Surgical Technique
International Version

smith&nephew

PERI-LOC◇

Upper Extremity
Locked Plating System

Volar Distal Radius Locking Plate

PERI-LOC◇ Upper Extremity Locked Plating System

Volar Distal Radius Surgical Technique

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Nota Bene
The technique description herein is made available to the healthcare professional to illustrate the author's suggested treatment for the uncomplicated procedure. In the final analysis, the preferred treatment is that which addresses the needs of the specific patient.

Introduction

PERI-LOC◇ Locked Plating System Overview

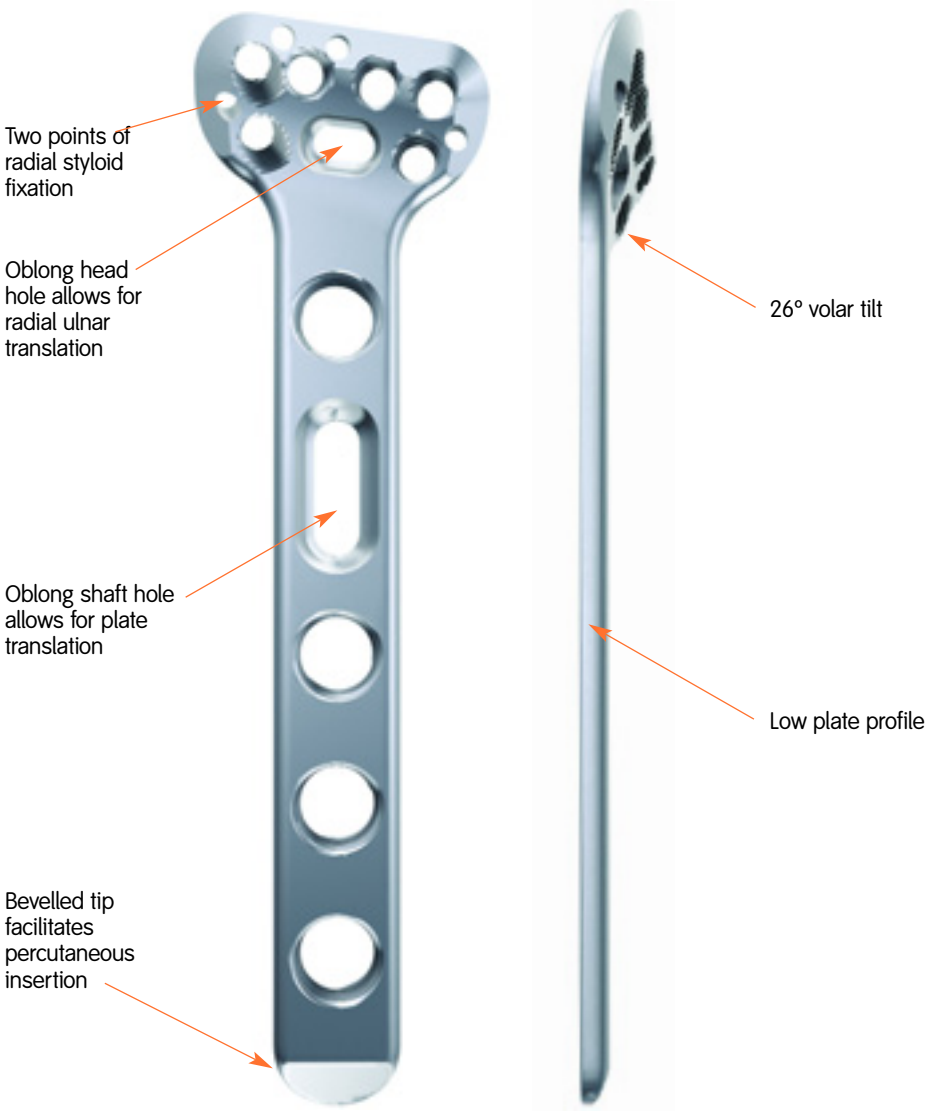
The PERI-LOC Locked Plating System combines the advantages of locked plating with the flexibility and benefits of traditional plates and screws. Utilising both locking and non-locking screws, the PERI-LOC system allows for the creation of a construct that resists angular collapse and also functions as an effective fracture reduction aid. A simple, intuitive instrument set featuring standardised drill bits, screwdrivers, and colour coded drill guides helps make the PERI-LOC system efficient and easy to use.

