

OrthoLine™ Small Animal Fracture Straight Plate

Surgical Technique




Arthrex®
Vet Systems

OrthoLine™ Small Animal Fracture Straight Plate

Introduction

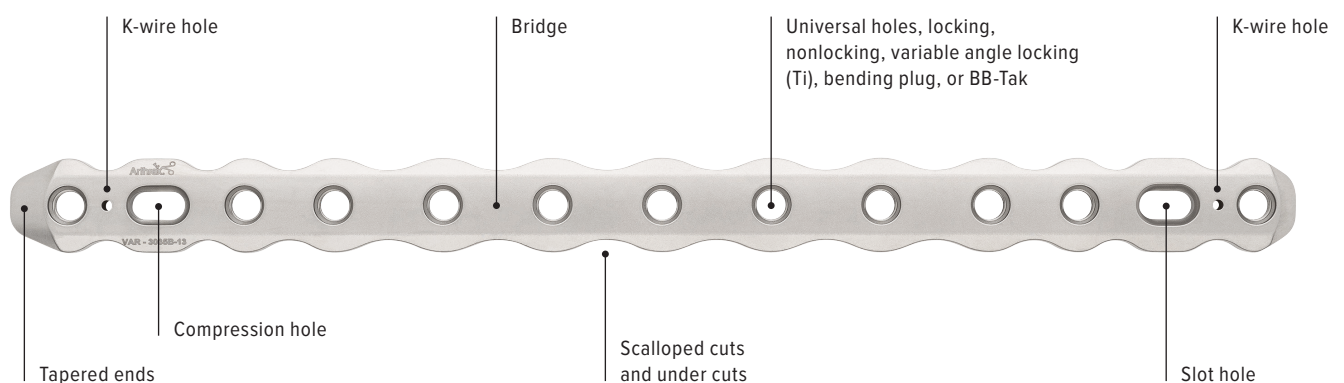
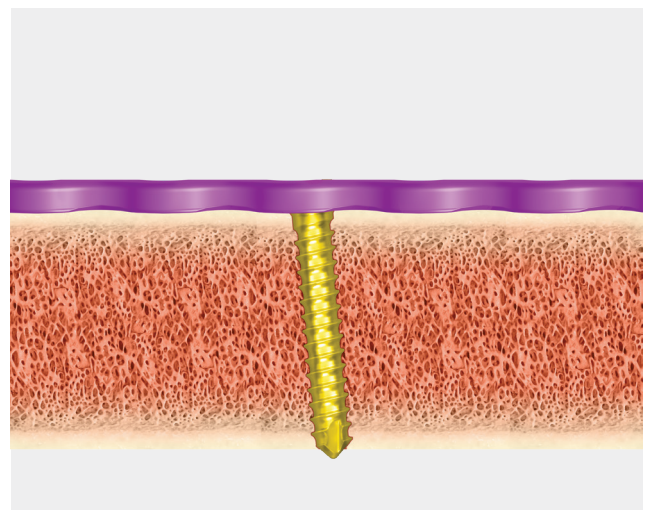
A considerable upgrade from a standard straight and T-plate design, the 70-plate OrthoLine plating system enables fracture repair for a variety of canine and feline patients. Unique hole-to-hole spacing along with an oblong compression hole and oblong slide hole allow the most optimal plate location for the fracture.

Development, research, and surgeon feedback converge to create an innovative plating system in a comprehensive range of sizes and lengths designed specifically for veterinary patients of all weight ranges. The OrthoLine plating system affords surgeons options ranging from 1.6 mm to broad 3.5 mm/4.0 mm plates to perform fracture repairs on a variety of small animal patients.

Product Highlight

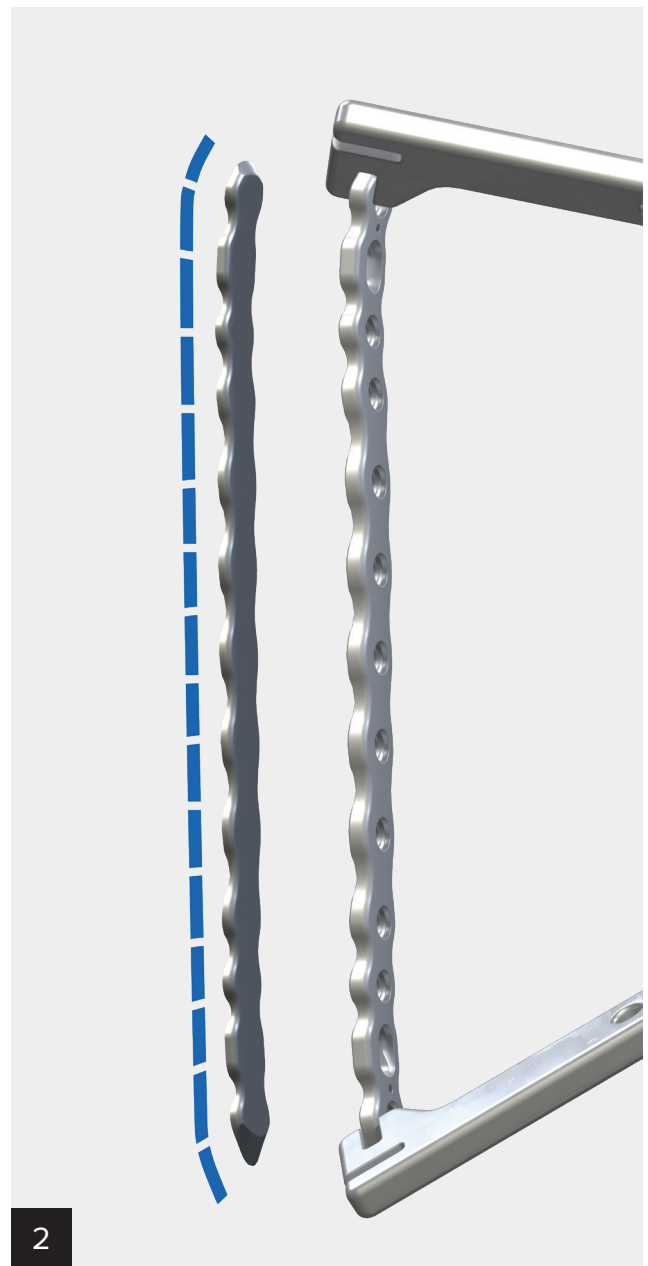
Experience the versatility and design surgeons have asked for with the OrthoLine straight plates. Features of the plate design include proximal and distal high screw density, central low screw density with a strong bridging design, slide and compression holes, and tapered ends for minimally invasive implantation. Locking screw holes accommodate variable angle locking (Ti), cortical, or locking screws as well as additional features, such as under cuts, scalloped edges, and K-wire holes.

