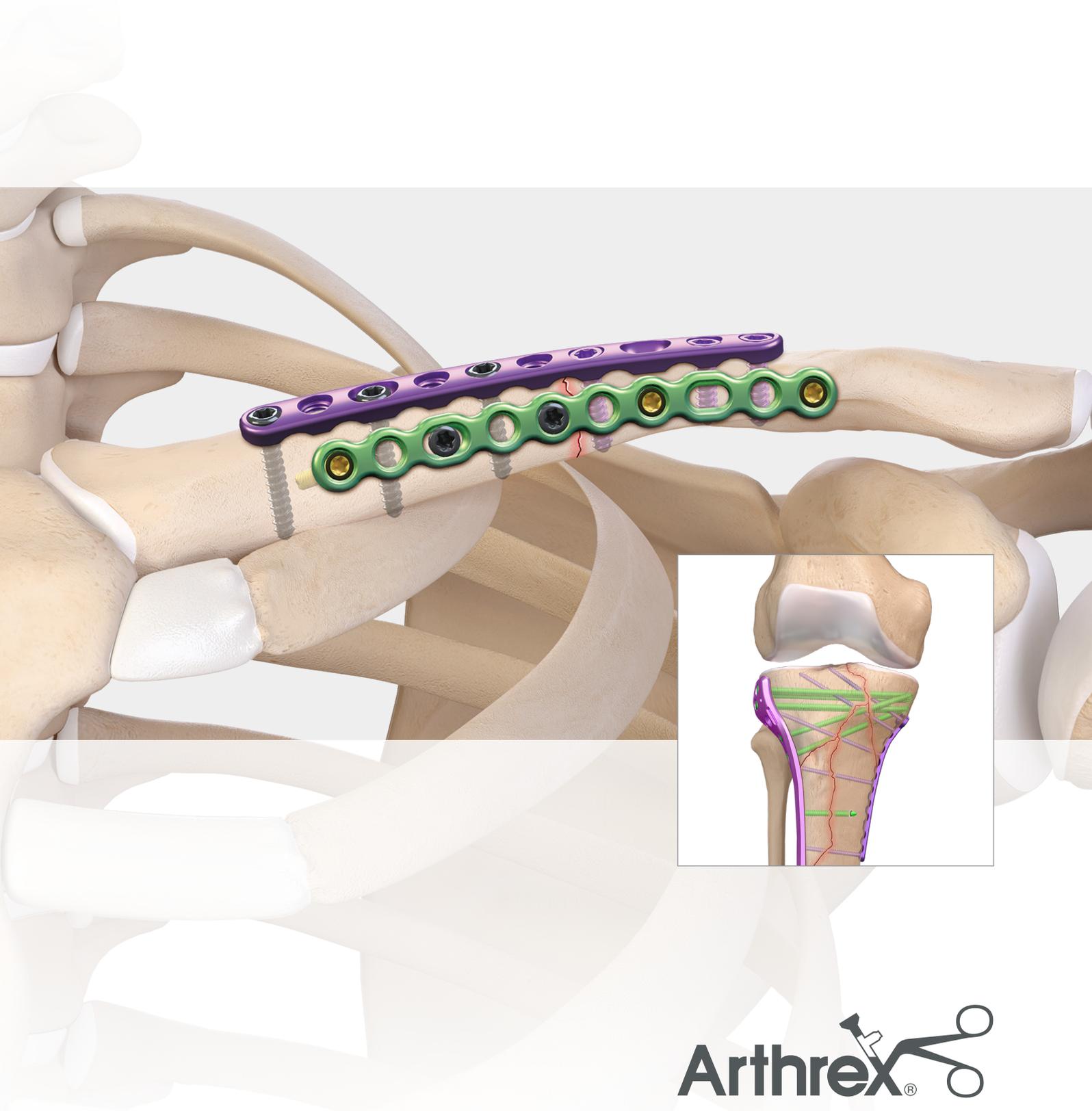


Mini Fragment System

Surgical Technique



Mini Fragment System

Introduction

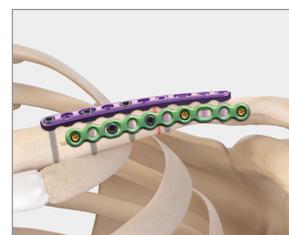
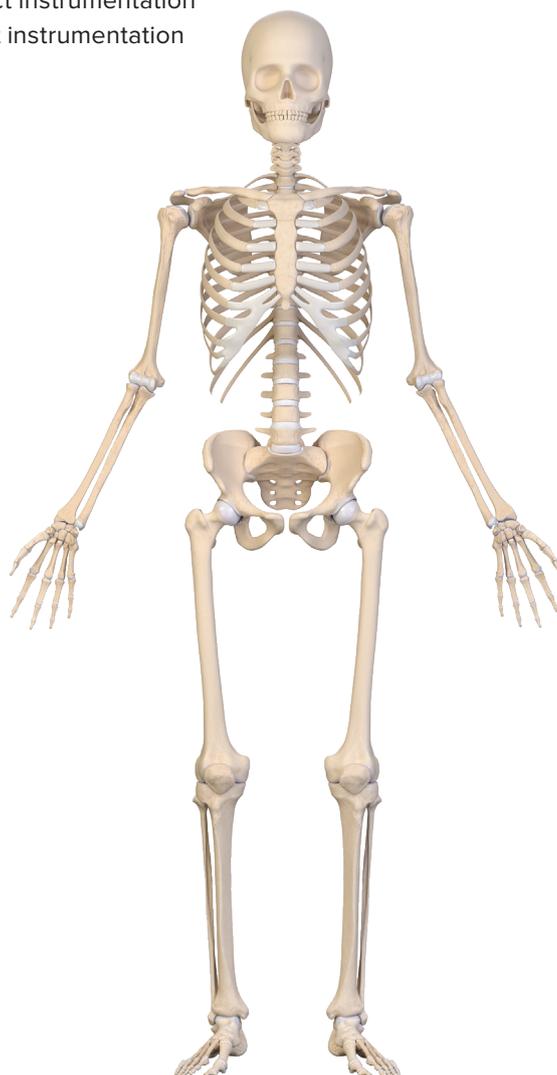
The Mini Fragment System (or “Mini Frag”) is designed to aid in the reduction and fixation of small and long bone trauma injuries. The tray modularity offers screw and plate options in 2.0 mm, 2.4 mm, and 2.7 mm variants. With a wide array of plates to fit a multitude of trauma needs, the Mini Fragment System is a keystone addition to the Arthrex Trauma portfolio.