The precise screw trajectories, anatomic contour, and locking capabilities of the PERI-LOC Volar Distal Radius Plates provide a stable construct for predictable reconstruction of complex fractures of the radius.

- Low profile plates and screws reduce the potential for soft tissue and tendon irritation
- Twenty-six degree distal volar tilt allows for optimal anatomic fracture reduction and restoration of radial inclination
- Pre-contoured standard and wide plates available in lefts and rights and a variety of lengths
- Locking and non-locking option in every threaded hole for custom screw configurations
- Five points of distal articular fixation
- Two points of radial styloid fixation
- K-wire holes for provisional fixation and joint surface reconstruction
- 316L stainless steel for strength
- Elongated holes in the plate shaft and head facilitate plate translation
- Bevelled plate tip for percutaneous insertion

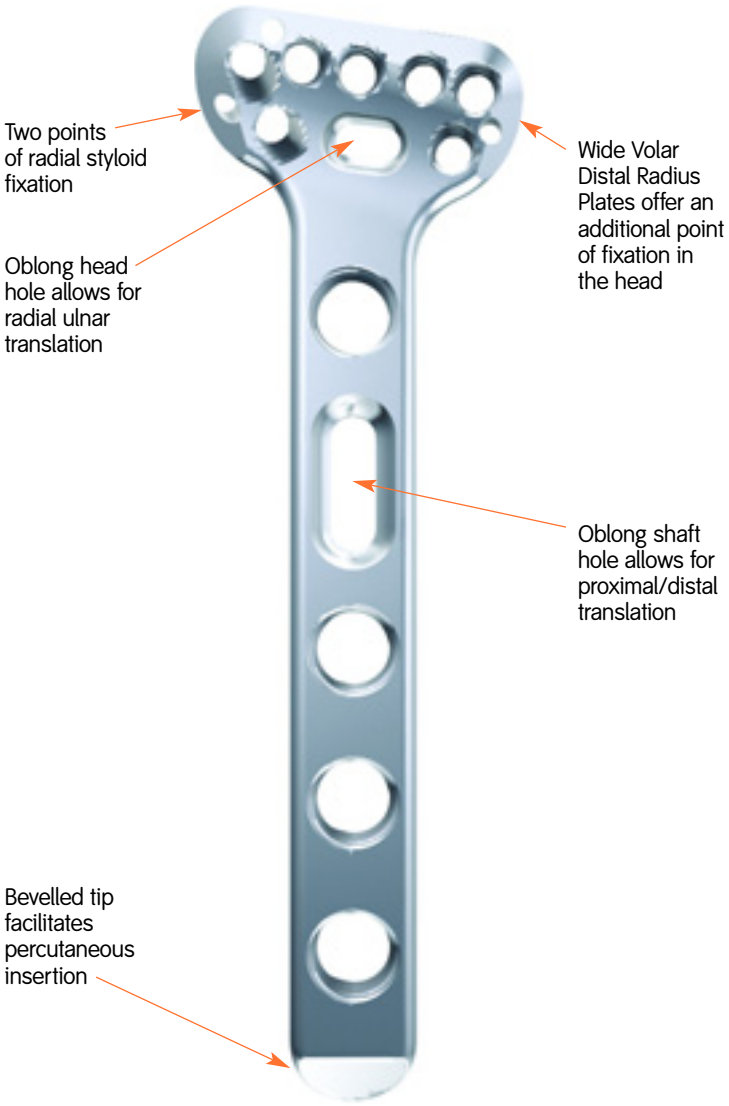
Implant Features

Standard Volar Distal Radius Plate



Implant Features

Wide Volar Distal Radius Plate



Every threaded hole can accept a locking or non-locking screw:

