Surgical Technique

smith&nephew

D-RAD SMART PACK◇

Single-Use Volar
Distal Radius Plating System

D-RAD SMART PACK◇ Single-Use Volar Distal Radius Plating System Surgical Technique

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Nota Bene

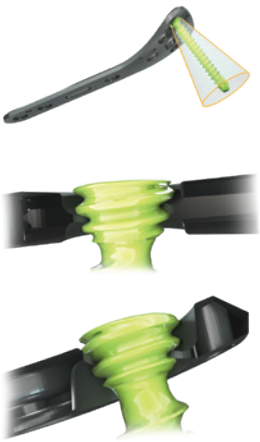
The following technique is for informational and educational purposes only. It is not intended to serve as medical advice. It is the responsibility of treating physicians to determine and utilize the appropriate products and techniques, according to their own clinical judgment, for each of their patients. For more information on the product, including its Indications for Use, contraindications, cleaning, sterilization and product safety information, please refer to the product's label and the Instructions for Use (IFU) for the product.

D-RAD SMART PACK◇ product overview

4-Hole Volar Plate

1.4mm K-wire holes for distal plate positioning

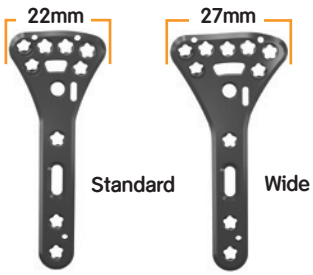
Anatomic plate is designed to sit beneath the watershed line



VLP◇ locking technology enables the use of Cortex Screws, Locking Screws or Locking Pegs within a 30° cone

Slotted 1.4mm K-wire hole or slotted screw hole to allow for proximal/distal plate adjustments

1.4mm K-wire hole to enable centering of the plate on the diaphysis



Standard and wide options accommodate varying patient anatomy

Volar tilt 24°

Screws/Pegs

2.4mm Cortex Screws

(10 – 24mm)

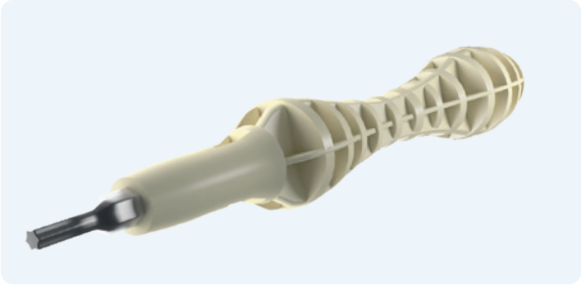
2.4mm Variable-Angle Locking Screws

(10 – 24mm)

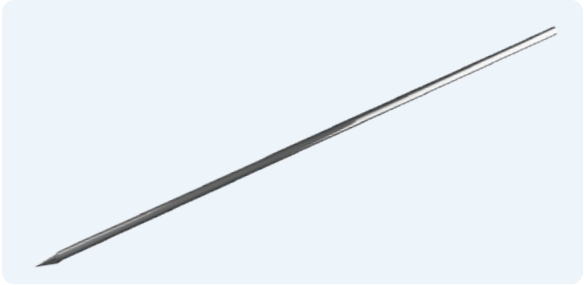
1.8mm Variable Angle Locking Pegs are designed to minimize dorsal soft tissue irritation

(12 – 24mm)

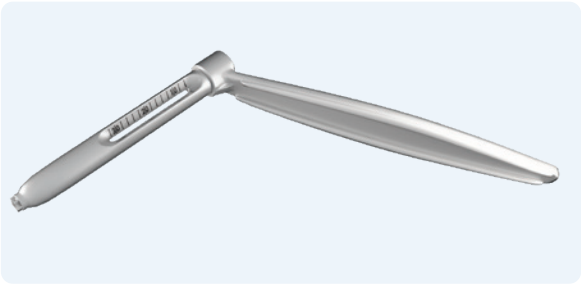
Instrumentation



Self-retaining T7 screwdriver



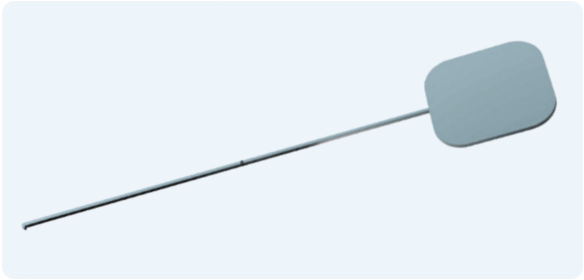
1.4mm K-wires to assist with plate positioning and reference screw trajectories



