OrthoLine™ Ilial Fracture System

Surgical Technique

Arthrex® Vet Systems

OrthoLine™ Ilial Fracture System

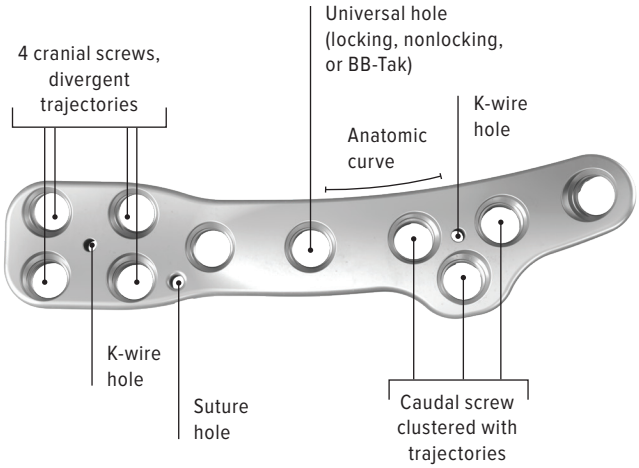
Introduction

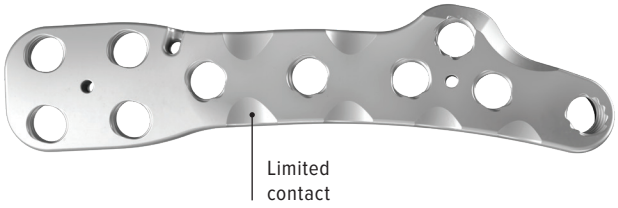
The OrthoLine ilial fracture plate system includes a range of sizes from 1.6 mm to 3.5 mm, with an additional long 3.5 plate for larger dogs. Each plate size is anatomically contoured to mimic the anatomy of patients within a given size range. The plate includes cranial divergent screw trajectories to improve purchase in the cranial ilium. The caudal screw trajectories are more dorsally oriented to help diverge away from the coxofemoral joint. Additionally, the ilial plate includes a suture hole that fits Arthrex VetSuture for apposition of the gluteal musculature at closure.

Features and Benefits

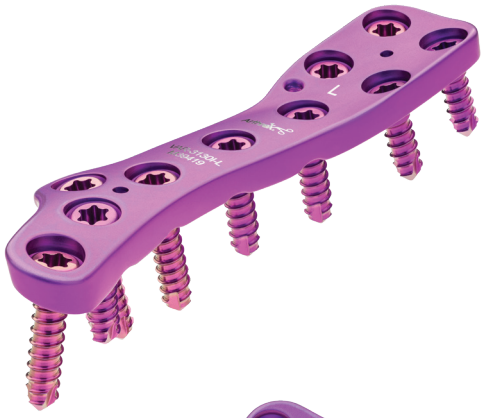
- Divergent cranial screw trajectories for added pull-out strength
- Caudal screw trajectories to diverge from coxofemoral joint
- Designed for cranial, caudal, and oblique fracture patterns
- Anatomic plate design with left and right options
- High screw density where needed
- Suture hole to aid in soft tissue closure
- Scalloped underside to distribute stress and minimize contact

