

Double row Rotator Cuff Repair

Surgical Technique



Using CEPTRE- Knotted Anchor & VIPLOK® Knotless Anchor

SIRONIX
Arthroscopy Solutions

MAY THE SPOR**T** OF LIFE NEVER STOP

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Shoulder Rotator Cuff Repair

The goal of rotator cuff repairs is to provide adequate tendon fixation and to keep it secure during the biological healing process. The gold standard for rotator cuff repair is now arthroscopic rotator cuff repair.

Single-row repair is one of the earliest defined treatments, but its inability to precisely restore the anatomical footprint, as well as considerable rates of re-tear, particularly in big tears, has pushed surgeons to seek new techniques.(1) However its still an option in the simple cuff tear where you wont to medialize the cuff repair.

Double-row repair techniques, which has been developed in response to these concerns, have various modifications like the number and placement of anchors and suture configurations.(2)

There appears to be a benefit of structural healing when an arthroscopic rotator cuff repair is performed with double-row fixation as opposed to single-row fixation(3)

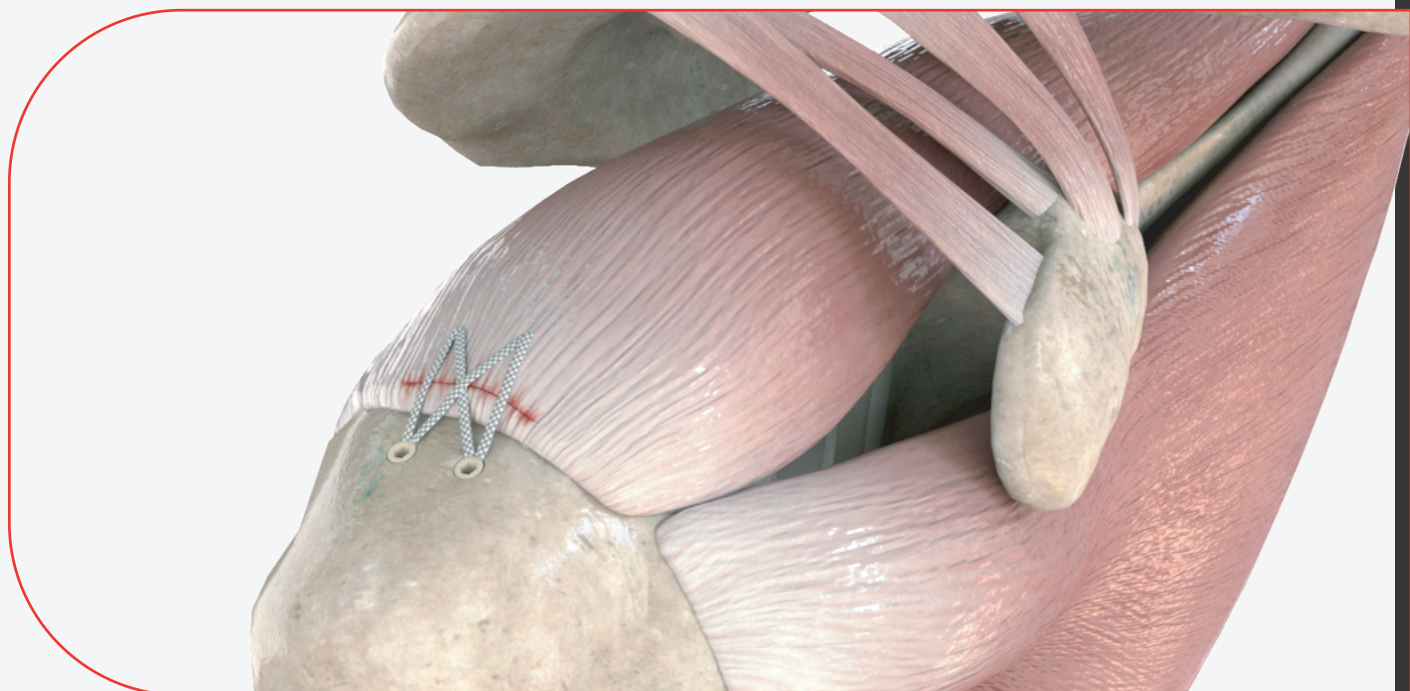


Figure 1

Patient Positioning

The patient may be positioned in the beach chair position using beach chair lateral traction device or in lateral decubitus position depending on your preference.