Features and Benefits

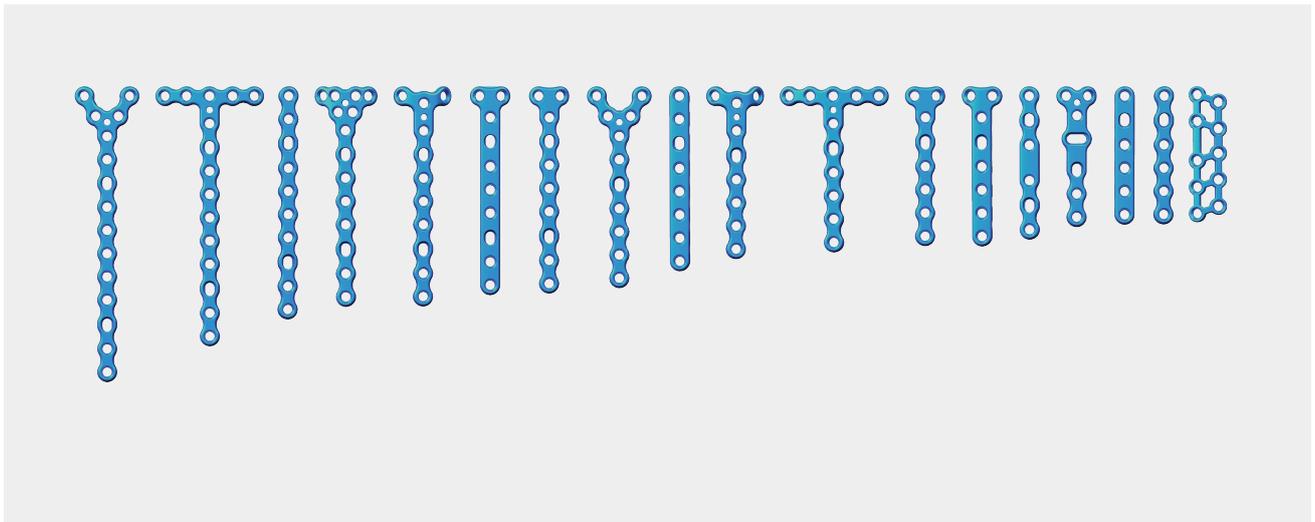
- Reduction instruments and 6 plate-bending options to meet surgeon and patient needs
- Reinforced plating options across all 3 plate sizes provide added stability when a stronger construct is desired
- A wide variety of plates and screws (2.0 mm in lengths up to 40 mm and 2.4 mm and 2.7 mm screws up to 80 mm)
- The split tray design provides intraoperative efficiency by simultaneously making general instruments and the size-specific caddies immediately available, reducing the overall footprint of the entire system
- Each caddy features a compact instrumentation drawer with size-specific short instrumentation

Indications

The Arthrex Mini Fragment System is indicated for fracture fixation, reconstruction, replantation, stabilization, reduction, fusions, osteotomies, malunions, and nonunions of small bones and small bone fragments, including normal and osteopenic bones in adult and adolescent (12 to 21 years) patients. The system is also indicated for non-load-bearing stabilization and reduction of bone fragments in long bones.

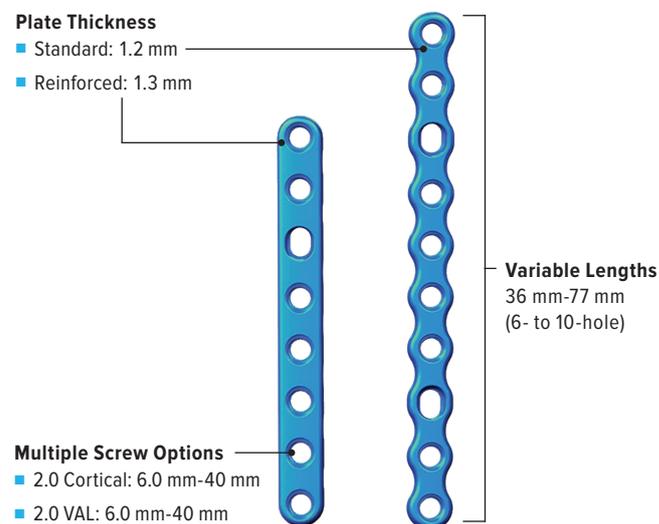


2.0 mm Module

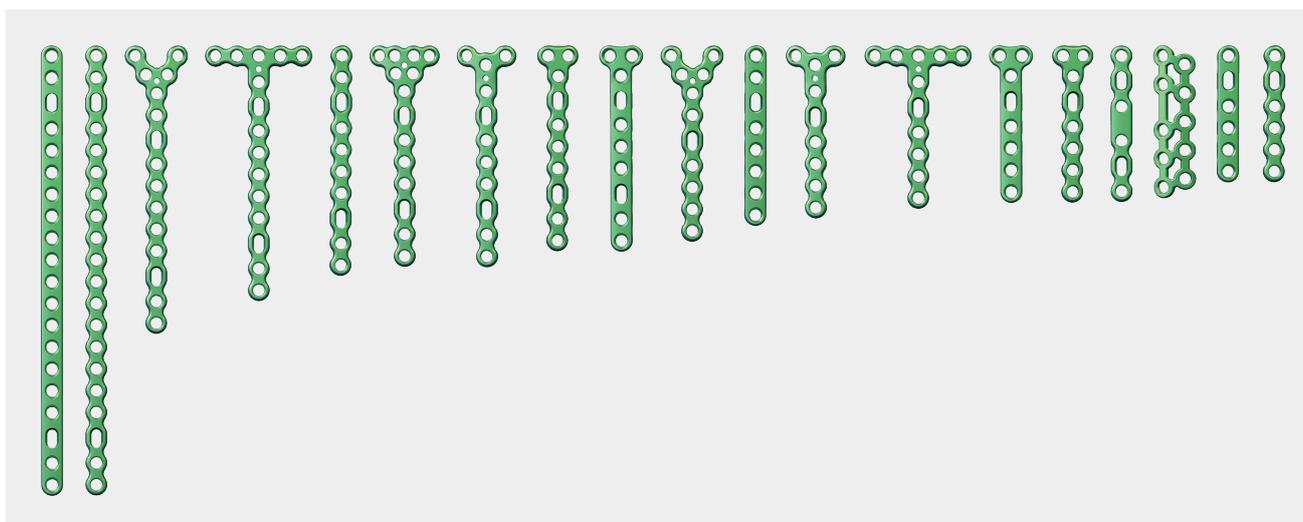


The 2.0 mm plate module can be used as a standalone system and contains all necessary plates, screws, and instrumentation. The updated caddy contains:

- Standard AO connect drills and drivers
- 18 plate options, including reinforced and standard
- Screws from 6.0 mm to 40 mm in cortical and variable-angle locking (VAL) options