The straight plates are available in a variety of lengths and sizes ranging from 1.6 mm to broad 3.5 mm. The variable angle titanium locking screws range from 1.6 mm to 3.0 mm. For a complete list, please see the final pages of this guide.



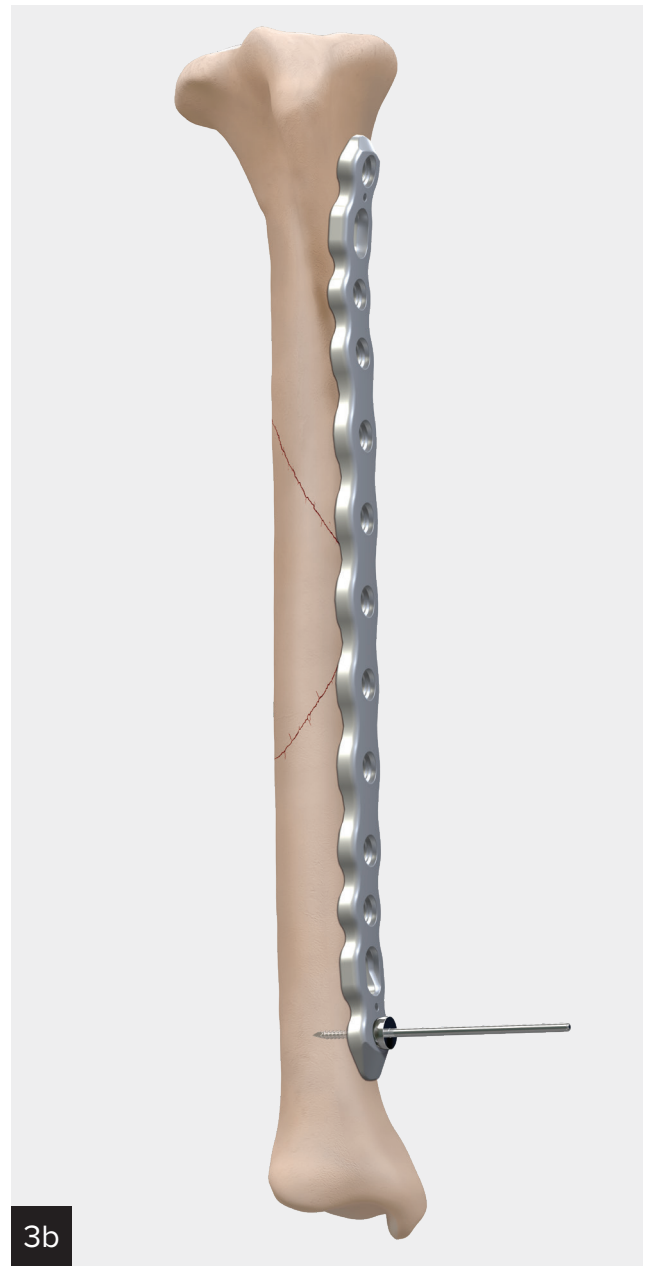
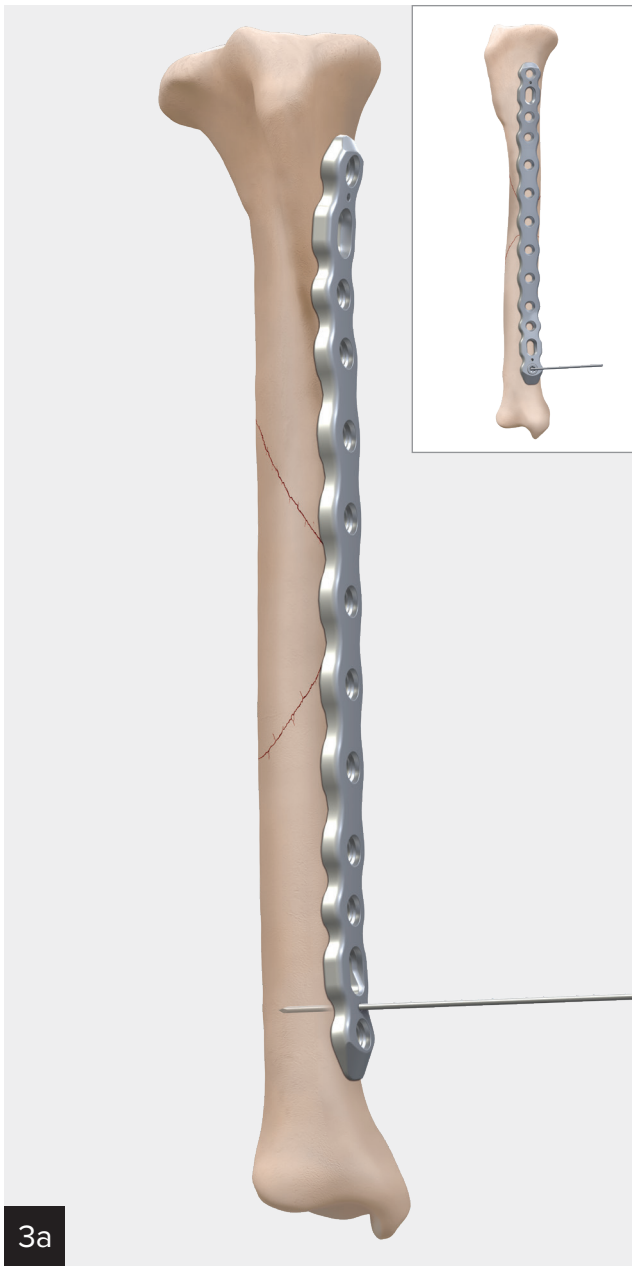


Reduce the fracture using standard fracture reducing technique and equipment.