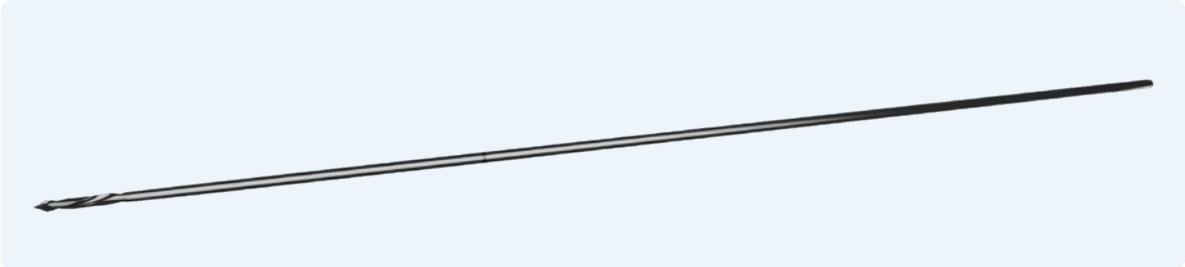
Fixed-angle drill guide to predetermine screw trajectories

Variable-angle drill guide to enable intraoperative screw placement flexibility

Preassembled guide block and plate holder



Hooked, laser-etched depth gauge grabs the dorsal cortex

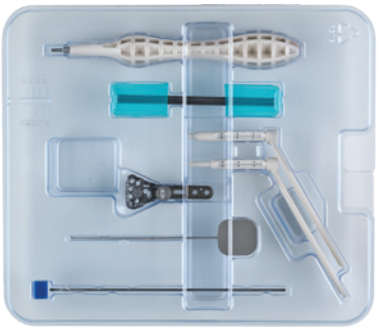


1.8mm drill for cortex screws, locking screws and locking pegs

Surgical technique

OR setup

Single-Use Kits are packaged sterile with a left or right “4-hole” volar distal radius plate and include single-use instruments needed for implantation. Left and right plates are available in two widths (standard and wide) to accommodate varying patient anatomy. In addition to Single-Use Kits, the Screw and Template Tray containing a variety of screws, pegs, and templates will be needed to conduct the procedure. The Screw and Template Tray should be positioned outside of the sterile field as the unit is non-sterile and should not be sterilized. The lid can be removed and nested underneath the tray.



Single-Use Kits include either a Left Standard, Left Wide, Right Standard, or Right Wide Plate.

Left Standard

Left Wide

Note: Soft tissue retractors, fracture reduction instruments and longer plates are not available in the D-RAD SMART PACK® Single-Use Volar Distal Radius Plating System.

Note: OR setup should include the appropriate wire driver(s) needed to utilize 1.4mm K-wires for plate positioning and a 1.8mm Drill Wire for screw preparation. Plate Templates are available in left and right, standard and wide options and exactly match the width, length and contour of their respective Plates.

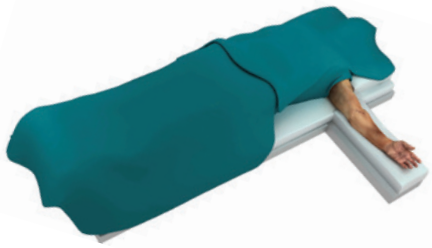
Screw and Template Tray

Open the appropriate Plate Template box (right or left) and place the single-use standard and wide plate templates on the back table in preparation for the Single-Use Kit selection step.

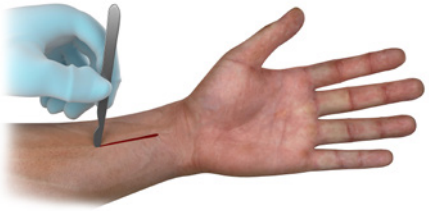
Plate Templates: Left Standard and Left Wide

Note: A Single-Use Kit should only be opened after the appropriate plate size has been determined by the Single-Use Plate Templates during the “Single-Use Kit Selection” step of the procedure.

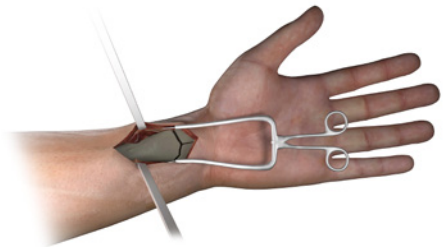
Patient positioning
The patient should be placed in the supine position with the affected limb positioned to expose the surgical site.