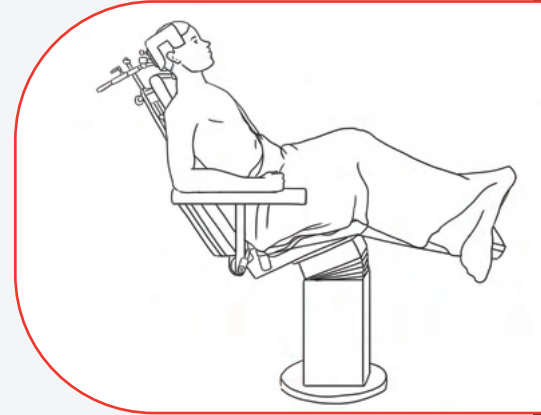


Figure 2

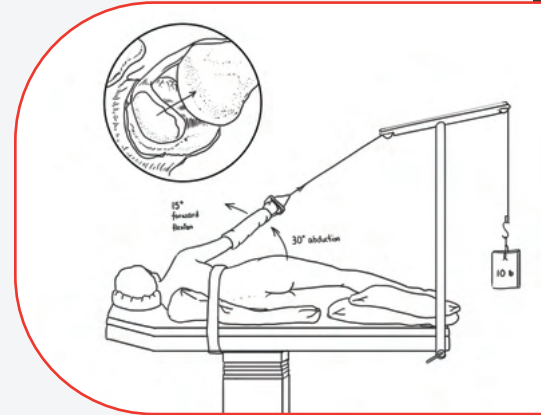


Figure 3

Portal Placement

Surgeon identify and point out the important anatomical landmarks prior to surgery.

Use a spinal needle to ensure proper location of intended portals.

Use the Sironix Shoulder instruments & equipment (shaver, burr, suture passing instruments, RF ablator, etc.) to establish the posterior, anterior, superior, lateral portals for diagnostic arthroscopy.

For the percutaneous approach use switching stick through a small incision at the lateral edge of the acromion. Use Sironix 8mm Cannula introducer over the switching stick into the portal.

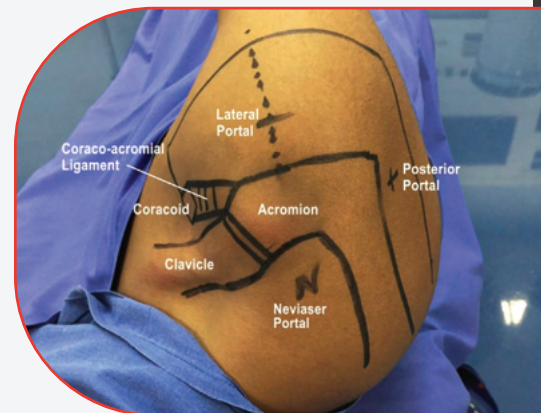


Figure 4

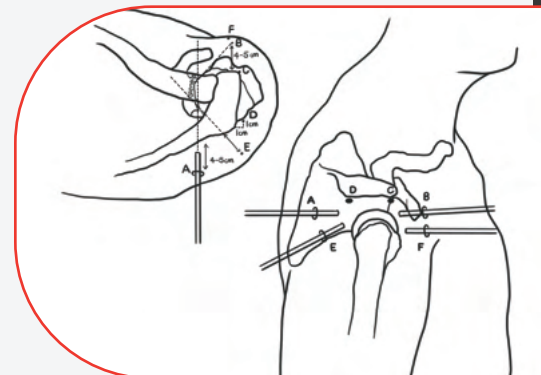


Figure 5

Schematic diagram demonstrating the relative positions of the most common glenohumeral portals

- A) posterior portal;
- B) anterior portal;
- C) anterosuperolateral portal;
- D) Port of Wilmington portal;
- E) low posterolateral portal;
- F) 5 o'clock portal.