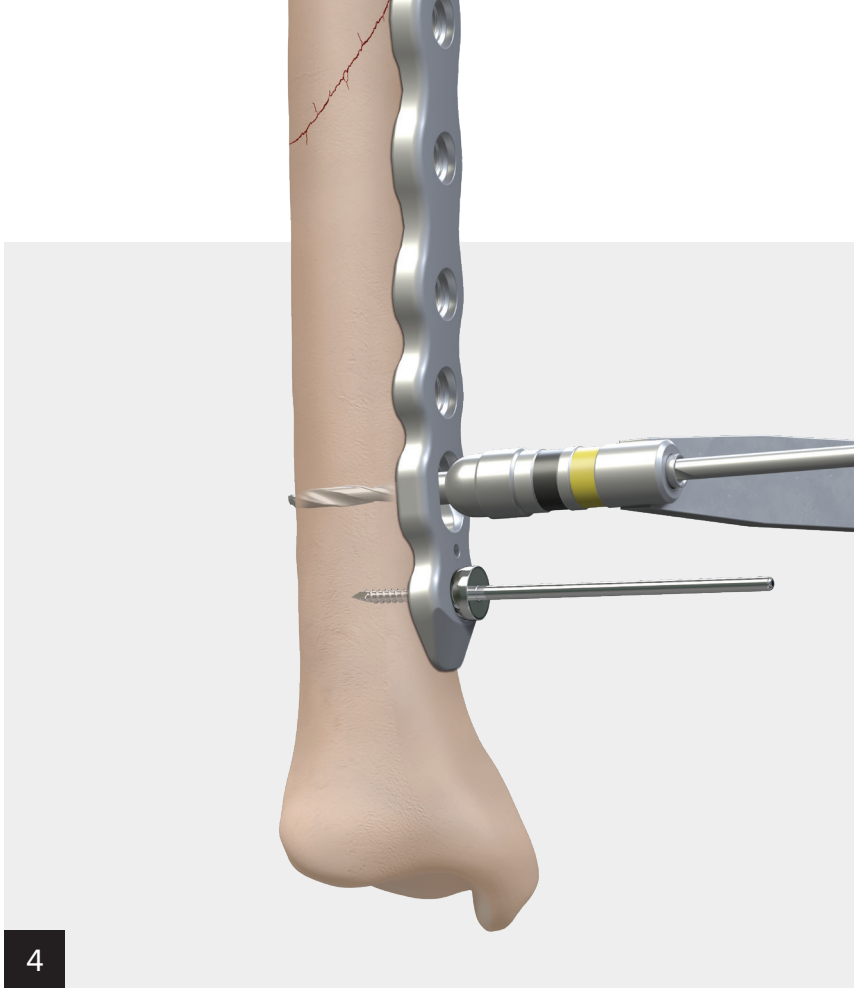


In order to contour the plate, place the appropriate cannulated, threaded, bending plug inserts into the locking screw holes where the plate will be contoured using the appropriate screwdriver. Contour the plate as necessary using bending irons or another form of plate benders, replicating the anatomy.

For bending of the tip/nose of the plate, use the “fork” end of the bending irons. Once the contouring is complete, the bending plugs can be removed or used in conjunction with K-wires.

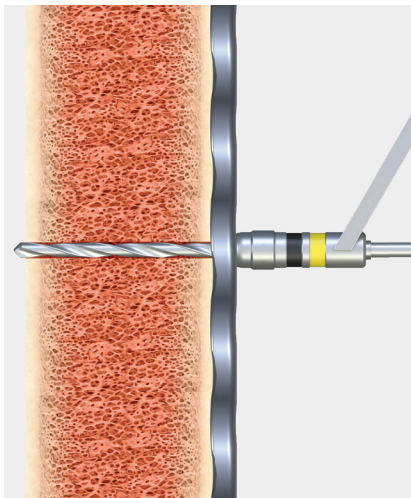


The plate may be temporarily affixed to the bone using multiple methods. For temporary fixation, K-wire holes and K-wires in conjunction with bending plugs can be used as well as threaded or nonthreaded BB-Tak in the center of a universal screw hole.

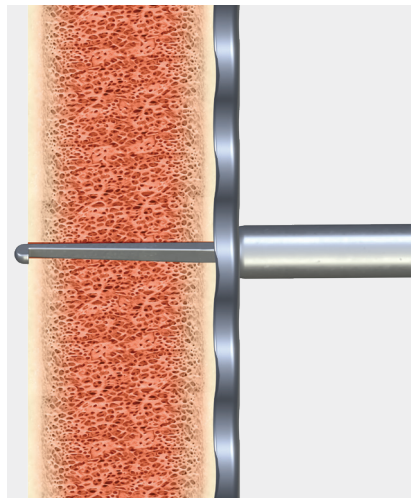


When applying the plate, first place a cortical screw in the slide hole of the contoured plated by drilling using the universal drill guide, measuring, and placing the screw. The screw is brought into contact with the plate and small adjustments are made prior to tightening the screw to the plate.

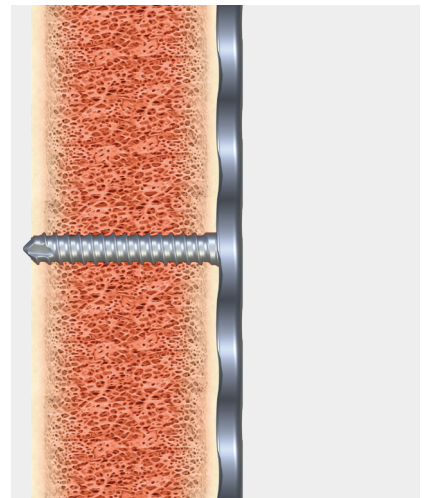
Note: K-wires and BB-Tak must be removed for proper application and use of the slide hole.