Incision
A longitudinal incision is made in Henry's interval at the wrist (flexor carpi radialis and radial artery). Carry the dissection to the pronator quadratus. Elevate the pronator quadratus to reveal the fracture site.



Fracture reduction
After exposure and debridement of the fracture site, the fracture is reduced and provisionally fixed under fluoroscopy, if necessary.



Single-Use Kit selection
Using the previously opened Plate Templates, confirm the plate width that will best accommodate the patient's anatomy and fracture pattern by applying the distal portion of each Template to the approximate watershed line.

Once the proper plate width has been determined via the Plate Templates, open the corresponding Single-Use Kit and introduce the sterile tray into the sterile field.

Plate Template on the distal radius

Plate positioning
Remove the Plate and preassembled Guide Block from the Single-Use Kit. Place them into the wound and onto the affected distal radius.

The Plate has been designed with a variety of 1.4mm K-wire holes to assist with plate positioning. A wire driver should be used to advance the provided 1.4mm K-wires through the plate to provisionally position it on the bone.

Plate and Guide Block positioned on the distal radius

Screw hole preparation
The Plate may be implanted using either a “shaft-first” or “distal-first” fixation method.

The Guide Block combined with the VLP® locking mechanism offers users the option of fixed, predesigned screw trajectories through the use of the Fixed Angle Drill Guide or variable-angle screw trajectories by using the Variable Angle Drill Guide.

Note: It is still possible to misplace screws into the radiocarpal joint using the variable-angle capability of the plate even when the K-wires appear to be well placed. Always confirm safe screw placement with fluoroscopy.

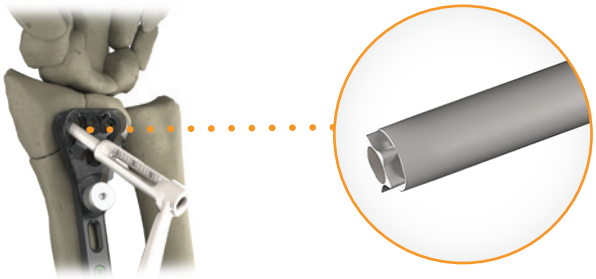
Note: The Guide Block limits screw trajectories to a 30° cone or 15° in any direction when using the Variable Angle Drill Guide. Screw angles should not exceed this in order for the VLP locking mechanism to work properly. Additionally, exceeding 15° off axis may cause unacceptable screw head prominence.

Note: Regardless of which drill guide is used (Fixed Drill Guide or Variable Angle Drill Guide), fluoroscopy should always be used to confirm safe drill placement due to the variability of patient anatomy and fracture patterns.

Insert the star tip of the Fixed or Variable Angle Drill Guide into the desired hole and drill accordingly with the 1.8mm Drill Wire. Screw length can be determined by reading the exposed laser-etched line on the 1.8mm Drill Bit through the window of the Drill Guide. Alternatively, a Depth Gauge with a laser-etched line has been provided and can be used through the Drill Guide to determine proper screw length.

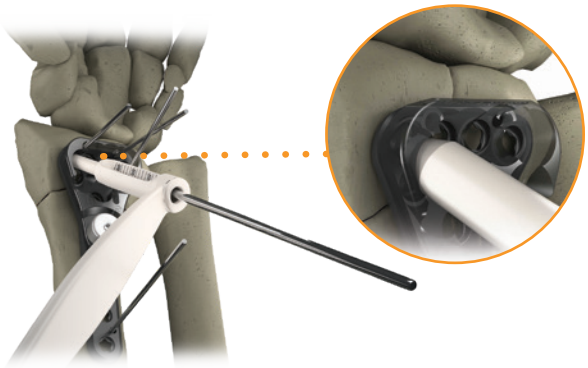
Fixed Angle Drill Guide

The star shaped distal tip of the Fixed Angle Drill Guide must be seated into the star shaped hole of the plate to facilitate Locking Screw engagement. The conical shape of the Fixed Angle Drill Guide restricts angulation when placed through the Guide Block and thus centers the Drill for fixed predesigned screw trajectories.