Visualization of Cuff Intra articular

Look for biceps stability of humerus head & in the groove

Look for Subscapularis tears & comma sign.

Look for the cable attachments of supraspinatus & infraspinatus.

Identify the intra-articular tear by passing a needle through the tear. Through which you also pass a proline 2'O' or ethibond which can be identified lateral in SA space.

In some situations you can debride the cuff while you are viewing from the intra articular side.

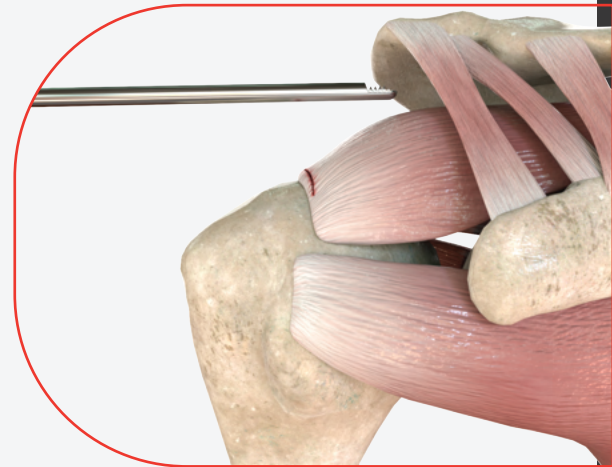


Figure 6

Visualization sub-acromial space

Prepare the insertion site to maintain axial alignment between the insertion site.

Debride the frayed edges of the torn rotator cuff muscles to prepare the tissue for repair.

Examine the tear from the various portals to determine tear type, configuration and size, as well as amount of retraction.

Visualize the sub-acromial space using the posterolateral portal while performing a bursectomy through the lateral portal.

Perform any other indicated procedures in the sub-acromial space such as , sub-acromial decompression, acromioplasty, distal clavicle resection or Coraco-Acromial Ligament (CAL) release addressing ac joint pathology prior to repairing the rotator cuff.

NOTE:

1. Do not remove CAL, if massive cuff tear.
2. Debride only anterior part of acromion.
3. Do not remove excess of fat around musculotendinous of cuff and Acromioclavicular Joint level because, this can lead to increase bleeding.
4. Clear sub-deltoid bursa.

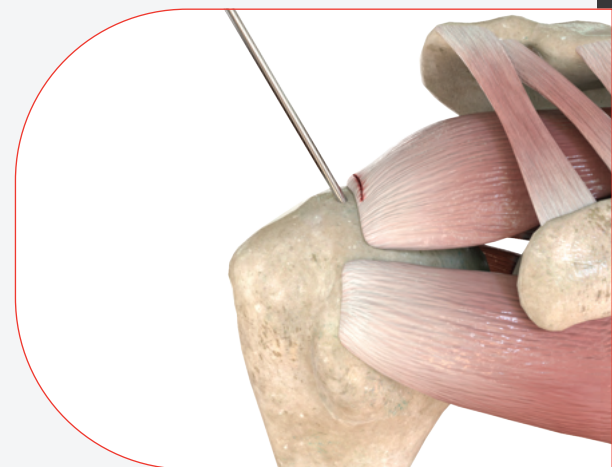


Figure 7

Medial Row Anchor Insertion

Use a spinal needle to locate the angle for Sironix Straight AWL, a small insertion access to the greater tuberosity for anatomical re-attachment of the cuff.

Pass the Sironix Straight AWL near the articular surface of Cuff, use Sironix mallet only to tap gently on the AWL which will be at 45° angle.

Advance the AWL until the distal edge of the black laser mark is flush inside the medial cortex of the bone.