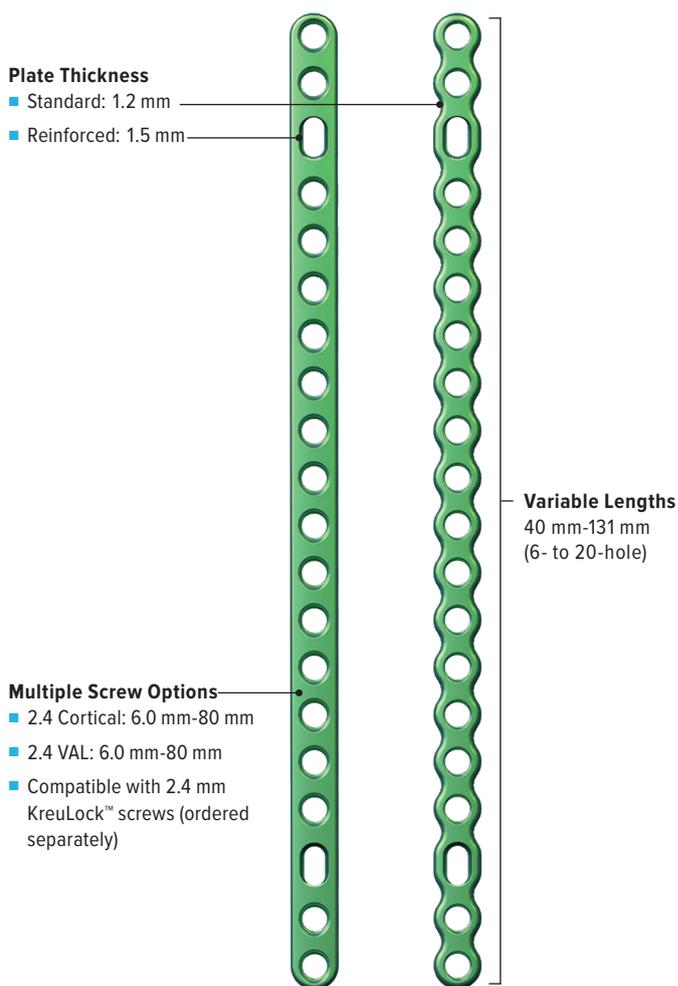


2.4 mm Module

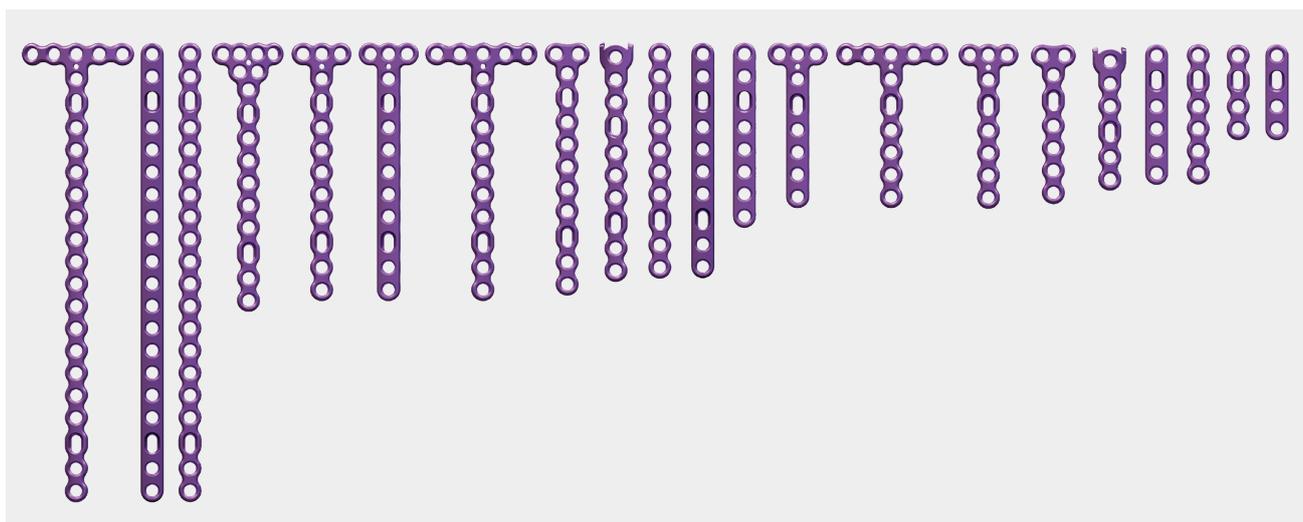


The 2.4 mm module features standard length instrumentation. Long instrumentation and depth gauges for screw lengths up to 80 mm can be found in the general instrument tray. The 2.4 module contains:

- 19 plate options, including longer 20-hole options in standard and reinforced
- Cortical and VAL screws from 6.0 mm to 80 mm
- Standard AO connect drills and drivers



2.7 mm Module



The 2.7 mm module houses 2.7 mm plates, screws, and standard instrumentation. The long instrumentation and depth gauges for screw lengths up to 80 mm can be found in the general instrument tray. This caddy contains:

- 23 plate options, 4 to 20 holes in length, in varying geometries
- Cortical and VAL screws from 6.0 mm to 80 mm
- Wide T-plate options (6-, 10-, and 20-hole)
- 6- and 10-hole tine plate options
- Standard AO connect drills and drivers

Plate Thickness

- Standard: 1.4 mm

- Reinforced: 2.2 mm

Multiple Screw Options

- 2.7 Cortical: 6.0 mm-80 mm

- 2.7 VAL: 6.0 mm-80 mm

- Compatible with 3.0 mm screws from Comprehensive Fixation System (CFS) (ordered separately)

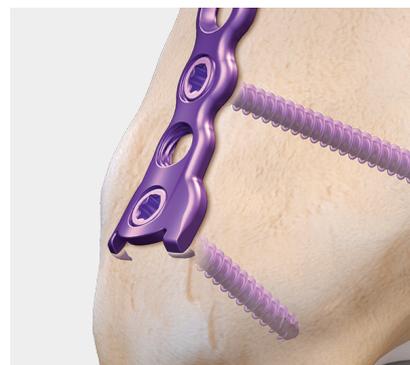
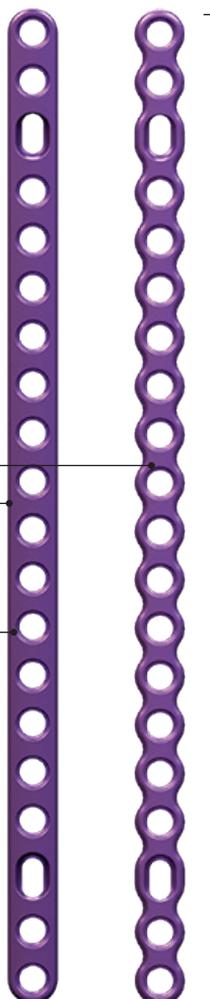
- 3.0 mm VAL and KreuLock™ screws

- 3.0 mm Hybrid VAL and KreuLock screws

Variable Lengths

29 mm-141 mm

(4- to 20-hole)



Tine plate for additional fragment stabilization

Plate Contouring and Modification

The Mini Fragment System's instrumentation aids in plate modification to fit the unique needs of each surgery.