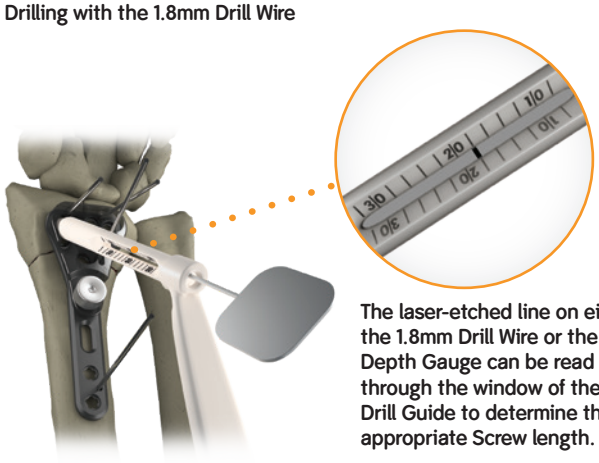


Variable Angle Drill Guide

The star shaped distal tip of the Variable Angle Drill Guide must be seated into the star shaped hole of the plate to facilitate Locking Screw engagement. When placed through the Guide Block, the Variable Angle Drill Guide allows for drilling within a 30° cone or 15° in any direction.



Drilling with the 1.8mm Drill Wire



The laser-etched line on either the 1.8mm Drill Wire or the Depth Gauge can be read through the window of the Drill Guide to determine the appropriate Screw length.

Determine screw hole depth with the Depth Gauge through the Drill Guide

Note: Drilling multiple screw holes without the plate firmly secured to the bone can cause misalignment between the Locking Screw/ Peg heads and the Plate. This can lead to engagement difficulties. It's advised that a Screw/Peg be placed in a prepared hole prior to additional holes being drilled.

Screw selection

2.4mm Cortex Screws, 2.4mm Locking Screws and 1.8mm Locking Pegs are contained in sterile tamper-evident vials and are organized by type and size within the Screw and Template Tray. Once the appropriate screw or peg has been identified, twist the non-sterile cap off of the vial and allow the sterile inner container to drop into the sterile field. Flip the cap of the sterile container up and remove the screw or peg with the provided T7 Self-Retaining Driver by engaging the head. Alternatively, the screw or peg can be removed by turning the inner container upside-down and allowing the screw or peg to fall out.

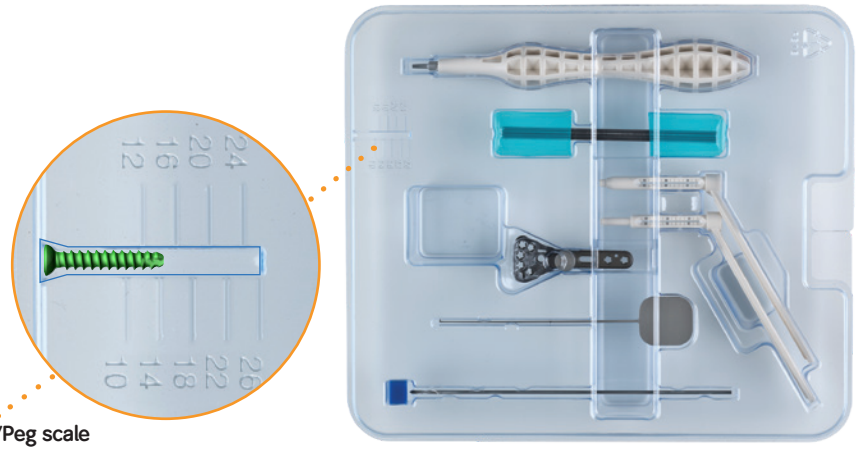
D-RAD SMART PACK◊ screws and pegs are packaged sterile thus eliminating the need to confirm length before insertion. However, a screw/peg scale has been provided in the Single-Use Kit should one be needed.

Note: When using the screw/peg scale provided on the Single-Use Kit tray, ensure that the top surface of the screw/peg head is in contact with the top surface of the scale.

Screw/Peg Vial

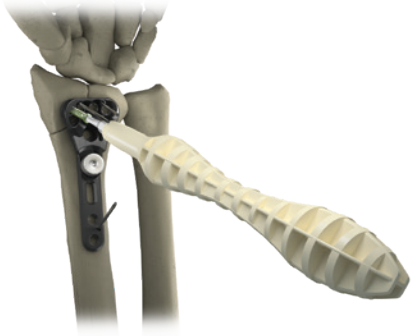
Sterile Inner Container

The T7 Self-Retaining Driver can be used to remove the Screw/Peg from the Sterile Inner Container



Screw/Peg scale

Screw insertion
Use the T7 Self-Retaining Driver to insert the appropriate length 2.4mm Cortex Screws, 2.4mm Locking Screws and 1.8mm Locking Pegs. Screws and Pegs can be inserted through the Guide Block.