2.5mm Cortex Screw
Cat. No. 7180-25XX

2.5mm Locking Screw
Cat. No. 7180-24XX

3.5mm Cortex Screw
Cat. No. 7180-40XX

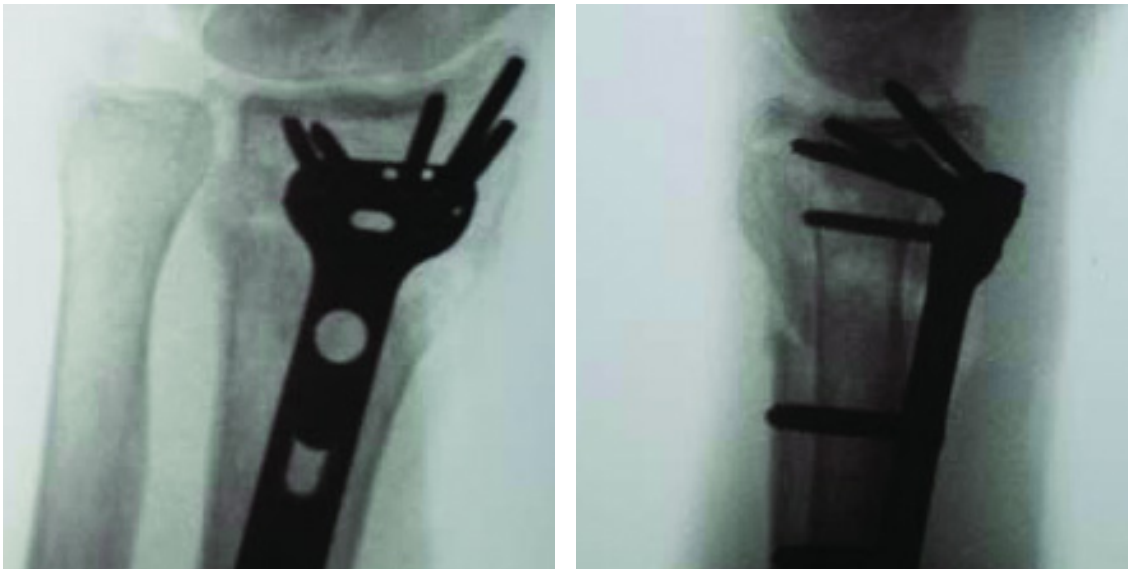
3.5mm Locking Screw
Cat. No. 7180-50XX

Indications

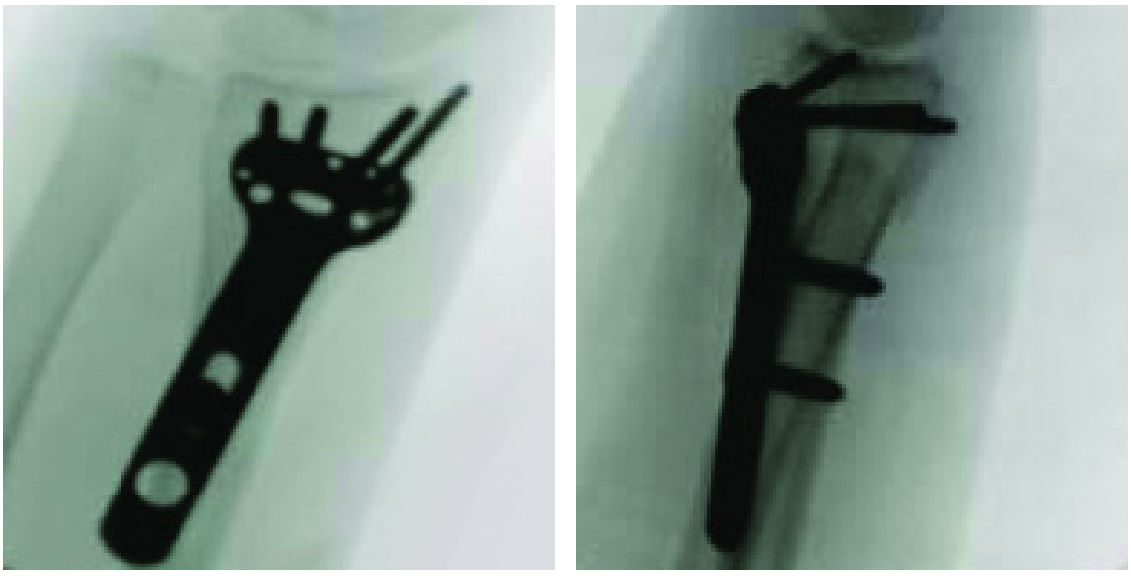
The PERI-LOC® Volar Distal Radius Plates are indicated for fixation of fractures, non-unions and osteotomies of the radius.

