of fluoroscopy. The first pilot hole should be drilled in the oval gliding hole.



Step 7

Measure the depth of the hole to determine screw length.

Step 8

Check the screw length on the measuring scale of the implant module (optional).

Step 9

The screw is placed in the oval gliding hole but not completely tightened to allow adjustment of the plate in a distal or proximal direction.



Step 10

Confirm proper plate positioning by use of fluoroscopy and then tighten the first screw.

Step 11

Repeat drilling, measuring, and placing of screws/pegs into the distal holes of the plate. The position and number of screws applied depends on the type of fracture.

Step 12

Place bone or locking screws in the proximal end of the plate.

Step 13

Confirm correct placement by use of fluoroscopy.

Step 14

Verify proper placement of screws and pegs by use of fluoroscopy to ensure that neither penetrates the joint.

Step 15

Close the incision.



Operative Technique

Radial Column Plate



Step 1

Incision is made along the radial column.



Step 2

Care must be taken to avoid injury to dorsal sensory branch of the radial nerve.



Step 3

First dorsal compartment is freed from dorsal to volar to allow plate placement.



Step 4

Plate is placed along the radial column.



Step 5

Screws or distal K-Wires can be placed for fixation options.

Operative Technique

Radial Column Plate



Step 6

The 3 in 1 K-Wire bender/cutter/insertor is used to place K-Wires distally.

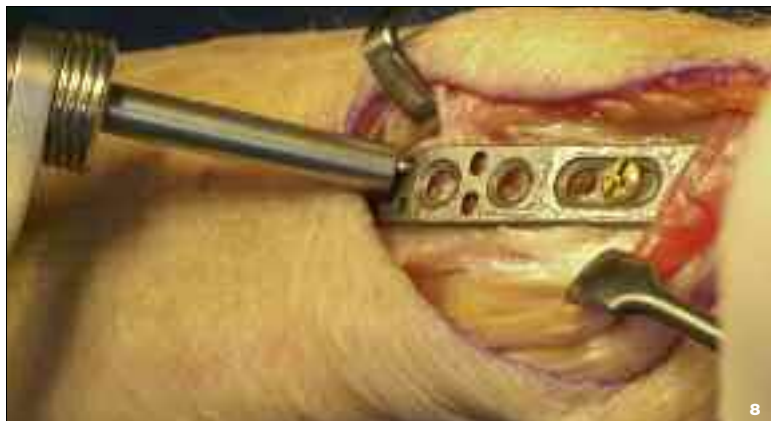
Step 7

It is recommended only one K-Wire be placed distally at a time in order to make proper use of the bender/cutter/insertor instrument.



Step 8

After insertion, the tamp and mallet can be used to further insert the K-Wires.



Step 9

K-Wires and screws can be placed in conjunction for more rigid fixation.


















Step 10

The incision is closed.




Ordering Information







Volar Plates

	REF	Description
	54-25384	Anatomical Volar DR Plate Narrow, Right
	54-25374	Anatomical Volar DR Plate Narrow, Left
	54-25386	Anatomical Volar DR Plate Standard, Right
	54-25376	Anatomical Volar DR Plate Standard, Left
	54-25385	Anatomical Volar DR Plate Narrow, Right, Long
	54-25375	Anatomical Volar DR Plate Narrow, Left, Long
	54-25387	Anatomical Volar DR Plate Standard, Right, Long
	54-25377	Anatomical Volar DR Plate Standard, Left, Long
	54-25394	Universal Volar DR Plate Narrow, Short
	54-25396	Universal Volar DR Plate Standard, Short
	54-25398	Universal Volar DR Plate Wide, Short
	54-25395	Universal Volar DR Plate Narrow, Long
	54-25397	Universal Volar DR Plate Standard, Long
	54-25399	Universal Volar DR Plate Wide, Long
	54-25391	Universal Volar DR Plate Narrow, XLong
	54-25392	Universal Volar DR Plate Standard, XLong
	54-25393	Universal Volar DR Plate Wide, XLong