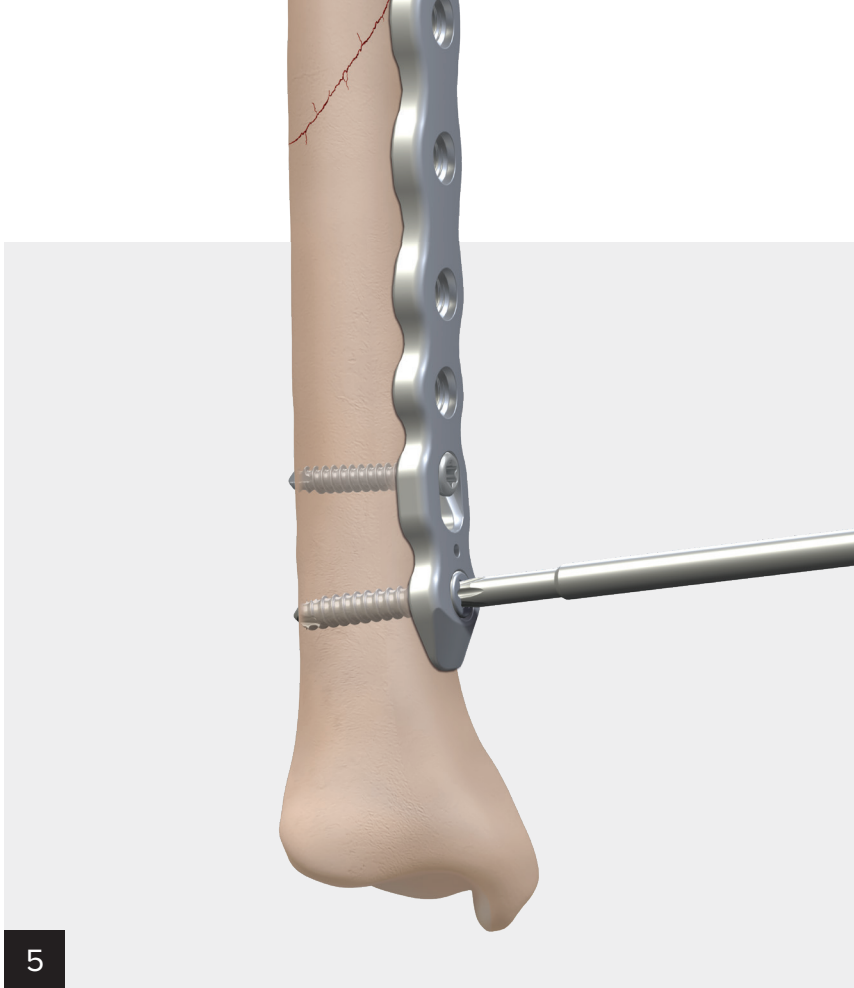
Drill Side Cross Section



Depth Gauge Measurement Side Cross Section

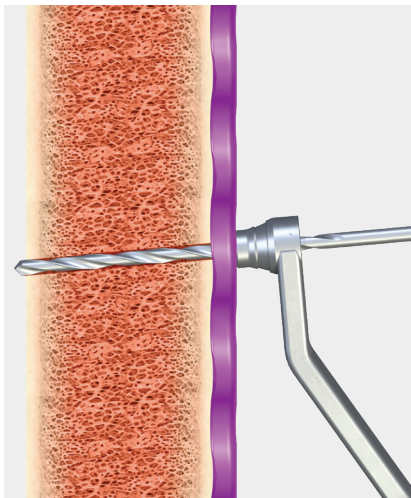


Locking Screw Placement Cross Section

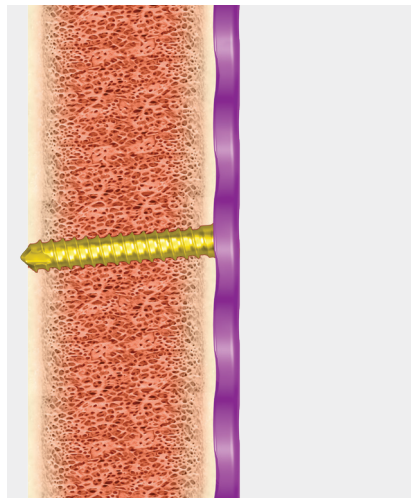


Place a locking screw next to the slide hole by drilling, measuring, placing the screw, and locking the screw in place. Screws may be placed under power, but the final turns should be done manually with the manual screwdriver.

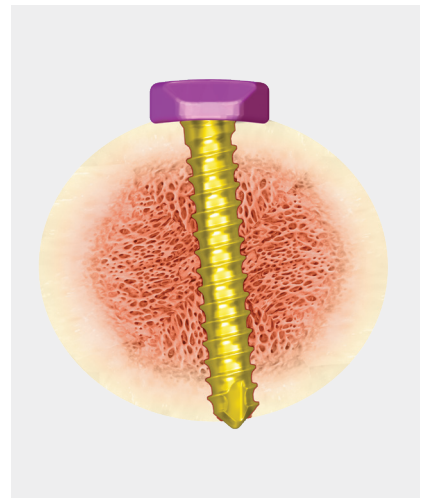
The variable angle guide can also be used for titanium implants sizes 3.0 mm and below for use with the variable angle locking screws. If care is not taken, a screw placed using a variable angle method can converge with another screw.