NOTE : The first black laser mark on the Sironix AWL represents 4.8mm, second black mark represents 5.5mm & the third black mark is for VIPLOK-Knotless Anchor. (Figure 8)

Open a sterile Sironix CEPTRE anchor of your choice and insert inside the pilot hole Rotate the anchor inserter handle in clock wise direction to insert the anchor until the black laser marking on shaft of inserter is flush with the bone



Figure 8

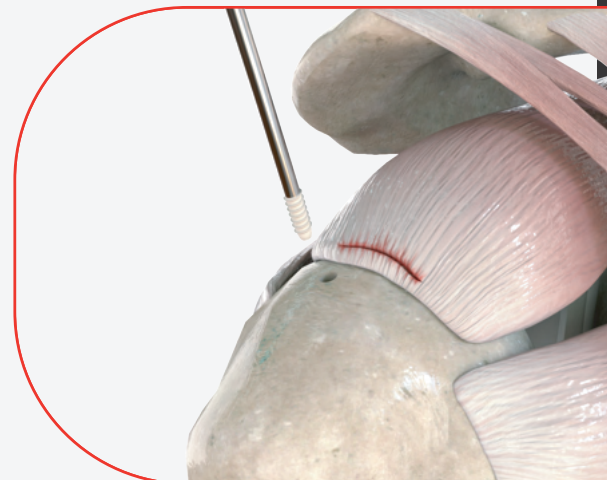


Figure 9

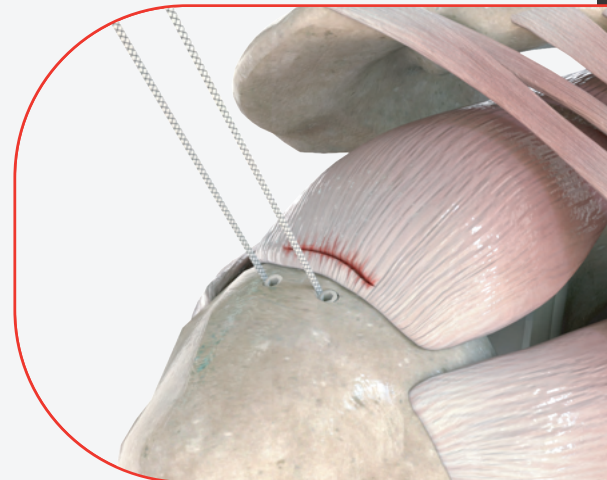


Figure 10

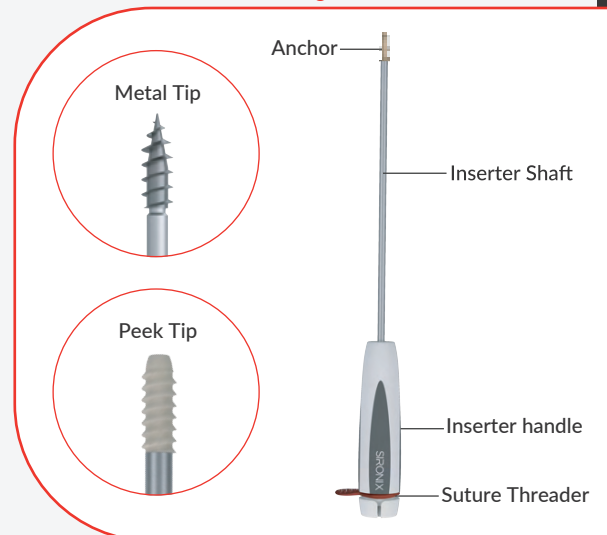


Figure 11

Passing sutures/tapes

Load UHMWPE Suture/tape into the slot on the lower jaw of the Sironix Suture passer, approximately 2 cm from the end of the suture to be passed through the cuff tissue.

Once the suture is passed through the cuff, suture can then be parked either in posterior or anterior portal for suture management.

This procedure is repeated until one limb of each suture/tape has been passed through the rotator cuff tendon to flush with the bone. (Figure 13)

After clearing the sub deltoid bursa trial reduction of cuff is done to assess the effectiveness of repair.