Volar Distal Radius Case Examples

Case 1



Case 2



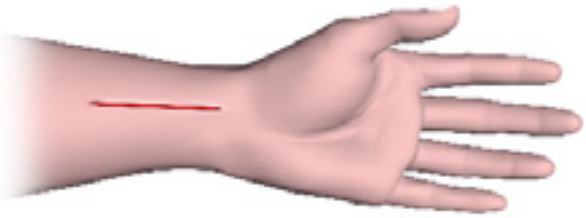
Surgical Technique

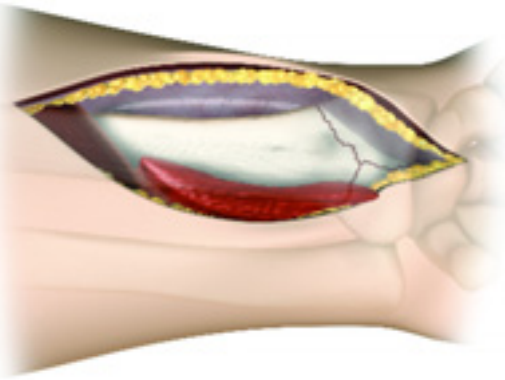
Patient Positioning

The patient should be placed in the supine position with the affected limb positioned to expose the surgical site. A radiolucent arm board is preferable so as not to impede fluoroscopy.

Incision

The incision for volar fixation of the distal radius is typically performed through the distal extent of the Henry approach. An incision is made between the flexor carpi radialis (FCR) tendon and the radial artery. This interval is developed, revealing the flexor pollicis longus (FPL) muscle at the proximal extent of the wound and the pronator quadratus muscle more distally. The radial artery is carefully retracted radially, while the tendons of the FCR and FPL are retracted ulnarly. The pronator quadratus is divided at its most radial aspect, leaving a small cuff of muscle for later reattachment. Any elevation of the muscle of the FPL should be performed at its most radial aspect, as it receives its innervation from the anterior interosseous nerve on its ulnar side. After the pronator quadratus has been divided and elevated, the fracture is readily visualised, and reduction manoeuvres can be accomplished under direct vision.





Fracture Reduction and Provisional Fixation

After exposure and debridement of the fracture site, the fracture is reduced and provisionally fixed under fluoroscopy with K-wires, reduction forceps or suture fixation. Reduction aids should be placed so as not to interfere with placement of the plate. The PERI-LOC◇ Volar Distal Radius Plate itself may also be used as a reduction tool due to its anatomical contour and locking/non-locking screw options.

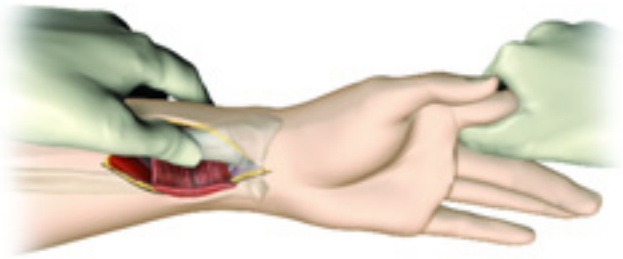


Plate Selection

The appropriate plate is selected following fracture reduction. Plate options include standard and wide distal configurations in left and right and varying lengths. The standard wide plate allows for an additional point of fixation distally. Correct plate selection is determined by the fracture pattern and how the plate conforms to the volar surface of the distal radius. The plate features 26° of volar tilt to help achieve optimal plate positioning along the distal aspect of the volar surface and anatomic reduction of the fracture.

The standard and wide plates utilise different Drill Guide Blocks that are coloured “lime” for left and “rose” for right to provide easy identification.

Following plate selection, the Guide Block is either attached to the plate prior to insertion or may be attached following provisional fixation of the plate to the bone. Alternatively, the Guide Block may be excluded altogether and the 2.0mm Locking Drill Guide threaded into the locking holes individually to drill for the 2.5mm locking screws. For the non-locking screws use the 2.0mm Drill Guide with Handle.