Anatomic Design



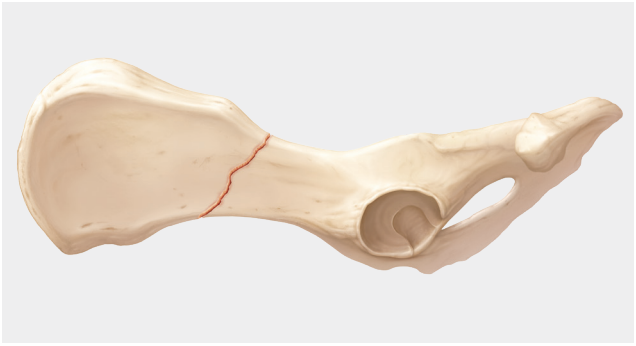


Small tapered end for minimally invasive placement

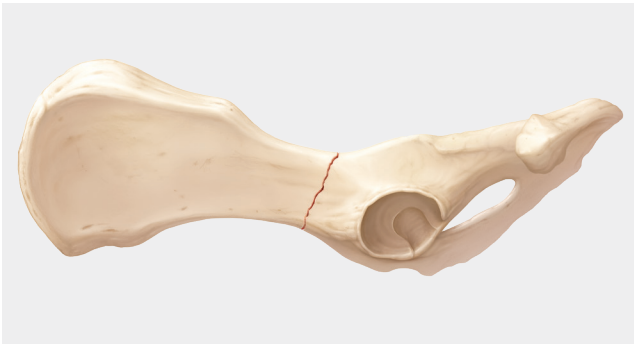


Fracture Patterns

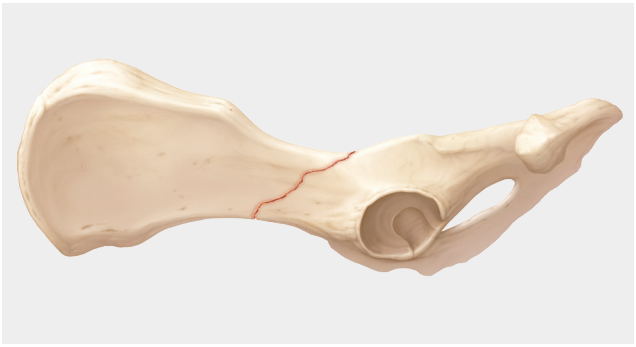
Transverse fracture pattern



Cranial fracture pattern

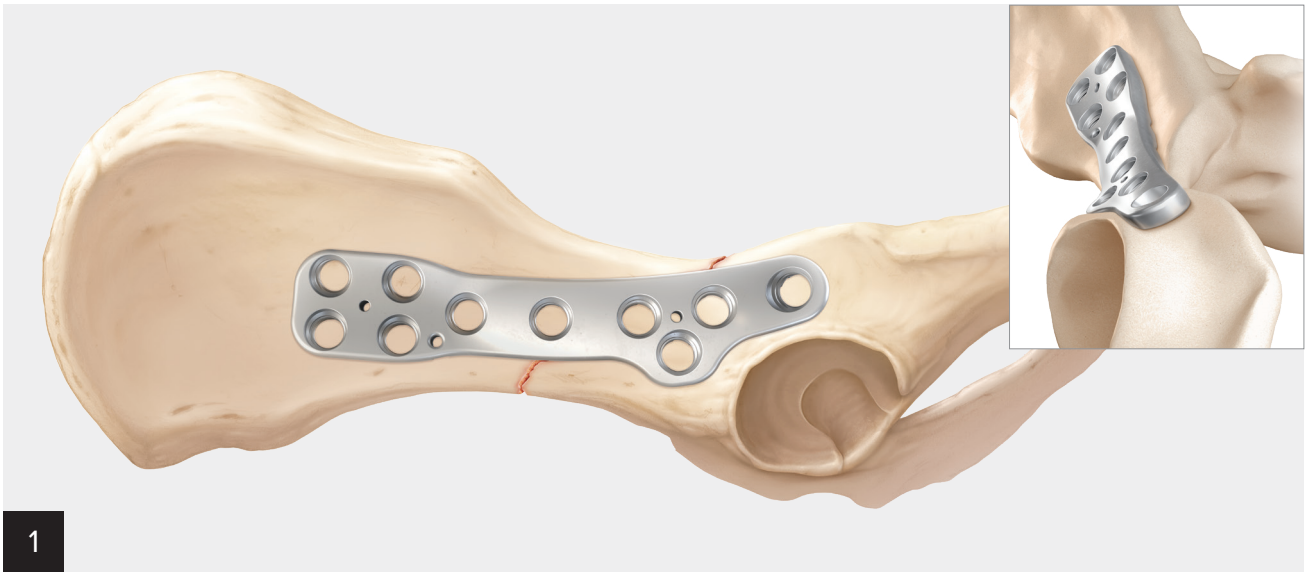


Caudal fracture pattern



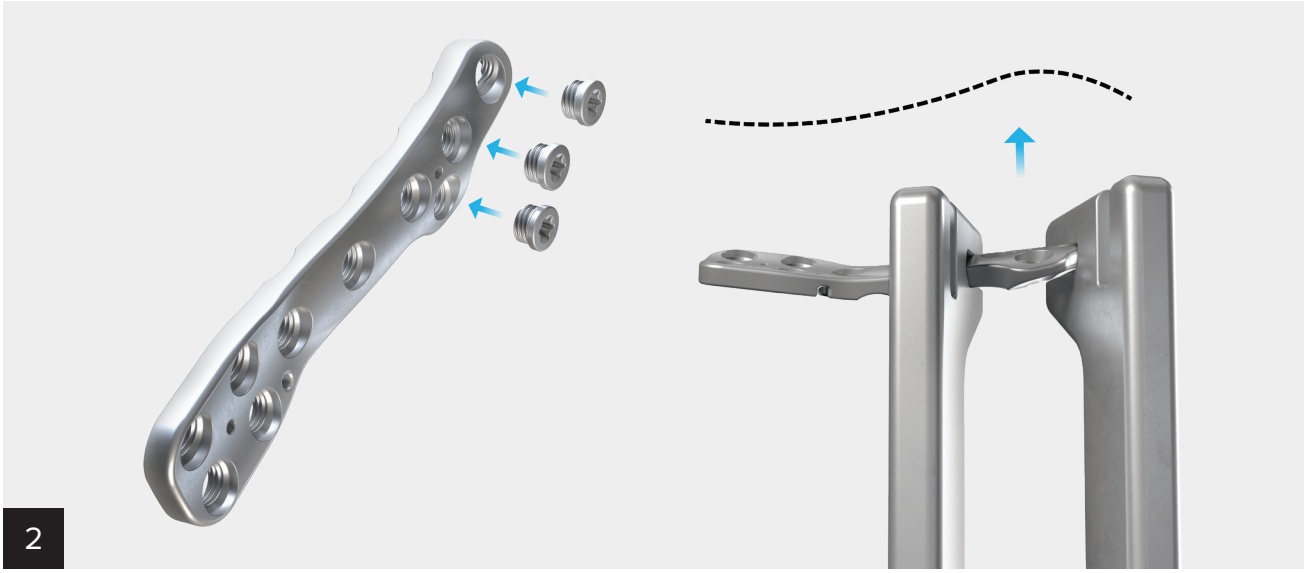
Long oblique fracture pattern

Surgical Technique



1

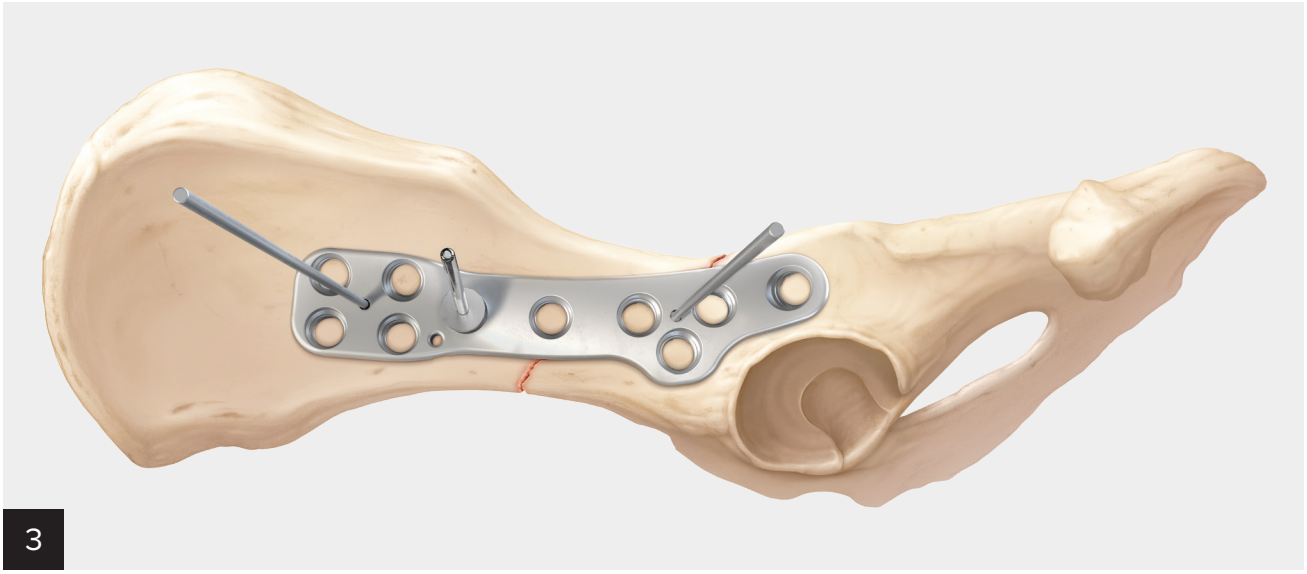
To determine contour requirements, place the implant on the bone surface of the ilium. The plate may be shifted cranial or caudal based on surgeon preference and specific fracture type. In plate application, the most-ventral screws can be placed just cranial to the cranial pillar of the acetabulum. A caudal twist may be required at the most-caudal aspect of the plate. Care must be taken with large plate contours as screw trajectories will be altered.