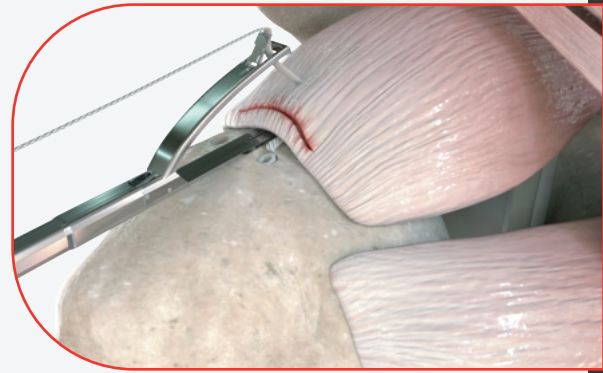


Figure 12

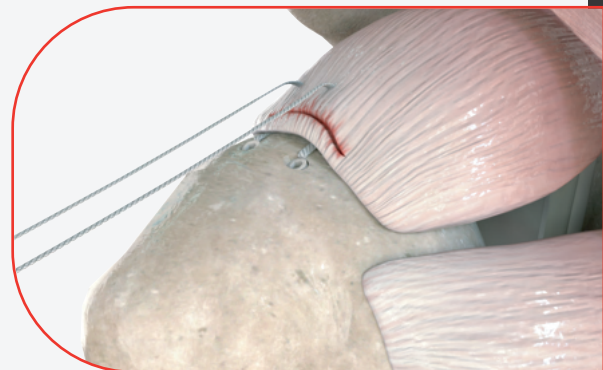


Figure 13

Lateral Anchor Insertion

Pass the Sironix AWL through the cannula and place it on (lateral side) to the articular surface of humeral head, use Sironix mallet only to tap gently on the Sironix AWL at 45° angle.

NOTE: It is recommended to use Sironix AWL to create pilot hole, if the bone is very hard for Metal Tip Viplok.

For PEEK Tip Viplok use AWL till 3rd black mark on AWL.

Advance the AWL until the distal edge of the black laser mark is flush inside the lateral cortex of the bone.

Note: VIPOK Anchors are available in Wedge & Screw-in variants. (Figure 14)

Open a sterile Sironix VIPOK knotless anchor of your variant choice and load the suture / tape strands coming from the cuff tissue directly into the VIPOK anchor eyelet. (Figure 15)

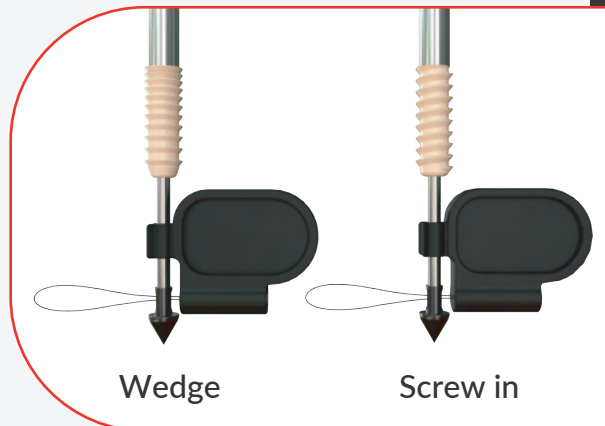


Figure 14

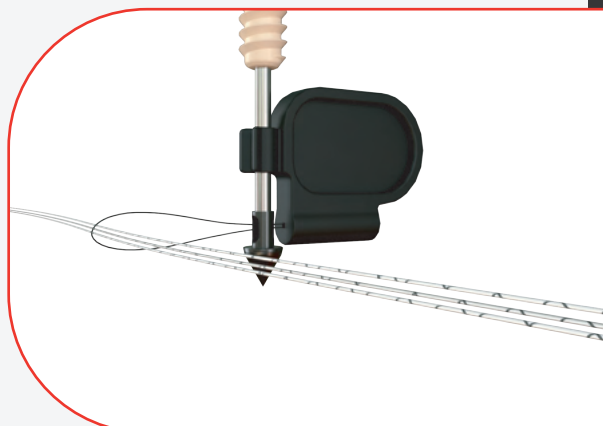


Figure 15

Maintain slight tension on the suture strands of medial row anchors and advance the anchor through the cannula.