Note: Applying the Guide Block following provisional fixation of the plate to bone may allow for enhanced visualization of the fracture and plate placement.

Tip:
When using the 2.0mm Locking Drill Guide without the Guide Block, care must be taken when threading it into the plate. If it is not properly threaded into the plate, the intended screw trajectory may not match the thread of the locking hole, causing the screw to cross thread. Cross threaded screws may still lock, but at suboptimal angles.

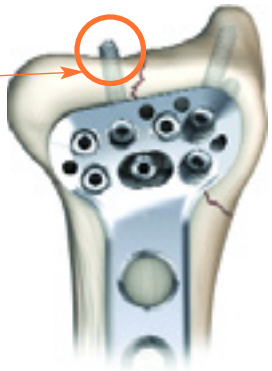


Plate Positioning

Plate position and the order of screw insertion will be determined by fracture pattern and/or patient anatomy. The plate is designed to sit along the distal aspect of the volar surface of the distal radius where its 26° of volar tilt will provide optimal buttressing of the articular surface.

Standard
Drill Guide Block
Left
Cat. No. 7117-3489

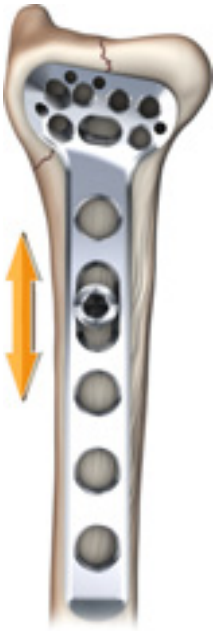
Standard
Drill Guide Block
Right
Cat. No. 7117-3490

Wide
Drill Guide Block
Left
Cat. No. 7117-3457

Wide
Drill Guide Block
Right
Cat. No. 7117-3458

Screw Insertion

The PERI-LOC® Volar Distal Radius Plate may be implanted using either a “Shaft-first” or “Distal-first” fixation method.



Option #1: Shaft-first Method
Apply the plate to bone and insert a 3.5mm Cortex Screw into the oblong hole in the shaft following the technique described below. Prior to fully seating the screw, the plate may be translated up to 5mm distally or proximally as needed. Once optimal plate position has been achieved, fully seat the screw. For the remaining screws, determine whether locking or cortex screws will be used and insert these screws according to the relevant screw insertion technique as described below.

Option #2: Distal-first Method
Apply the plate to bone and insert a 2.5mm Cortex Screw into the oblong hole in the distal aspect of the plate following the technique described below. Prior to fully seating the screw, perform radial or ulnar translation as needed. Once optimal plate position has been achieved fully seat the screw. For the remaining screws, determine whether locking or cortex screws will be used and insert these screws according to the relevant screw insertion technique as described below.

Tip:
If the Distal-first method is used the Guide Block cannot be attached to the plate until after the 2.5mm Cortex Screw is fully seated in the oblong hole.

Tips:

- If non-locking screws are to be inserted into a plate to gain compression, it is preferred that they be inserted prior to any locking screws.
- For a pre-determined screw trajectory when inserting Cortex Screws, either the 2.7mm Locking Drill Guide or 2.0mm Locking Drill Guide should be used.
- The 3.5mm Locking Drill Guide-One Piece may be substituted for the Locking Drill Guide with Insert.
- Locking screws may be inserted on power, but should always be tightened by hand. Tightening screws on power may cause loss of reduction, exposure of the screw head to excessive torque or damage to the drill.

3.5mm Cortex Screw Insertion

- Drill with the Short 2.7mm Drill bit through the 2.7mm Drill Guide with Handle. Screw length may be determined by reading the calibrations on the Drill Bit or by using the 3.5mm Depth Gauge. If using the Depth Gauge, remove the Drill Guide for accurate measurement. Insert the appropriate length cortex screw with the 3.5mm Hexdriver.