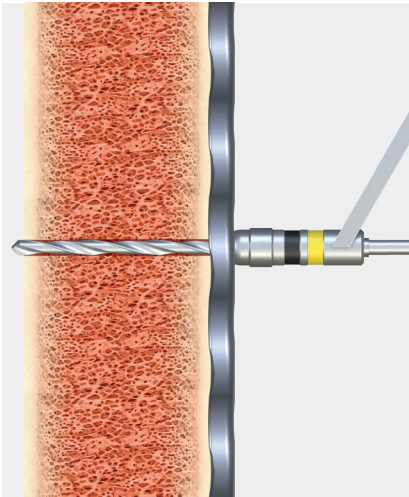
Drilling Side Cross Section



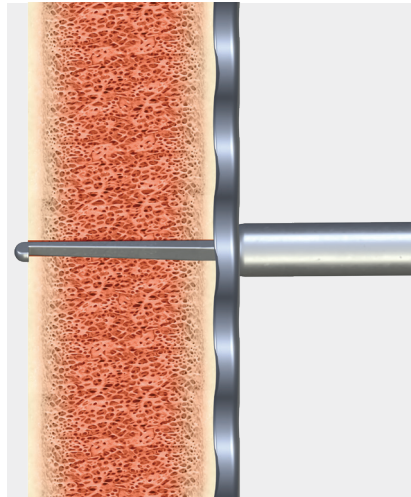
Locking Screw Placement Cross Section



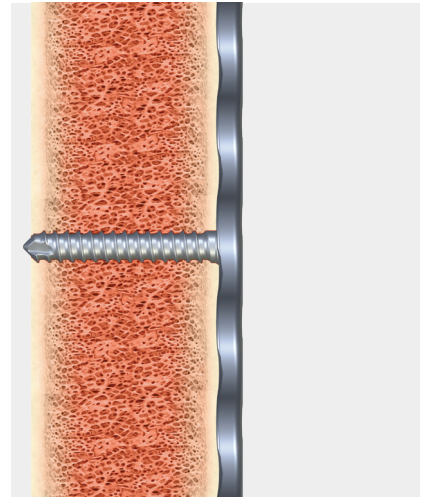
Top, Cross-Section Detail



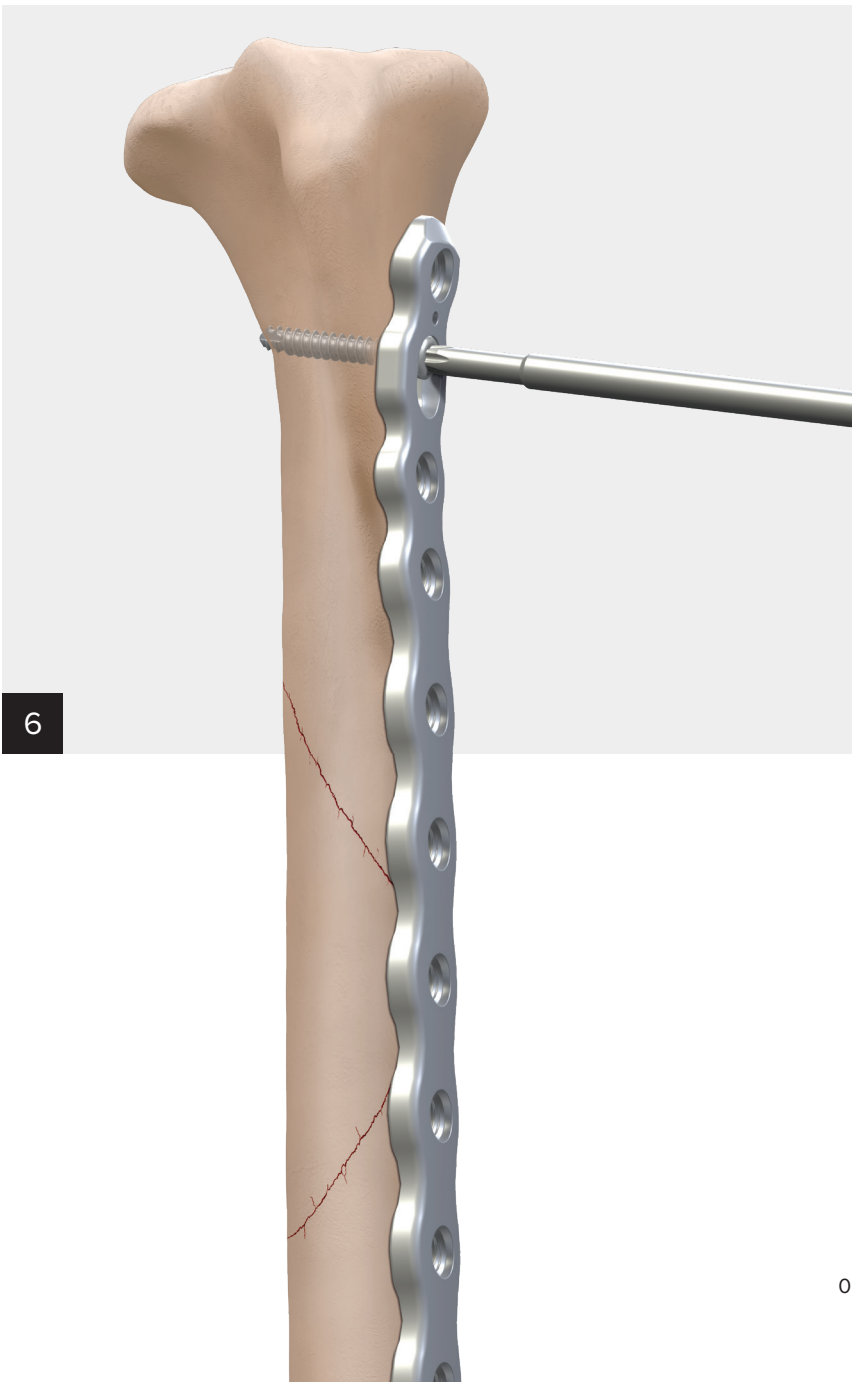
Drill Side Cross Section



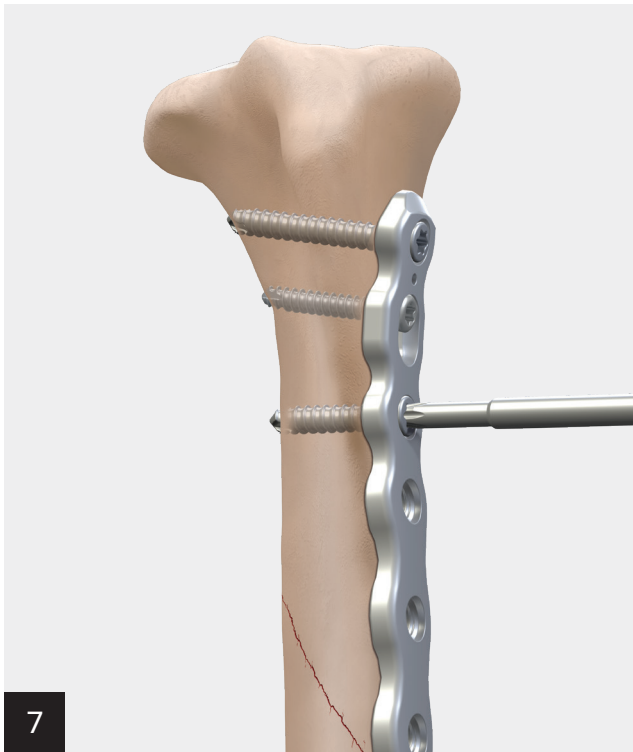
Depth Gauge Measurement Side Cross Section