Insert the tip of the anchor into the pilot hole up to the bottom of the pilot hole

Once the anchor is near the pilot hole either screw in or mallet the anchor in the bone , release the key ring present on the handle of inserter. (Figure 18)

Note:

1. VIPLOK Anchor will accept up to 6-8 strand suture limbs.
2. Do not hold tension on the sutures during final deployment.
3. To avoid over tightening of the sutures you can place wisenger rode under the suture & then remove after final tightening.
4. To avoid dog ears : reduce the cuff tear before final tightening of the sutures

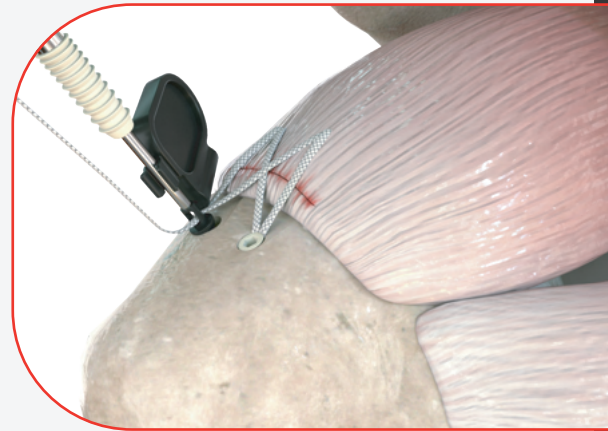


Figure 16

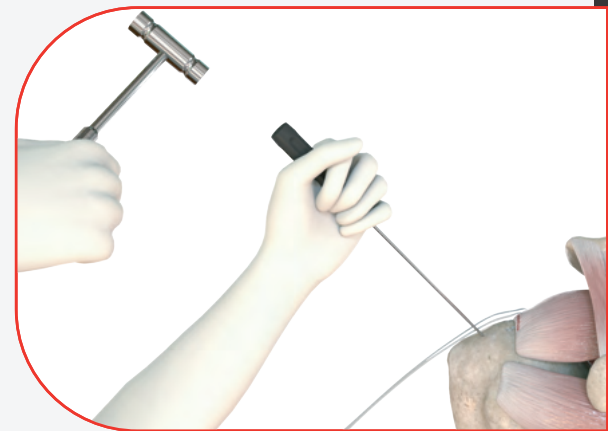


Figure 17



Figure 18

While maintaining gentle tension on the suture/tape, slide the anchor into the bone to provide continued tensioning and securing of the suture during insertion of the anchor.

Once the distal tip of PEEK or Bio anchor touches the entry of pilot hole, disengage the pin.

Screw-in type VIPLOK: Rotate the anchor inserter handle in clock wise direction to insert the anchor until the black laser marking on shaft of inserter is flush with the bone.

Wedge type VIPLOK: Use Sironix mallet only to tap VIPLOK wedge anchor into the bone. Mallet until the black laser mark is in the bone.

Continue tensioning of the suture until the anchor is flush inside the bone.

To disengage the inserter from the deployed anchor, remove the red ribbon (Figure 20) and release the suture toggle, release the inserter or apply slight anticlockwise twist movement to remove from anchor and also release the VIPLOK suture gently.

Cut the suture limbs of medial row anchors right over the implanted VIPLOK anchor using a Sironix suture cutter.

Note: VIPLOK has an additional suture loaded inside the handle inserter. Remove it once deployment is satisfactory.