2

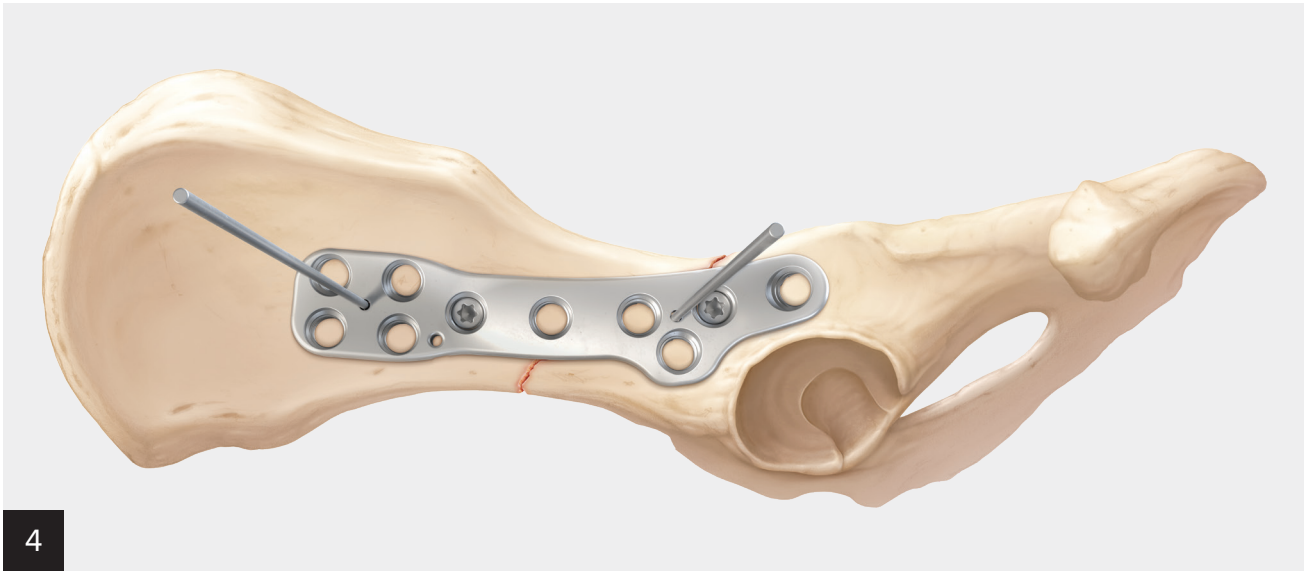
Using the appropriate screwdriver, place the cannulated threaded bending plugs into the locking screw holes where the plate will be contoured. Contour the plate as necessary using bending irons or another form of plate benders.