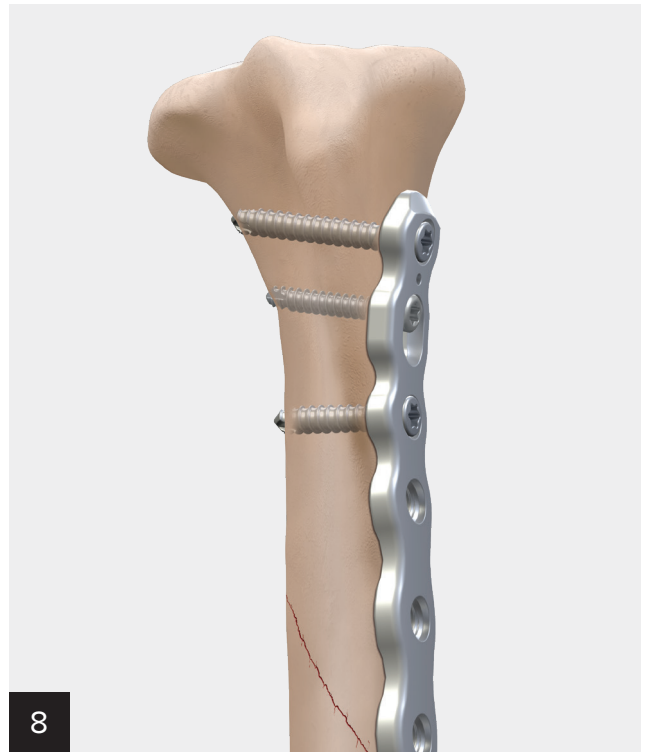
Locking Screw Placement Cross Section



If compression is desired, place a cortical screw in the compression slot. To do so, place the universal drill guide farthest away from the fracture within the compression hole of the plate, then drill, measure, and insert the screw. Placing the guide farther from the fracture will result in greater compression. To ensure compression is obtained, a fixed point on the distal end will need to be in place.



Drill and place the additional locking screws desired, ideally six cortices on each side of the fracture.



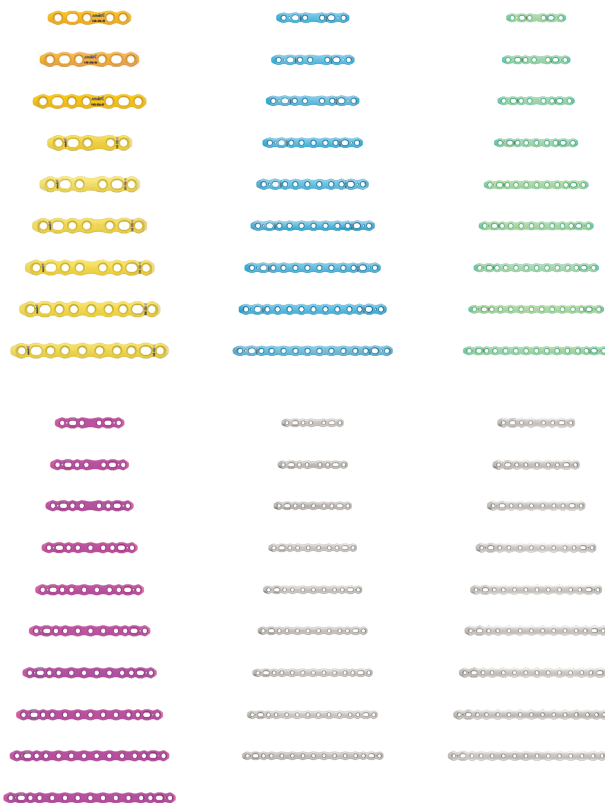
Final fixation

Ordering Information

Implants

Product Description	Item Number
1.6 mm Straight Plates	
Straight Plate, Ti, 1.6 mm, 5 hole	VAR-3116-05
Straight Plate, Ti, 1.6 mm, 6 hole	VAR-3116-06
Straight Plate, Ti, 1.6 mm, 7 hole	VAR-3116-07
Straight Plate Broad, Ti, 1.6 mm, 5 hole	VAR-3116B-05
Straight Plate Broad, Ti, 1.6 mm, 6 hole	VAR-3116B-06
Straight Plate Broad, Ti, 1.6 mm, 7 hole	VAR-3116B-07
Straight Plate Broad, Ti, 1.6 mm, 8 hole	VAR-3116B-08
Straight Plate Broad, Ti, 1.6 mm, 9 hole	VAR-3116B-09
Straight Plate Broad, Ti, 1.6 mm, 10 hole	VAR-3116B-10
2.0 mm Straight Plates	
Straight Plate, Ti, 2.0 mm, 6 hole	VAR-3120-06
Straight Plate, Ti, 2.0 mm, 7 hole	VAR-3120-07
Straight Plate, Ti, 2.0 mm, 8 hole	VAR-3120-08
Straight Plate, Ti, 2.0 mm, 9 hole	VAR-3120-09
Straight Plate, Ti, 2.0 mm, 10 hole	VAR-3120-10
Straight Plate, Ti, 2.0 mm, 11 hole	VAR-3120-11
Straight Plate, Ti, 2.0 mm, 12 hole	VAR-3120-12
Straight Plate, Ti, 2.0 mm, 13 hole	VAR-3120-13
Straight Plate, Ti, 2.0 mm, 14 hole	VAR-3120-14
Straight Plate, Ti, 2.0 mm, 15 hole	VAR-3120-15
2.4 mm Straight Plates	
Straight Plate, Ti, 2.4 mm, 6 hole	VAR-3124-06
Straight Plate, Ti, 2.4 mm, 7 hole	VAR-3124-07
Straight Plate, Ti, 2.4 mm, 8 hole	VAR-3124-08
Straight Plate, Ti, 2.4 mm, 9 hole	VAR-3124-09
Straight Plate, Ti, 2.4 mm, 10 hole	VAR-3124-10
Straight Plate, Ti, 2.4 mm, 11 hole	VAR-3124-11
Straight Plate, Ti, 2.4 mm, 12 hole	VAR-3124-12
Straight Plate, Ti, 2.4 mm, 13 hole	VAR-3124-13
Straight Plate, Ti, 2.4 mm, 14 hole	VAR-3124-14
Straight Plate, Ti, 2.4 mm, 15 hole	VAR-3124-15
3.0 mm Straight Plates	
Straight Plate, Ti, 3.0 mm, 6 hole	VAR-3130-06
Straight Plate, Ti, 3.0 mm, 7 hole	VAR-3130-07
Straight Plate, Ti, 3.0 mm, 8 hole	VAR-3130-08
Straight Plate, Ti, 3.0 mm, 9 hole	VAR-3130-09
Straight Plate, Ti, 3.0 mm, 10 hole	VAR-3130-10
Straight Plate, Ti, 3.0 mm, 11 hole	VAR-3130-11
Straight Plate, Ti, 3.0 mm, 12 hole	VAR-3130-12
Straight Plate, Ti, 3.0 mm, 13 hole	VAR-3130-13
Straight Plate, Ti, 3.0 mm, 14 hole	VAR-3130-14
Straight Plate, Ti, 3.0 mm, 15 hole	VAR-3130-15