2.7mm Drill Guide/
2.0mm Drill Guide
Handle
Cat. No. 7117-3462

2.7mm
Short Drill Bit
Cat. No. 7117-3362

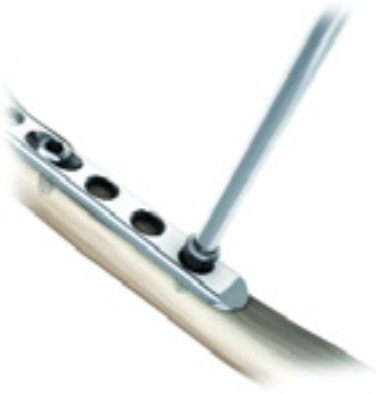
Short 3.5mm
Screw Depth
Gauge
Cat. No. 7117-3523

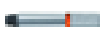
Teardrop
Screwdriver Handle
Cat. No. 7117-3543

3.5mm
Self Retaining
Hexdriver Shaft
Cat. No. 7117-3488

3.5mm Locking Screw Technique

- Thread the 2.7mm Locking Drill Guide into the screw hole. Drill with the Short 2.7mm Drill Bit and measure for screw length by reading the calibrations on the Drill Bit or by using the 3.5mm Depth Gauge. If using Depth Gauge, the Locking Drill Guide must be removed for accurate measurement. Insert the appropriate length screw using the 3.5mm Hexdriver.





2.7mm
Short Locking
Drill Guide
Cat. No. 7117-3464

2.7mm
Short Drill Bit
Cat. No. 7117-3362

Short 3.5mm
Screw Depth
Gauge
Cat. No. 7117-3523

3.5mm
Self Retaining
Hexdriver Shaft
Cat. No. 7117-3488

Teardrop
Screwdriver Handle
Cat. No. 7117-3543

2.5mm Cortex Screw Technique

- Drill with the Short 2.0mm Drill Bit through the 2.0mm Drill Guide with Handle. Screw length may be determined by reading the calibrations on the Drill Bit or by using the 2.5mm Depth Gauge. If using the Depth Gauge, remove the Drill Guide for accurate measurement. Insert the appropriate length 2.5mm Cortex Screw using the 1.5mm Hexdriver.

Tip:
The Drill Guide Block does not need to be removed for screw insertion.

2.0mm Short
Drill Bit
Cat. No. 7117-3555

2.5mm Short Screw
Depth Gauge
Cat. No. 7117-3463

1.5mm Hexdriver
Shaft
Cat. No. 7117-0036

Mini Quick
Coupling Bulb
Handle
Cat. No. 7117-0014

Holding Sleeve
Cat. No. 7117-0034

2.5mm Locking Screw Technique

- Thread the 2.0mm Locking Screw Guide into the screw hole and drill with the Short 2.0mm Drill Bit. The Locking Drill Guide can either be threaded directly into the plate itself or placed through the Drill Guide Block. Screw length may be determined by reading the calibrations on the Drill Bit or by using the 2.5mm Depth Gauge. If using the Depth Gauge, remove the Locking Drill Guide for accurate measurement. Insert the appropriate length 2.5mm Locking Screw using the 1.5mm Hexdriver.

Once optimal fracture fixation is achieved, attach the plate to the radial shaft and apply cortex screws and/or locking screws as needed.

2.5mm Short Screw Depth Gauge
Cat. No. 7117-3463

1.5mm Hexdriver Shaft
Cat. No. 7117-0036

Mini Quick Coupling Bulb Handle
Cat. No. 7117-0014

Holding Sleeve
Cat. No. 7117-0034

2.0mm Locking Drill Guide
Cat. No. 7117-3459

Incision Closure

Verify fracture reduction under fluoroscopy and use the appropriate method for surgical closure of the incision.

Catalogue Information – Volar Distal Radius Implants

2.5mm Volar Distal Radius Locking Plates

Standard

Cat. No.	Length	Minimum Suggested Qty
7180-3110	3H Left 62mm	1
7180-3112	5H Left 86mm	1
7180-3126 *	9H Left 135mm	0
7180-3114	3H Right 62mm	1
7180-3116	5H Right 86mm	1
7180-3128 *	9H Right 135mm	0

Wide

Cat. No.	Length	Minimum Suggested Qty
7180-3118	3H Left 62mm	1
7180-3120	5H Left 86mm	1
7180-3122	3H Right 62mm	1
7180-3124	5H Right 86mm	1