To bend the tip of the plate, use the fork end of the bending iron. Once the contouring is complete, the bending plugs can be removed or used in conjunction with the appropriate size K-wire for temporary fixation.



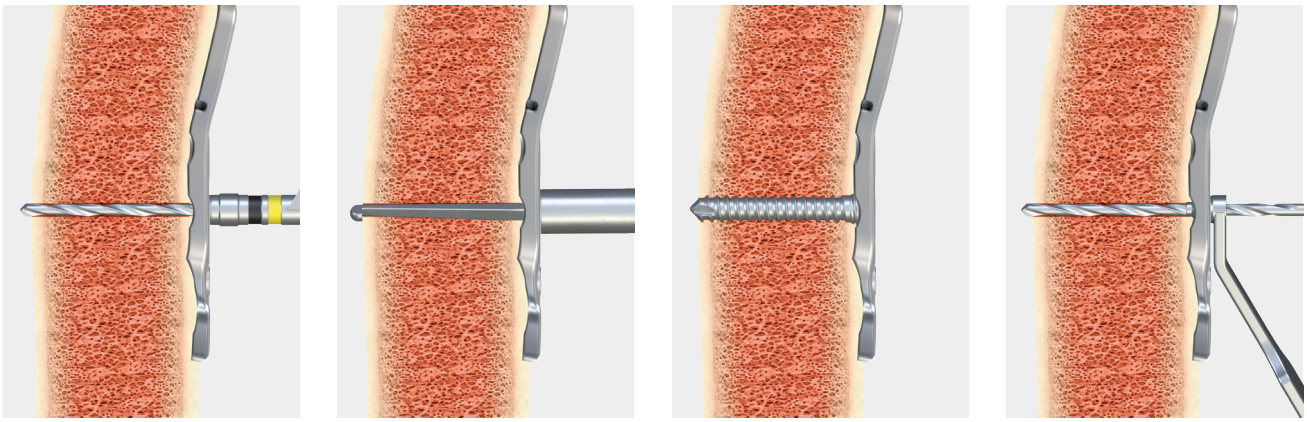
3

The plate may be temporarily affixed to the bone using multiple methods. For temporary fixation, 3 methods may be used: K-wire holes, K-wires in conjunction with cannulated bending plugs, and/or the application of a threaded BB-Tak in the center of a universal hole.