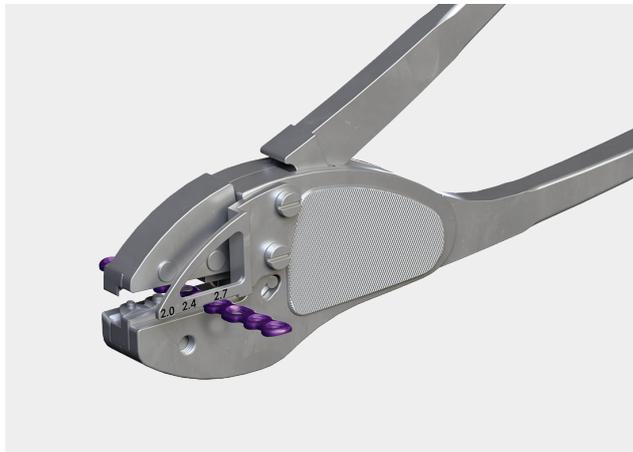
Plate Cutters

Two plate cutters to cut selected plate to desired length.



The straight plate cutter is compatible with all plate families and is used to make straight cuts.

Note: This cutter may leave sharp edges at the cut site.



The round plate cutter features dedicated slots for 2.0 mm, 2.4 mm, and 2.7 mm plates. These slots protect the screw holes and allow the user to cut a round edge into the plate while preserving the locking features of the hole nearest to the cut. The file on the side of the cutter can be used to remove any sharp ends.

Tip: The preserved portion of the plate is on the guarded side of the cutter.

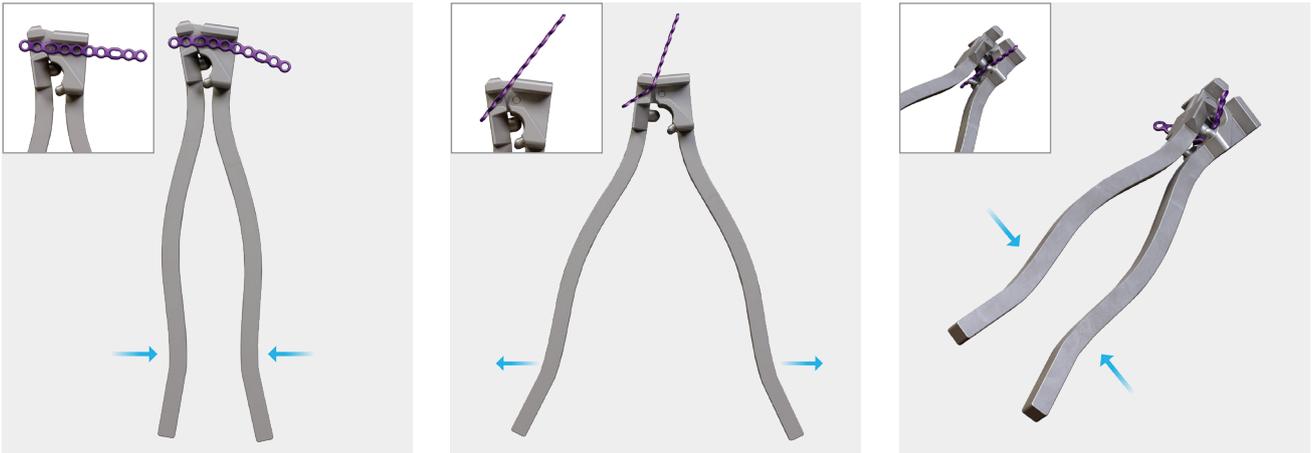
After cutting the plate to the desired length, it can be contoured by hand or using needlenose pliers or one of 4 dedicated contouring instruments.

Standard Plate Benders



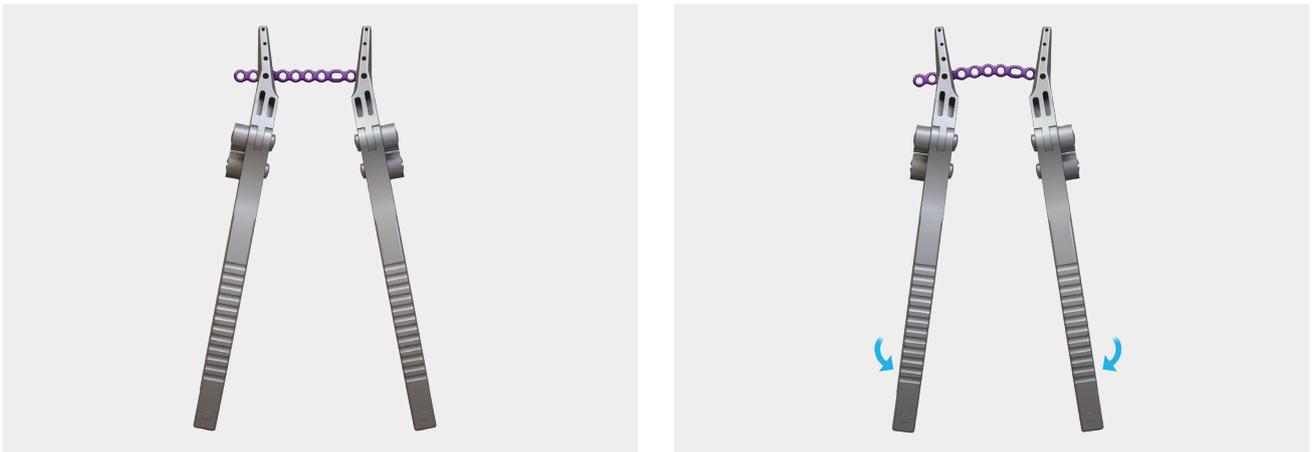
Featuring dedicated slots for each plate size, standard plate benders feature a variety of tools to contour plates to the desired shape. Additionally, the grooves on the long axis of the bender can be used for additional leverage.

French-Style Plate Benders



French benders are an additional option if more leverage is needed. Plates can be loaded in a variety of ways for in-plane and out-of-plane bending to create radial bends, smooth curves, or more acute bends.

Bending Pliers



Dedicated left- and right-bending pliers protect the locking screw holes when necessary while providing the ability to manipulate the plates in any plane. These pliers are compatible with 2.0 mm, 2.4 mm, and 2.7 mm plates.