Product Description	Item Number
3.5 mm Straight Plates	
Straight Plate, SS, 3.5 mm, 6 hole	VAR-3035-06
Straight Plate, SS, 3.5 mm, 7 hole	VAR-3035-07
Straight Plate, SS, 3.5 mm, 8 hole	VAR-3035-08
Straight Plate, SS, 3.5 mm, 9 hole	VAR-3035-09
Straight Plate, SS, 3.5 mm, 10 hole	VAR-3035-10
Straight Plate, SS, 3.5 mm, 11 hole	VAR-3035-11
Straight Plate, SS, 3.5 mm, 12 hole	VAR-3035-12
Straight Plate, SS, 3.5 mm, 13 hole	VAR-3035-13
Straight Plate, SS, 3.5 mm, 14 hole	VAR-3035-14
Straight Plate, SS, 3.5 mm, 15 hole	VAR-3035-15
Straight Plate Broad, SS, 3.5 mm, 8 hole	VAR-3035B-08
Straight Plate Broad, SS, 3.5 mm, 9 hole	VAR-3035B-09
Straight Plate Broad, SS, 3.5 mm, 10 hole	VAR-3035B-10
Straight Plate Broad, SS, 3.5 mm, 11 hole	VAR-3035B-11
Straight Plate Broad, SS, 3.5 mm, 12 hole	VAR-3035B-12
Straight Plate Broad, SS, 3.5 mm, 13 hole	VAR-3035B-13
Straight Plate Broad, SS, 3.5 mm, 14 hole	VAR-3035B-14
Straight Plate Broad, SS, 3.5 mm, 15 hole	VAR-3035B-15
Straight Plate Broad, SS, 3.5 mm, 16 hole	VAR-3035B-16
Straight Plate Broad, SS, 3.5 mm, 17 hole	VAR-3035B-17



T-Plates

Product Description	Item Number
1.6 mm T-Plate	
T-plate, Ti, 1.6 mm, 2-hole/3-hole	VAR-3116T-2-3
T-plate Broad, Ti, 1.6 mm, 2-hole/3-hole	VAR-3116BT-2-3
T-plate Broad, Ti, 1.6 mm, 3-hole/4-hole	VAR-3116BT-3-4
2.0 mm T-Plate	
T-plate, Ti, 2.0 mm, 2-hole/4-hole	VAR-3120T-2-4
T-plate, Ti, 2.0 mm, 3-hole/4-hole	VAR-3120T-3-4
2.4 mm T-Plate	
T-plate, Ti, 2.4 mm, 2-hole/4-hole	VAR-3124T-2-4
T-plate, Ti, 2.4 mm, 3-hole/4-hole	VAR-3124T-3-4
3.0 mm T-Plate	
T-plate, Ti, 3.0 mm, 2-hole/4-hole	VAR-3130T-2-4
T-plate, Ti, 3.0 mm, 3-hole/4-hole	VAR-3130T-3-4
3.5 mm T-Plate	
T-plate, SS, 3.5 mm, 2-hole/4-hole	VAR-3035T-2-4
T-plate, SS, 3.5 mm, 3-hole/4-hole	VAR-3035T-3-4



Screws

Product Description	Item Number
1.6 mm Low-Profile Cortical, Variable Angle	
Low-Profile Cortical Screw, 1.6 mm × 6 mm–20 mm Sizes: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20 mm	VAR-8916-06 to -20
Low-Profile Variable Angle Screw, 1.6 mm × 6 mm–20 mm Sizes: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20 mm	VAR-8916V-06 to -20
2.0 mm Low-Profile Cortical, Variable Angle, Locking	
Low-Profile Cortical Screw, 2.0 mm × 6 mm–30 mm Sizes: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8920-06 to -30
Low-Profile Variable Angle Screw, 2.0 mm × 6 mm–30 mm Sizes: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8920V-06 to -30
Low-Profile Locking Screw, 2.0 mm × 6 mm–30 mm Sizes: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8920L-06 to -30
2.4 mm Low-Profile Cortical, Variable Angle, Locking	
Low-Profile Cortical Screw, 2.4 mm × 8 mm–30 mm Sizes: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8924-08 to -30
Low-Profile Variable Angle Screw, 2.4 mm × 8 mm–30 mm Sizes: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8924V-08 to -30
Low-Profile Locking Screw, 2.4 mm × 8 mm–30 mm Sizes: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-8924L-08 to -30
3.0 mm Low-Profile Cortical, Variable Angle, Locking	
Low-Profile Cortical Screw, 3.0 mm × 8 mm–40 mm Sizes: 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40 mm	VAR-8930-08 to -40
Low-Profile Variable Angle Screw, 3.0 mm × 8 mm–40 mm Sizes: 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40 mm	VAR-8930V-08 to -40
Low-Profile Locking Screw, 3.0 mm × 8 mm–40 mm Sizes: 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38 40 mm	VAR-8930L-08 to -40
3.5 mm Low-Profile Cortical, Locking	
Low-Profile Cortical Screw, 3.5 mm × 8 mm–65 mm Sizes: 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 65 mm	VAR-8835-08 to -65
Low-Profile Locking Screw, 3.5 mm × 10 mm–60 mm Sizes: 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60 mm	VAR-8835L-10 to -60
4.0 mm Low-Profile Cortical, Locking	
Low-Profile Locking Screw, 4.0 mm × 18 mm–65 mm Sizes: 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 65 mm	VAR-8840L-18 to -65