Note: A moderate amount of downward pressure should be applied through the driver when the head of a Locking Screw or Locking Peg begins to engage the Plate.

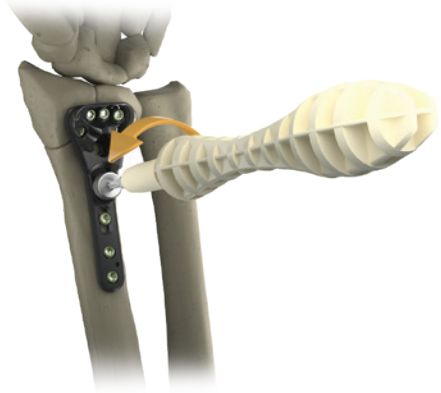
Note: The non-locking screw hole in the metaphyseal area of the plate has been designed to only accept a cortex screw.

Note: Fluoroscopy should always be used to confirm safe screw placement due to the variability of patient anatomy and fracture patterns.

Note: Once locking screw head engagement with the plate is noticed, only a half turn is necessary to lock the screw.

Note: Locking screws may be inserted up to two times. After the second time, a non-locking screw should be used.

Guide block removal
Once distal screw insertion is complete, use the T7 Self-Retaining Driver to turn the Plate Holder counter-clockwise and subsequently remove the Guide Block from the Plate.



Final imaging
Obtain final radiographic images to confirm optimal screw placement and length. Be certain that the plate fits proximal to the volar lip of the radius to help avoid tendon injury.

Closure
If possible, repair the pronator quadratus over the plate. Wound closure as per surgeon preference.

Note: Care should be taken during dissection and reconstruction of soft tissue to reduce the occurrence of soft tissue adherence and/or tissue irritation.

Catalog

D-RAD SMART PACK◇
Single-Use Volar Distal Radius Plating System

Cat No	Description	Qty
71158016	D-RAD Screw and Template Tray	1
71158023	D-RAD Screw and Template Tray Lid	1
71158019	D-RAD SMART PACK 4H Left Standard Plate	2
71158020	D-RAD SMART PACK 4H Left Wide Plate	1
71158021	D-RAD SMART PACK 4H Right Standard Plate	2
71158022	D-RAD SMART PACK 4H Right Wide Plate	1
71158017	D-RAD Plate Templates Left	3
71158018	D-RAD Plate Templates Right	3
74671812	D-RAD TI 1.8mm x 12mm Locking Peg T7	3
74671814	D-RAD TI 1.8mm x 14mm Locking Peg T7	8
74671816	D-RAD TI 1.8mm x 16mm Locking Peg T7	7
74671818	D-RAD TI 1.8mm x 18mm Locking Peg T7	7
74671820	D-RAD TI 1.8mm x 20mm Locking Peg T7	7
74671822	D-RAD TI 1.8mm x 22mm Locking Peg T7	4
74671824	D-RAD TI 1.8mm x 24mm Locking Peg T7	3
74682410	D-RAD TI 2.4mm x 10mm Cortex Screw T7 S-T	7
74682412	D-RAD TI 2.4mm x 12mm Cortex Screw T7 S-T	8
74682414	D-RAD TI 2.4mm x 14mm Cortex Screw T7 S-T	7
74682416	D-RAD TI 2.4mm x 16mm Cortex Screw T7 S-T	7
74682418	D-RAD TI 2.4mm x 18mm Cortex Screw T7 S-T	7
74682420	D-RAD TI 2.4mm x 20mm Cortex Screw T7 S-T	7
74682422	D-RAD TI 2.4mm x 22mm Cortex Screw T7 S-T	4
74682424	D-RAD TI 2.4mm x 24mm Cortex Screw T7 S-T	3
74692410	D-RAD TI 2.4mm x 10mm Locking Screw T7 S-T	7
74692412	D-RAD TI 2.4mm x 12mm Locking Screw T7 S-T	8
74692414	D-RAD TI 2.4mm x 14mm Locking Screw T7 S-T	7
74692416	D-RAD TI 2.4mm x 16mm Locking Screw T7 S-T	7
74692418	D-RAD TI 2.4mm x 18mm Locking Screw T7 S-T	7
74692420	D-RAD TI 2.4mm x 20mm Locking Screw T7 S-T	7
74692422	D-RAD TI 2.4mm x 22mm Locking Screw T7 S-T	4
74692424	D-RAD TI 2.4mm x 24mm Locking Screw T7 S-T	3
74462402	VLP° MINI-MOD 1.8mm Drill Short AO QC	1

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