Bending Towers

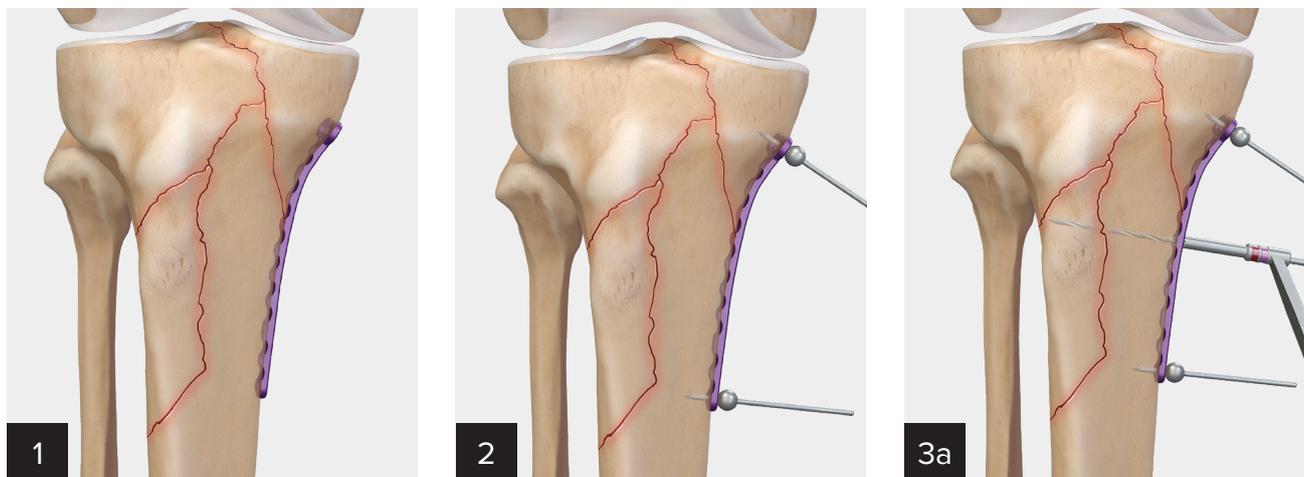


Each caddy contains bending towers that thread into their respective locking holes. These towers can be used to manipulate the plate to the desired contour. Additionally, these towers can be used for in situ plate contouring when the fracture pattern allows.

Note: Be sure to fully engage the threads of the locking tower in the locking hole and avoid cross-threading prior to bending the plate.

Surgical Technique

This surgical technique can be replicated with the 2.0 mm and 2.4 mm modules using their respective instrumentation. If additional instructions for the 2.0 plates are required, refer to the technique guide for the Mini CFS.



1
Select the appropriate plate and use the previously described techniques to contour it to the desired shape.

2
Use BB-Taks or K-wires to provisionally fixate the plate. The calibrated, drill-tip K-wires can be used with the 2.4 and 2.7 mm locking towers to simultaneously pin the plate while drilling and measuring for the final screw.

3a
Use the double-ended drill guide or extended drill/depth guide to drill for a cortical screw to secure the plate to bone. The double-sided drill guide can also aid in independent lag screw placement.



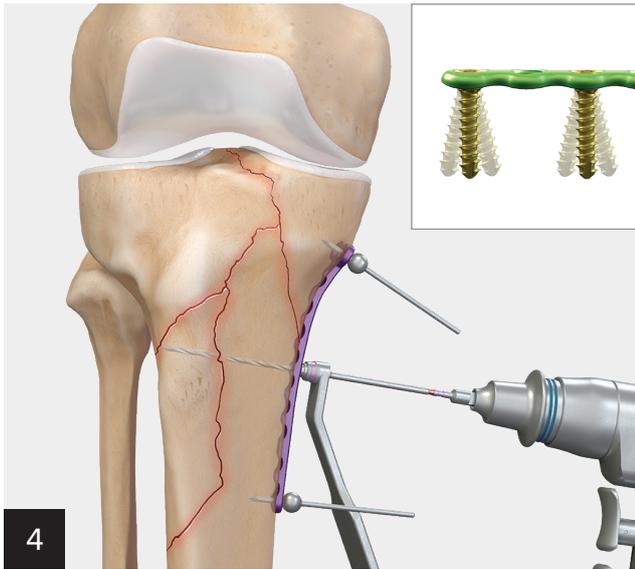
Use the standard drill bit for screws under 50 mm and the long drill bit and extended drill/depth guide for screws over 50 mm. The long instrumentation is only available for the 2.4 mm and 2.7 mm plates and screws.

When using the long calibrated drills with the locking towers or the extended drill/depth guide, use the single laser line for screws under 50 mm and the double laser line for screws over 50 mm.

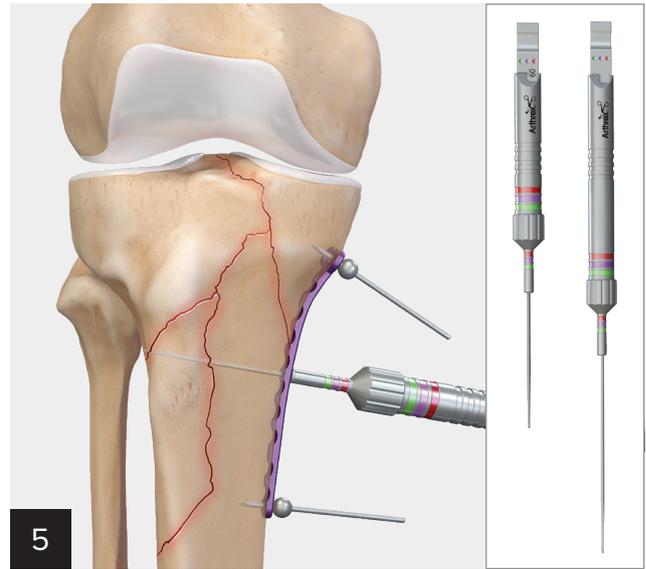
Note: The short drill bits do not feature calibration marks.



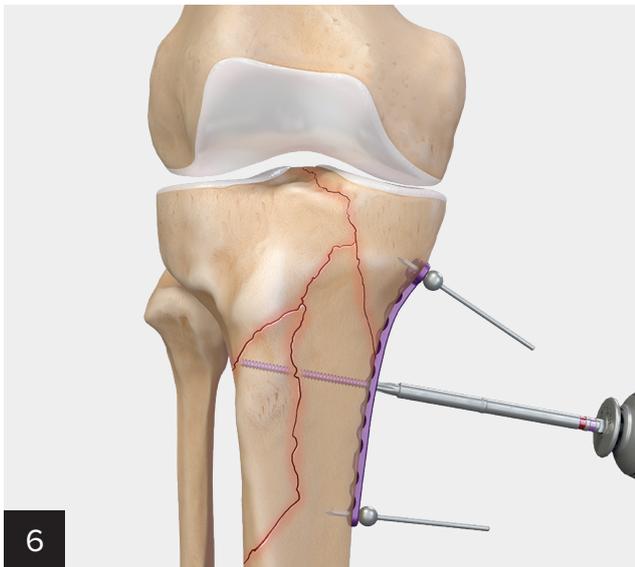
Plate Size	Color	Short Drill Bit	Long Drill Bit	Lag Drill Bit	Drill-Tip Guidewire
2.0 mm	Blue	1.5 mm (AR-18800-01)	N/A	2.0 mm (AR-18800-02)	1.25 mm (AR-18800-35)
2.4 mm	Green	1.7 mm (AR-18800-49)	1.7 mm (AR-18800-16)	2.4 mm (AR-4160-24)	1.6 mm (AR-18800-36)
2.7 mm	Purple	2.0 mm (AR-18800-18)	2.0 mm (AR-18800-19)	2.7 mm (AR-18800-20)	2.0 mm (AR-18800-37)



Additionally, the VAL drill guide fully seats into the plate to allow for up to 15° of off-axis locking.