Equipment Part List

Product Description	Item Number
Disposable/Limited Reusable	
Drill Bit, solid, AO, 1.1 mm	VAR-4016D
Drill Bit, solid, AO, 1.5 mm	VAR-4020D
Drill Bit, solid, AO, 1.8 mm	VAR-4024D
Drill Bit, solid, AO, 2.3 mm	VAR-4030D
Drill Bit, solid, short, AO, 2.5 mm	VAR-8943-30
Drill Bit, solid, AO, 2.8 mm	VAR-4035D
Drill Bit, solid, AO, 3.5 mm	VAR-4040D
Drill Bit, solid, short, AO, 1.1 mm*	VAR-4016SD
Drill Bit, solid, short, AO, 1.5 mm*	VAR-4020SD
Drill Bit, solid, short, AO, 1.8 mm*	VAR-4024SD
Drill Bit, solid, short, AO, 2.3 mm*	VAR-4030SD
Guide Wire w/ Trocar, 0.86 mm × 80 mm	VAR-8929K
Guide Wire w/ Trocar, 1.1 mm × 150 mm	VAR-8933K
Guide Wire w/ Trocar, 1.3 mm × 150 mm	VAR-8937K
Instruments	
Depth Measuring Device, 1.6 mm/2.0 mm/2.4 mm	VAR-2024DD
Depth Measuring Device, 2.7 mm/3.0 mm/3.5 mm/4.0 mm	VAR-8943-15
T6 Driver, 1.6 mm/2.0 mm	VAR-4020-01
T8 Driver, 2.4 mm	VAR-4024-01
T10 Driver, 3.0 mm	VAR-8944DH
T15 Driver, 3.5 mm	VAR-8941DH
T6 Screwdriver, 1.6 mm/2.0 mm	VAR-4020-02
T8 Screwdriver, 2.4 mm	VAR-4024-02
T10 Screwdriver, 3.0 mm	VAR-8943-08
T15 Screwdriver, 3.5 mm	VAR-8943-10
Screw Holding Forceps	VAR-8941F
Drill/Depth Guide, locking, 1.6 mm	VAR-4016DG
Drill/Depth Guide, locking, 2.0 mm	VAR-4020DG
Drill/Depth Guide, locking, 2.4 mm	VAR-4024DG
Drill/Depth Guide, locking, 3.0 mm	VAR-4030DG
Drill/Depth Guide, locking, 3.5 mm	VAR-4035DG
Drill/Depth Guide, locking, 4.0 mm	VAR-4040DG
Drill Guide, 1.1 mm	VAR-4016TDG
Tap/Drill Guide, 2.0 mm/1.5 mm	VAR-4020TDG
Tap/Drill Guide, 2.4 mm/1.8 mm	VAR-4024TDG
Tap/Drill Guide, 3.0 mm/2.3 mm	VAR-4030TDG
Drill Guide, 3.5 mm/2.5 mm	VAR-8943-14
BB-Tak, small, threaded	VAR-8933TBB
BB-Tak, small	VAR-8933BB
BB-Tak, large, threaded	VAR-8941TBB
BB-Tak, large	VAR-8941BB
Drill Guide, variable, 1.6 mm	VAR-4016VDG
Drill Guide, variable, 2.0 mm	VAR-4020VDG
Drill Guide, variable, 2.4 mm	VAR-4024VDG
Drill Guide, variable, 3.0 mm	VAR-4030VDG
Bone Tap, 2.0 mm	VAR-4020T
Bone Tap, 2.4 mm	VAR-4024T

Product Description	Item Number
Bone Tap, 3.0 mm	VAR-4030T
Bending Plug, cannulated, 1.6/ 2.0 mm	VAR-4020-04
Bending Plug, cannulated, 2.4 mm	VAR-4024-04
Bending Plug, cannulated, 3.0 mm	VAR-4030-04
Bending Plug, cannulated, 3.5 mm	VAR-4035-04
Bending Iron, small, 1.6 mm/2.0 mm	VAR-4000-07
Bending Iron, medium, 2.4 mm/3.0 mm	VAR-4000-08
Bending Iron, large 3.5 mm/broad 3.5 mm	VAR-4000-09
Freer Elevator*	VAR-4000-10
Hohmann Retractor, double ended, 6 mm/10 mm	VAR-4000-11
Ikuta Clamp	VAR-4000-12
Lobster Clamp, mini	VAR-4000-13
Lobster Clamp, mini, radiolucent	VAR-4000-14
Periosteal Elevator, 6 mm curved blade*	VAR-4000-15
Pliers, needle nose*	VAR-4000-16
Pointed Reduction Forceps	VAR-4000-17
Reduction Forceps, guide wire	VAR-4000-18
Sharp Hook*	VAR-4000-19
Termite Forceps*	VAR-4000-20
Toothed Reduction Forceps, kocher	VAR-4000-21
Cases and Caddies	
General Instrument Case*	VAR-4000GC
General Instrument Tray Insert*	VAR-4000GC-01
Bending Plug Caddy	VAR-4000BPC
Screw Caddy, 1.6 mm	VAR-3016SC-01
Screw Caddy, 2.0 mm	VAR-3020SC-01
Screw Caddy, 2.4 mm	VAR-3024SC-01
Screw Caddy, 3.0 mm	VAR-3030SC-01
Screw Caddy, 3.5 mm/4.0 mm	VAR-4035SC-02

*Available soon



This is not veterinary advice and Arthrex recommends that veterinarians be trained in the use of any particular product before using it in surgery. A veterinarian must always rely on their own professional clinical judgment when deciding whether to use a particular product. A veterinarian must always refer to the package insert, product label, and/or directions for use before using any Arthrex product. Products may not be available in all markets because product availability is subject to the regulatory or veterinary practices in individual markets. 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. Please contact your Arthrex representative if you have questions about availability of products in your area.

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