Dorsal Plates

	REF	Description
	54-25290	Dorsal DR Plate Standard, Right
	54-25291	Dorsal DR Plate Standard, Left
	54-25292	Dorsal DR Plate Wide, Right
	54-25293	Dorsal DR Plate Wide, Left
	54-25294	Dorsal DR Plate Standard, Right, XLong
	54-25295	Dorsal DR Plate Standard, Left, XLong
	54-25296	Dorsal DR Plate Wide, Right, XLong
	54-25297	Dorsal DR Plate Wide, Left, XLong

Fragment Specific Plates

	REF	Description
	54-25400	Radial Column Plate Short
	54-25401	Radial Column Plate Long
	54-25402	Ulnar Column Plate Short, Right
	54-25403	Ulnar Column Plate Short, Left
	54-25404	Ulnar Column Plate Long, Right
	54-25405	Ulnar Column Plate Long, Left

The Variax Distal Radius Plating System incorporates plate designs originating from the Matrix Distal Radius Plating System developed by Stryker in conjunction with Richard Rogachefsky, MD.

Ordering Information

2.0mm Locking Pegs*



Ti REF	Length mm
52-20616	16mm
52-20618	18mm
52-20620	20mm
52-20622	22mm
52-20624	24mm
52-20626	26mm

2.3mm Locking Screws*



Ti REF	Length mm
52-23610	10mm
52-23612	12mm
52-23614	14mm
52-23616	16mm
52-23618	18mm
52-23620	20mm
52-23622	22mm
52-23624	24mm
52-23626	26mm
52-23628	28mm
52-23630	30mm
52-23632	32mm
52-23634	34mm
52-23636	36mm
52-23638	38mm

2.7mm Locking Screws*



Ti REF	Length mm
52-27610	10mm
52-27612	12mm
52-27614	14mm
52-27616	16mm
52-27618	18mm
52-27620	20mm
52-27622	22mm
52-27624	24mm
52-27626	26mm

2.7mm Partially Threaded Locking Pegs*



Ti REF	Length mm
52-27716	16mm
52-27718	18mm
52-27720	20mm
52-27722	22mm
52-27724	24mm
52-27726	26mm

2.7mm Bone Screws*



Ti REF	Length mm
52-27010	10mm
52-27012	12mm
52-27014	14mm
52-27016	16mm
52-27018	18mm
52-27020	20mm
52-27022	22mm
52-27024	24mm
52-27026	26mm

2.3mm Bone Screws*



Ti REF	Length mm
52-23010	10mm
52-23012	12mm
52-23014	14mm
52-23016	16mm
52-23018	18mm
52-23020	20mm
52-23022	22mm
52-23024	24mm
52-23026	26mm
52-23028	28mm
52-23030	30mm
52-23032	32mm
52-23034	34mm
52-23036	36mm
52-23038	38mm

2.7mm Partially Threaded Bone Screws*



Ti REF	Length mm
52-27116	16mm
52-27118	18mm
52-27120	20mm
52-27122	22mm
52-27124	24mm
52-27126	26mm

Twist Drills



REF	Description
60-23141	2.3mm, Stryker shaft end
60-23341	2.3mm, AO shaft end
60-23441	2.3mm, Dental shaft end
60-20185	2.0mm, Stryker shaft end
60-20385	2.0mm, AO shaft end
60-20485	2.0mm, Dental shaft end
60-19140	1.9mm, Stryker shaft end
60-19340	1.9mm, AO shaft end
60-19440	1.9mm, Dental shaft end

Ordering Information



Instrumentation

	REF	Description
	62-20290	Screwdriver Ratcheting Handle
	62-27007	Cross-Pin Blade 2.3mm/2.7mm
	56-01250	Polyaxial Drill Guide 2.3mm/2.7mm
	56-01255	Fixed Angle Drill Guide 2.3mm/2.7mm
	56-01260	2.3mm Overdrill and K-Wire Guide
	62-00016	Depth Measuring Gauge
	64-20117	Plate Bending Pliers
	64-20118	K-Wire Bending Pliers
	64-20129	Forceps w/Grasping Lips