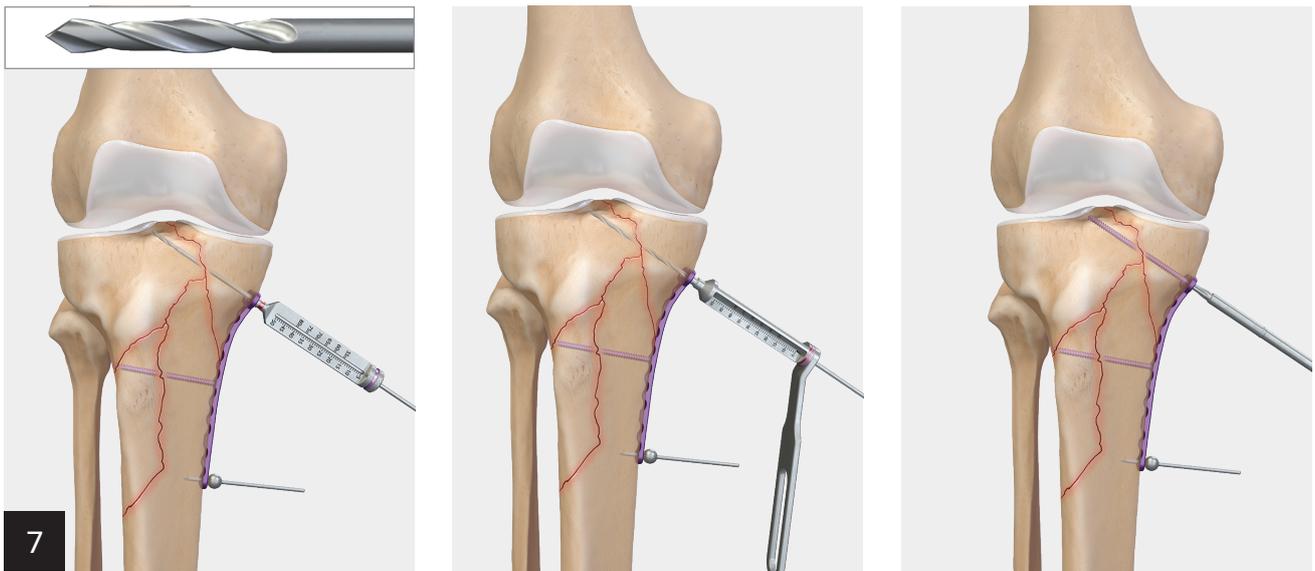


If using a noncalibrated technique, use the corresponding depth gauge to determine screw length. Use the long depth gauge for any 2.4 mm or 2.7 mm screw over 60 mm.

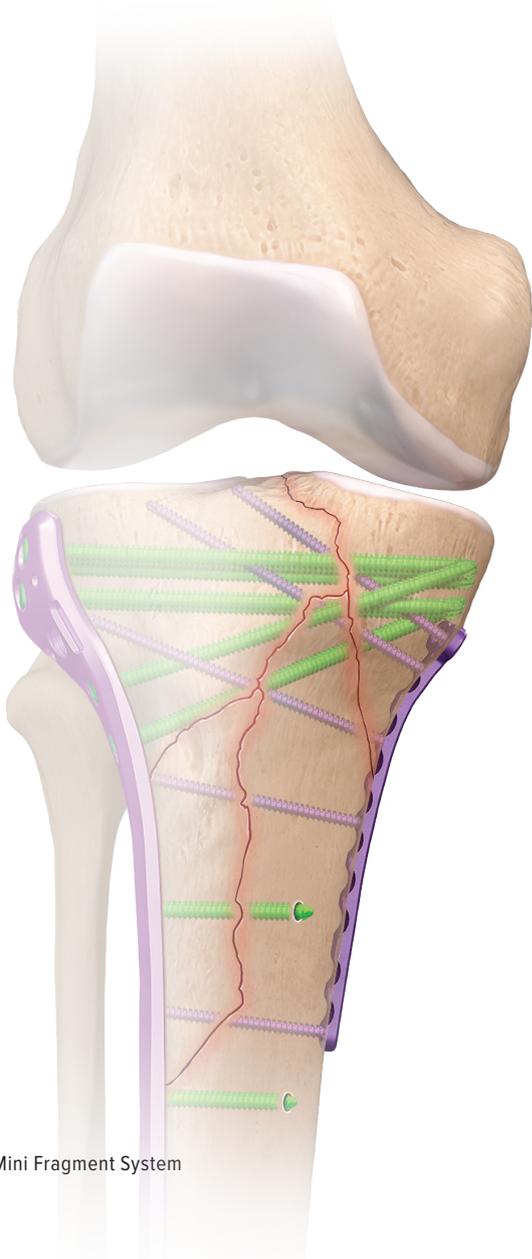


Insert the appropriate screw using the corresponding screwdriver. Modular, retaining, and nonretaining drivers and solid hand drivers are available. For smaller screws, a capturing guide can be used to stabilize the screw on the driver. For locking screws, a torque-limiting handle or modular torque-limiting adapter is available.

Plate Size	Driver Size
2.0 mm	T6
2.4 mm	T8
2.7 mm	T10



Additional options are available for cortical or VAL screw preparation. Calibrated, drill-tipped K-wires (highlighted above) and calibrated AO drills can be used with locking towers and the extended instrumentation to drill for the final screws. Both feature the single and double laser lines for measuring purposes.



8

Repeat steps as needed for the remaining screws. This system can be used in conjunction with other Arthrex Trauma systems.

Plate Shape	2.0 mm Plate Thickness: 1.2 mm Reinforced Plate Thickness: 1.3 mm	2.4 mm Plate Thickness: 1.25 mm Reinforced Plate Thickness: 1.5 mm	2.7 mm Plate Thickness: 1.4 mm Reinforced Plate Thickness: 2.2 mm
Rotation Correction Plate 	5-hole, 37 mm, AR-18720P-48		
Straight Plate 	6-hole, 36 mm, AR-18720P-03 10-hole, 61 mm, AR-18720P-07	6-hole, 40 mm, AR-18724P-03 10-hole, 68 mm, AR-18724P-07 20-hole, 131 mm, AR-18724P-55	4-hole, 26 mm, AR-18827P-01 6-hole, 43 mm, AR-18827P-03 8-hole, 57 mm, AR-18827P-05 10-hole, 72 mm, AR-18827P-07 20-hole, 141 mm, AR-18827P-08
Reinforced Straight Plate 	6-hole, 36 mm, AR-18720P-24 8-hole, 48 mm, AR-18720P-26	6-hole, 40 mm, AR-18724P-17 8-hole, 53 mm, AR-18724P-19 20-hole, 131 mm, AR-18724P-56	4-hole, 26 mm, AR-18827P-09 6-hole, 43 mm, AR-18827P-11 8-hole, 57 mm, AR-18827P-13 10-hole, 72 mm, AR-18827P-15 20-hole, 141 mm, AR-18827P-16
Bridge Plate 	6-hole, 40 mm, AR-18720P-55	6-hole, 46 mm, AR-18724P-34	
Cage Plate 	2 × 5 hole, 35 mm, AR-18720P-49	2 × 5 hole, 45 mm, AR-18724P-54	
Hook Plate 			6-hole, 44 mm, AR-18827P-38 10-hole, 73 mm, AR-18827P-39
2-Hole T-Plate 	6-hole, 42 mm, AR-18720P-17 8-hole, 54 mm, AR-18720P-19	6-hole, 46 mm, AR-18724P-10 8-hole, 60 mm, AR-18724P-12	6-hole, 49 mm, AR-18827P-26 10-hole, 78 mm, AR-18827P-30
2-Hole Reinforced T-Plate 	6-hole, 42 mm, AR-18720P-31 8-hole, 54 mm, AR-18720P-33	6-hole, 46 mm, AR-18724P-42 8-hole, 60 mm, AR-18724P-44	
3-Hole T-Plate 			6-hole, 51 mm, AR-18827P-19 10-hole, 79 mm, AR-18827P-23
3-Hole Reinforced T-Plate 			6-hole, 51 mm, AR-18827P-47 10-hole, 79 mm, AR-18827P-48