Catalogue Information – Volar Distal Radius Screws

2.5mm Self-Tapping Cortex Screws (Non-Locking)

Cat. No.	Length	Minimum Suggested Qty
7180-2510	10mm	0
7180-2512	12mm	0
7180-2514	14mm	2
7180-2516	16mm	2
7180-2518	18mm	2
7180-2520	20mm	4
7180-2522	22mm	4
7180-2524	24mm	2
7180-2526	26mm	2
7180-2528	28mm	2
7180-2530	30mm	0

2.5mm Locking Self-Tapping Cortex Screws

Cat. No.	Length	Minimum Suggested Qty
7180-2410	10mm	0
7180-2412	12mm	0
7180-2414	14mm	2
7180-2416	16mm	2
7180-2418	18mm	4
7180-2420	20mm	4
7180-2422	22mm	4
7180-2424	24mm	4
7180-2426	26mm	4
7180-2428	28mm	4
7180-2430	30mm	0

3.5mm Self-Tapping Cortex Screws (Non-Locking)

Cat. No.	Length	Minimum Suggested Qty
7180-4010A	10mm	2
7180-4012A	12mm	4
7180-4014A	14mm	4
7180-4016A	16mm	4
7180-4018A	18mm	4
7180-4020A	20mm	2

3.5mm Locking Self-Tapping Cortex Screws

Cat. No.	Length	Minimum Suggested Qty
7180-5010	10mm	2
7180-5012	12mm	4
7180-5014	14mm	4
7180-5016	16mm	4
7180-5018	18mm	4
7180-5020	20mm	2

Catalogue Information – Volar Distal Radius Instruments

Bending Iron, Left
Cat. No. 7117-0101

Bending Iron, Right
Cat. No. 7117-0103

PERI-LOC◇ Wide Drill Guide Block w/Set Screw – Left
Cat. No. 7117-3457

PERI-LOC Wide Drill Guide Block w/Set Screw – Right
Cat. No. 7117-3458

PERI-LOC 2.0mm Locking Drill Guide
Cat. No. 7117-3459

Cannulated AO to Trinkle Adaptor
Cat. No. 7117-3528

Tear Drop Handle Screwdriver w/Quick Connect
Cat. No. 7117-3543

Mini Quick Coupling Bulb Handle
Cat. No. 7117-0014

Holding Sleeve
Cat. No. 7117-0034

1.5mm Hexdriver Shaft 64mm
Cat. No. 7117-0036

PERI-LOC◇ 2.7mm Drill Guide/2.0mm Drill Guide w/Handle
Cat. No. 7117-3462

PERI-LOC 2.5mm Short Screw Depth Gauge
Cat. No. 7117-3463

PERI-LOC 2.7mm Short Locking Drill Guide – 1 Piece
Cat. No. 7117-3464

Short 3.5mm Screw Depth Gauge
Cat. No. 7117-3523

PERI-LOC 3.5mm Self-Retracting Hexdriver Shaft 78mm
Cat. No. 7117-3488

PERI-LOC Standard Drill Guide Block w/Set Screw – Left
Cat. No. 7117-3489

PERI-LOC Standard Drill Guide Block w/Set Screw – Right
Cat. No. 7117-3490

Optional Instruments

Sharp Hook
Cat. No. 7117-0043

Hohmann Retractor, 8mm Width
Cat. No. 7117-0057

Periosteal Elevator 6mm, Rounded
Cat. No. 7117-0097

Reduction Forceps w/Serrated Jaw
Cat. No. 7117-3378

Catalogue Information – Volar Distal Radius System Trays

PERI-LOC◇ International Wrist Instrument Tray
Cat. No. 7117-0391

PERI-LOC Volar Distal Radius Implant/Instrument Tray Lid
Cat. No. 7117-0401

PERI-LOC Volar Distal Radius Screw Caddy
Cat. No. 7117-0393

Catalogue Information – Volar Distal Radius Disposables

K-Wires with Trocar Point and Threaded Pins

Cat. No.	Description	Qty
7116-1016	1.6mm x 150mm	6

Taps with Quick Connect

Cat. No.	Description	Qty
7117-3318	3.5mm	1

Drill Bit

Cat. No.	Description	Qty
7117-3555	2.0mm	2

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