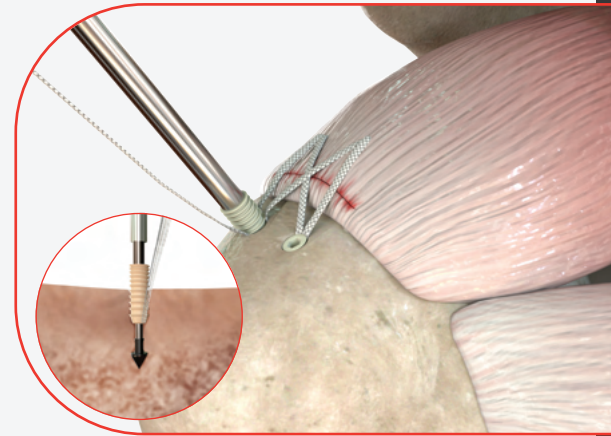


Figure 19



Figure 20

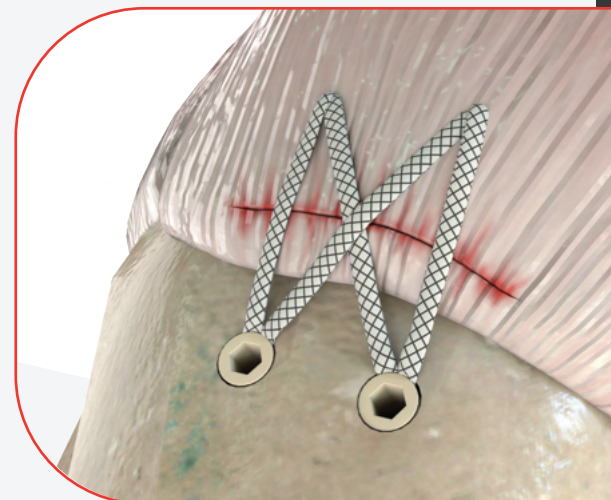


Figure 21

Ordering Information

- **Implants**

Order Code	Description
S33-4806-K	VIPLK Knotless PEEK Anchor-4.8mm Screw
S33-4807-K	VIPLK Knotless PEEK Anchor-4.8mm Wedge
S33-4808-K	VIPLK Knotless Anchor-4.8mm Self Tap Screw
S33-4809-K	VIPLK Knotless Anchor-4.8mm Self Tap Wedge
S33-5506-K	VIPLK Knotless PEEK Anchor-5.5mm Screw
S33-5507-K	VIPLK Knotless PEEK Anchor-5.5mm Wedge
S33-5508-K	VIPLK Knotless Anchor-5.5mm Self Tap Screw
S33-5509-K	VIPLK Knotless Anchor-5.5mm Self Tap Wedge

- **Order Code**

Order Code	Description
S33-4802-K	CEPTRE PEEK Anchor 4.8mm DS
S33-48E2-K	CEPTRE PEEK Anchor 4.8mm DT
S33-4804-K	CEPTRE PEEK Anchor 4.8mm SST
S33-5502-K	CEPTRE PEEK Anchor 5.5mm DS
S33-5503-K	CEPTRE PEEK Anchor 5.5mm TS
S33-55E2-K	CEPTRE PEEK Anchor 5.5mm DT
S33-5504-K	CEPTRE PEEK Anchor 5.5mm SST

NOTE: DS- Double Suture, TS- Triple Suture,
DT- Double Tape, SST- Single Suture Single Tape

Ordering Information

- **Instruments**

Order Code	Description
S36-0003-T	Crochet Hook Straight
S36-0004-T	Switching Stick
S36-0006-T	Knot Pusher Full Loop
S36-0007-T	Sliding Suture Cutter Straight
S36-0008-T	Clever Hook Right
S36-0009-T	Clever Hook Left
S36-0012-T	Penetrating Grasper Straight
S36-0018-T	Tape Cutter
S36-0019-T	Suture Manipulator
S36-0020-T	Mallet
S36-2000-T	R-Suture Passer 17mm Length
S39-0011-T	Cannula Introducer (8mm)
S39-0012-T	Cannula Introducer (6mm)
S35-0055-P	5.5 mm Anchor Tap
S45-1048-LU	Blunt Straight AWL-4.8 MM
S45-1055-LU	Blunt Straight AWL-5.5 MM

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References:

1. Aydin, Nuri et al. "Arthroscopic double-row rotator cuff repair: a comprehensive review of the literature." SICOT-J vol. 4 (2018): 57. doi:10.1051/sicotj/2018048
2. Aydin N, Karaismailoglu B, Gurcan M, Ozsahin MK. Arthroscopic double-row rotator cuff repair: a comprehensive review of the literature. SICOT J. 2018;4:57. doi:10.1051/sicotj/2018048
3. Saridakis P, Jones G. Outcomes of single-row and double-row arthroscopic rotator cuff repair: a systematic review. J Bone Joint Surg Am. 2010 Mar;92(3):732-42. doi: 10.2106/JBJS.I.01295. PMID: 20194334.

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