Plate Shape	2.0 mm Plate Thickness: 1.2 mm Reinforced Plate Thickness: 1.3 mm	2.4 mm Plate Thickness: 1.25 mm Reinforced Plate Thickness: 1.5 mm	2.7 mm Plate Thickness: 1.4 mm Reinforced Plate Thickness: 2.2 mm
Y-Plate 	6-hole, 45 mm, AR- 18720P-10 8-hole, 57 mm, AR- 18720P-12	6-hole, 50 mm, AR- 18724P-49 8-hole, 65 mm, AR- 18724P-51	
V-Plate 	6-hole, 52 mm, AR- 18720P-37 10-hole, 77 mm, AR- 18720P-41	6-hole, 57 mm, AR- 18724P-23 10-hole, 84 mm, AR- 18724P-27	
Triangular Plate 	8-hole, 57 mm, AR- 18720P-54	8-hole, 65 mm, AR- 18724P-39	6-hole, 54 mm, AR- 18827P-33 10-hole, 83 mm, AR- 18827P-37
Wide T-Plate 	6-hole, 43 mm, AR- 18720P-43 10-hole, 68 mm, AR- 18720P-47	6-hole, 48 mm, AR- 18724P-29 10-hole, 75 mm, AR- 18724P-33	6-hole, 51 mm, AR- 18827P-41 10-hole, 79 mm, AR- 18827P-45 20-hole, 141 mm, AR- 18827-46

Mini Fragment System (AR-18800FS)

Product Description	Item Number
Instruments, 2.0 mm	
Drill guide, VAL, cone-shaped, 2.0 mm	AR-18700-61
Driver shaft, T6, self-retaining, AO	AR-18800-03
Driver shaft, T6, non-retaining, AO	AR-18800-04
Screwdriver, T6 hexalobe, solid	AR-18800-05
Holding sleeve, 2.0 mm	AR-18800-08
Locking bending tower, 2.0 mm	AR-18800-09
Depth/drill guide, 2.0 mm	AR-18700-37
Depth device, 2.0 mm	AR-18800-38
Drill guide, 1.5 mm/2.0 mm	AR-18800-48
Instruments, 2.4 mm	
Drill guide, 1.7 mm/2.5 mm	AR-8916-05
Locking bending guide, 2.4 mm	AR-8950-08
Holding sleeve, 2.4 mm	AR-18700-38
Driver shaft, T8, self-retaining, AO	AR-18700-54
Driver shaft, T8, non-retaining, AO	AR-18700-55
VAL drill guide, cone-shaped, 2.4 mm	AR-18700-62
Screwdriver, T8 hexalobe, solid	AR-18800-14
Locking tower, 2.4 mm	AR-18800-15
Instruments, 2.7 mm	
Drill guide, 2.0 mm / 2.7 mm	AR-18800-22
Driver shaft, T10, self-retaining	AR-18800-24
Driver shaft, T10, non-retaining	AR-18800-25
Screwdriver, T10, solid	AR-18800-27
Locking tower, 2.7 mm	AR-18800-30
VAL guide, cone-style, 2.7 mm	AR-18800-31
Holding sleeve, 2.7 mm	AR-18800-32
Locking bending tower, 2.7 mm	AR-18800-33
General Instruments	
Needlenose pliers	AR-8916-24
Torque limiting handle, 0.8 mm, QC	AR-8916TL-011
Screw holding forceps, self-retaining	AR-8941F
Sharp hook	AR-8943-21
Lobster claw	AR-8943-23
Plate cutter, straight cut	AR-8957-06
Torque limiting adapter, AO, 0.8 mm	AR-18700-39
Pointed reduction forceps	AR-18700-45
Hohmann retractor, double-ended, 6 mm/10 mm	AR-18700-53
Driver shaft, T8, long, self-retaining	AR-18800-13
Driver shaft, T10, long, self-retaining	AR-18800-26
Drill/depth guide, 2.7 mm	AR-18800-29
Depth device, 2.4 mm/2.7 mm, short	AR-18800-39
Depth device, 2.4 mm/2.7 mm, long	AR-18800-40
T-handle, AO	AR-18800-41
Plate cutter, 2.0 mm/2.4 mm/2.7 mm	AR-18800-42
Bending pliers, angled, left	AR-18800-43
Bending iron, double-ended	AR-18800-44
Drill/depth guide, 2.4 mm	AR-18800-45
Bending pliers, angled, right	AR-18800-46
Bending pliers, French style	AR-18800-47
Mini Fragment System 2.0 mm/2.4 mm/2.7 mm case	AR-18800C
Ratcheting handle, AO, QC	AR-8700RH

Implants and Disposables (AR-18800FI)

Product Description	Item Number
Guidewire w/ trocar tip, 0.062 in	AR-8941K
Guidewire w/ trocar tip, 1.35 mm	AR-8943-01
Guidewire w/ trocar tip, 0.078 in × 5.91 in (2 mm × 150 mm)	AR-8945K
Drill bit, 1.7 mm, long	AR-18800-16
Drill bit, 2.0 mm, long, AO	AR-18800-19
Guidewire, drill tip, 1.25 mm	AR-18800-35
Guidewire, drill tip, 1.6 mm	AR-18800-36
Guidewire, drill tip, 2.0 mm	AR-18800-37
Plates, 2.0 mm	
Straight plate, 2.0 mm, 6H	AR-18720P-03
Straight plate, 2.0 mm, 10H	AR-18720P-07
Y-plate, 2.0 mm, 6H	AR-18720P-10
Y-plate, 2.0 mm, 8H	AR-18720P-12
T-plate, 2.0 mm, 6H	AR-18720P-17
T-plate, 2.0 mm, 8H	AR-18720P-19
Straight plate, 2.0 mm, 6H, reinforced	AR-18720P-24
Straight plate, 2.0 mm, 8H, reinforced	AR-18720P-26
T-plate, 2.0 mm, 6H, reinforced	AR-18720P-31
T-plate, 2.0 mm, 8H, reinforced	AR-18720P-33
V-plate, 2.0 mm, 6H	AR-18720P-37
V-plate, 2.0 mm, 10H	AR-18720P-41
Wide T-plate, 2.0 mm, 6H	AR-18720P-43
Wide T-Plate, 2.0 mm, 10H	AR-18720P-47
T-plate rotation correction, 2.0 mm, 5H	AR-18720P-48
Cage plate, 2.0 mm, 2H × 5H	AR-18720P-49
Triangle plate, 2.0 mm, 8H	AR-18720P-54
Bridge plate, straight, 2.0 mm, 6H	AR-18720P-55
Screws, 2.0 mm	
Low profile screw, cortical, 2.0 mm × 6.0 mm-15 mm (1.0 mm increments)	AR-18720-06-15
VAL screw, Ti, 2.0 mm × 6.0 mm-15 mm (1.0 mm increments)	AR-18720V-06-15
Low profile screw, cortical, 2.0 mm × 16 mm-40 mm (2.0 mm increments)	AR-18720-16-40
VAL screw, Ti, 2.0 mm × 16 mm-40 mm (2.0 mm increments)	AR-18720V-16-40
Disposables, 2.0 mm	
BB-Tak, nonthreaded	AR-18800-11
BB-Tak, threaded	AR-18800-11T
Drill bit, 0.059 in (1.5 mm), AO	AR-18800-01
Drill bit, 0.079 in (2.0 mm), AO	AR-18800-02
Countersink, 2.0 mm	AR-18800-06
Bone tap, 2.0 mm	AR-18800-07