Bone Reduction Instruments

	REF	Description
	07-30600	Lobster Bone Holding Forceps
	07-30111	Lewin Bone Holding Forceps, Sharp Tip
	07-10006	Elevator, Double sided, Narrow & Wide, Hohmanns
	07-10021	Elevator, Double sided, Strong & Light Curved
	07-10175	Bone Hook
	43-09830	Mallet (250g)
	64-00011	Tamp

K-Wires

	REF	Description
	56-40281	K-Wire with Olive Stop*
	07-40281	K-Wire, 1.1x160mm**

Implant Module



REF	Description
29-27001	VariAx™ Distal Radius Locking Implant Module, double-sized



29-27002	Inlay for Anatomical Volar Distal Radius Plates
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29-27003	Inlay for Universal Volar Distal Radius Plates
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Sterilizing Container



REF	Description
29-13012	VariAx™ Lid for Sterilizing Container



29-13013	Sterilizing Container, Half- size, w/o VariAx™ Lid
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29-13114	VariAx™ Distal Radius Plating Instrument Tray
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29-13024	VariAx™ Distal Radius Bone Reduction Tray
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Optional Items



REF	Description
62-00017	Depth Measuring Gauge (Aluminum, UDR Version)



50-23501	Marker - Locking Screws 2.3mm
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50-27500	Marker - Locking Screws 2.7mm
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50-20501	Marker - Locking Pegs 2.0mm
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50-23001	Marker - Bone Screws 2.3mm
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50-27000	Marker - Bone Screws 2.7mm
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50-27001	Marker - PT Bone Screws 2.7mm
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50-27501	Marker - PT Locking Pegs 2.7mm
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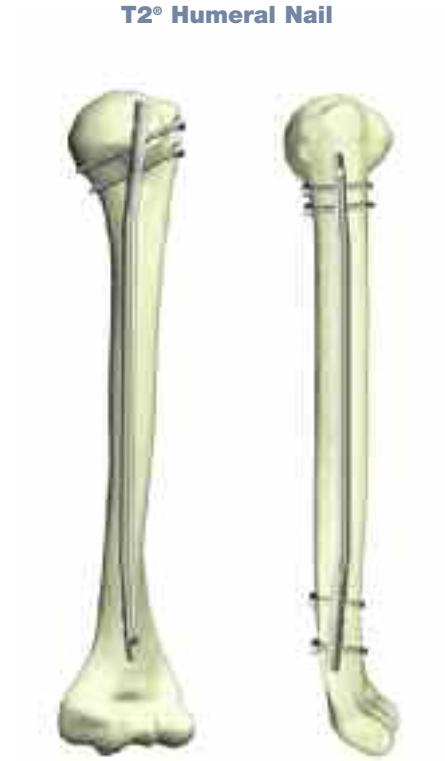
50-23502	Marker - 2.3mm
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Note: The following drills may be ordered sterile by replacing "60-" by "91-" in their respective Cat. Nr.: 60- 20185 / 20385 / 19340 / 19440.

*Order Quantity: Packages of 5. **Order Quantity: Packages of 10.

Complementary Products

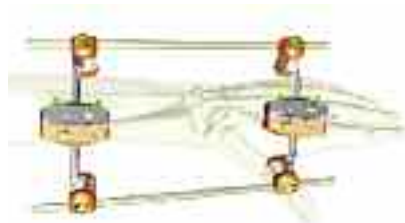
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Hoffmann® II Compact™ MRI



Profyle Modular



AxSOS™ Proximal Humeral Plate



Asnis™ III 4.0 Cannulated Screws



T2° Proximal Humeral Nail



Notes