Product Description	Item Number
Plates, 2.4 mm	
Straight plate, 2.4 mm, 6H	AR-18724P-03
Straight plate, 2.4 mm, 10H	AR-18724P-07
T-plate, 2.4 mm, 6H	AR-18724P-10
T-plate, 2.4 mm, 8H	AR-18724P-12
Straight plate, 2.4 mm, 6H, reinforced	AR-18724P-17
Straight plate, 2.4 mm, 8H, reinforced	AR-18724P-19
V-plate, 2.4 mm, 6H	AR-18724P-23
V-plate, 2.4 mm, 10H	AR-18724P-27
Wide T-plate, 2.4 mm, 6H	AR-18724P-29
Wide T-plate, 2.4 mm, 10H	AR-18724P-33
Bridge plate, straight, 2.4 mm, 6H	AR-18724P-34
Triangle plate, 2.4 mm, 8H	AR-18724P-39
T-plate, 2.4 mm, 6H, reinforced	AR-18724P-42
T-plate, 2.4 mm, 8H, reinforced	AR-18724P-44
Y-plate, 2.4 mm, 6H	AR-18724P-49
Y-plate, 2.4 mm, 8H	AR-18724P-51
Cage plate, 2.4 mm, 2H × 5H	AR-18724P-54
Straight plate, 2.4 mm, 20H	AR-18724P-55
Straight plate, 2.4 mm, 20H, reinforced	AR-18724P-56
Screws, 2.4 mm	
VAL screw, Ti, 2.4 mm × 6.0 mm-15 mm (1.0 mm increments)	AR-18724V-06-15
Cortical screw, 2.4 mm × 6.0 mm-15 mm (1.0 mm increments)	AR-8916CX24-06-15
VAL screw, Ti, 2.4 mm × 16 mm-50 mm (2.0 mm increments)	AR-18724V-16-50
Cortical screw, 2.4 mm × 16 mm-50 mm (2.0 mm increments)	AR-8916CX24-16-50
VAL screw, Ti, 2.4 mm × 55 mm-80 mm (5.0 mm increments)	AR-18724V-55-80
Cortical screw, 2.4 mm × 55 mm-80 mm (5.0 mm increments)	AR-8916CX24-55-80
Disposables, 2.4 mm	
BB-Tak, nonthreaded	AR-18800-11
BB-Tak, threaded	AR-18800-11T
Drill bit, ø1.7 mm	AR-18800-49
Drill bit, 2.4 mm	AR-4160-24
Bone tap, 2.4 mm	AR-18800-17
Countersink, 2.4 mm	AR-8950-01

Product Description	Item Number
Plates, 2.7 mm	
Straight plate, 2.7 mm, 4H	AR-18827P-01
Straight plate, 2.7 mm, 6H	AR-18827P-03
Straight plate, 2.7 mm, 8H	AR-18827P-05
Straight plate, 2.7 mm, 10H	AR-18827P-07
Straight plate, 2.7 mm, 20H	AR-18827P-08
Straight plate, 2.7 mm, 4H, reinforced	AR-18827P-09
Straight plate, 2.7 mm, 6H, reinforced	AR-18827P-11
Straight plate, 2.7 mm, 8H reinforced	AR-18827P-13
Straight plate, 2.7 mm, 10H, reinforced	AR-18827P-15
Straight plate, 2.7 mm, 20H, reinforced	AR-18827P-16
T-plate, 2.7 mm, 3H head, 6H	AR-18827P-19
T-plate, 2.7 mm, 3H head, 10H	AR-18827P-23
T-plate, 2.7 mm, 2H head, 6H	AR-18827P-26
T-plate, 2.7 mm, 2H head, 10H	AR-18827P-30
Triangular plate, 2.7 mm, 6H	AR-18827P-33
Triangular plate, 2.7 mm, 10H	AR-18827P-37
Tine plate, 2.7 mm, 6H	AR-18827P-38
Tine plate, 2.7 mm, 10H	AR-18827P-39
Wide T-plate, 2.7 mm, 6H	AR-18827P-41
Wide T-plate, 2.7 mm, 10H	AR-18827P-45
Wide T-plate, 2.7 mm, 20H	AR-18827P-46
T-plate, 2.7 mm, 3H head, reinforced, 6H	AR-18827P-47
T-plate, 2.7 mm, 3H head, reinforced, 10H	AR-18827P-48
Screws, 2.7 mm	
Cortical screw, 2.7 mm × 6.0 mm - 15 mm (1.0 mm increments)	AR-18827-06 - 15
VAL screw, 2.7 mm × 6.0 mm - 15 mm (1.0 mm increments)	AR-18827V-06 - 15
Cortical screw, 2.7 mm × 16 mm - 50 mm (2.0 mm increments)	AR-18827-16 - 50
VAL screw, 2.7 mm × 16 mm - 50 mm (2.0 mm increments)	AR-18827V-16 - 50
Cortical screw, 2.7 mm × 55 mm - 80 mm (5.0 mm increments)	AR-18827-55 - 80
VAL screw, 2.7 mm × 55 mm - 80 mm (5.0 mm increments)	AR-18827V-55 - 80
Disposables, 2.7 mm	
BB-Tak	AR-13226
BB-Tak, threaded	AR-13226T
Drill bit, 2.0 mm, short, AO	AR-18800-18
Drill bit, 2.7 mm, AO	AR-18800-20
Countersink, 2.7 mm	AR-18800-23
Bone tap, 2.7 mm	AR-18800-34



This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience, and should conduct a thorough review of pertinent medical literature and the product's directions for use. Postoperative management is patient-specific and dependent on the treating professional's assessment. Individual results will vary and not all patients will experience the same postoperative activity level or outcomes.

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Arthrex manufacturer,
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US patent information