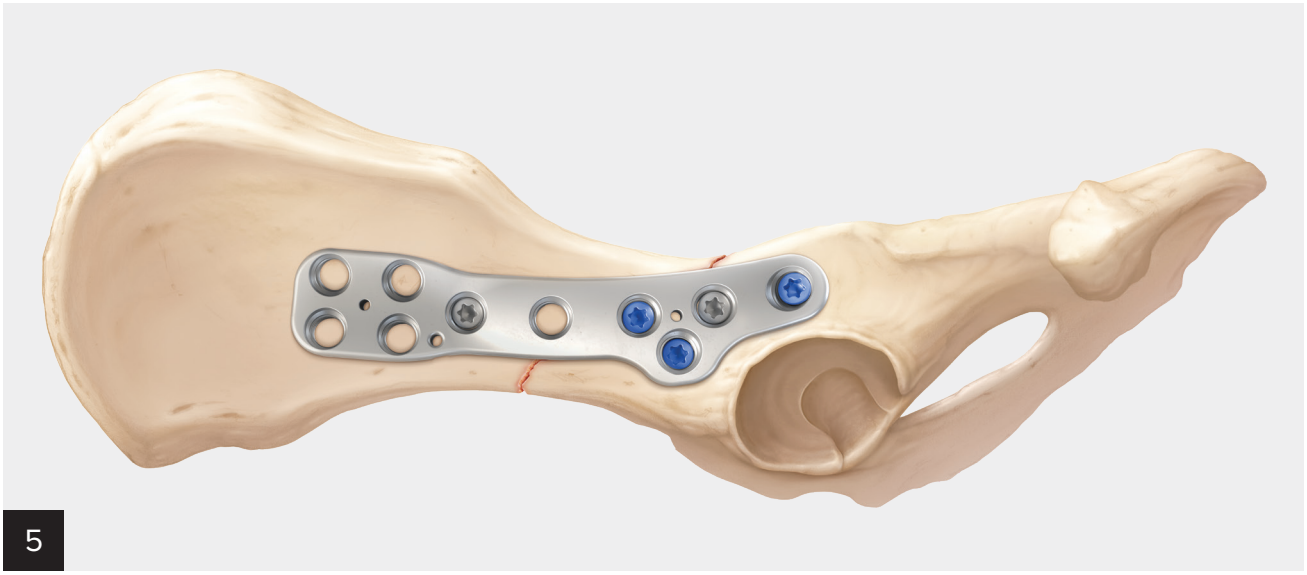


4

First, affix the plate to the cranial and caudal fracture segments using a cortical or locking screw. When using the locking guide, it is important to note that the guide must be inserted parallel to the screw hole. This is not always perpendicular to the plate surface in Arthrex anatomic plates, as screw trajectories are unique. Inappropriate drill guide alignment may result in locking thread damage and should be avoided. Using a second sterile plate as a reference guide may be helpful. Standard techniques are employed in drilling, measuring, and placing screws.



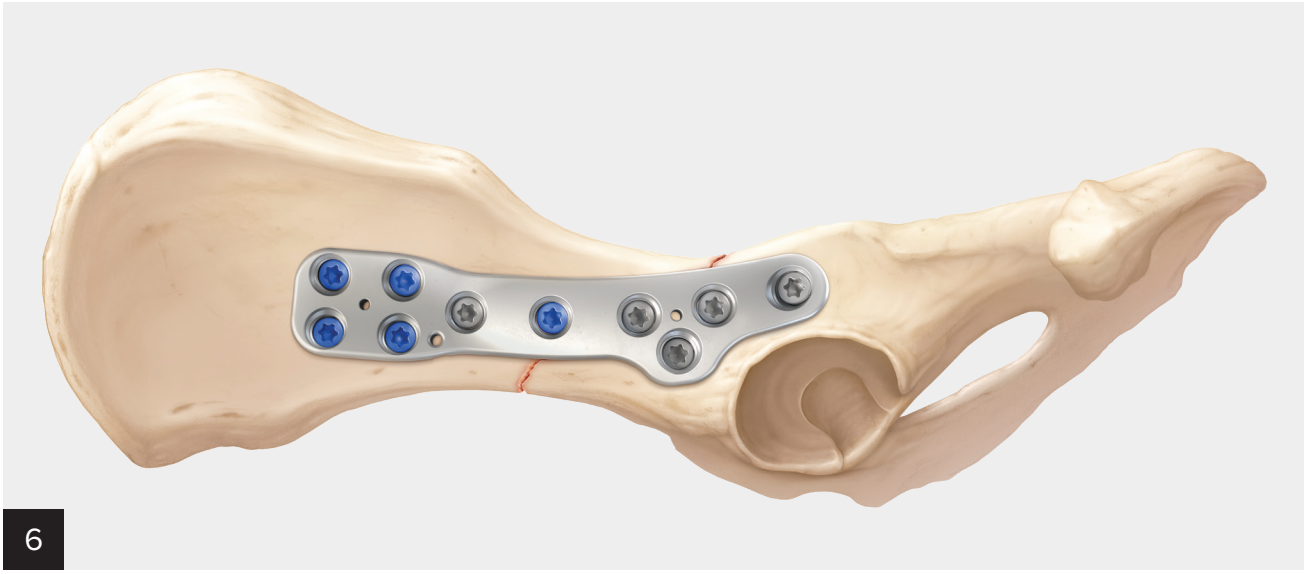
Note: If desired, the variable-angle guide can be used for titanium implants sizes 3.0 mm and below. If care is not taken, a screw placed using a variable-angle method can interfere with another screw.



5

Place locking screws caudal to the fracture as required by drilling using the locking drill guide, measuring, and placing the screw. When using power, the screw is brought into contact with the plate and should be manually locked into place. Ensure the screws avoid the fracture line.

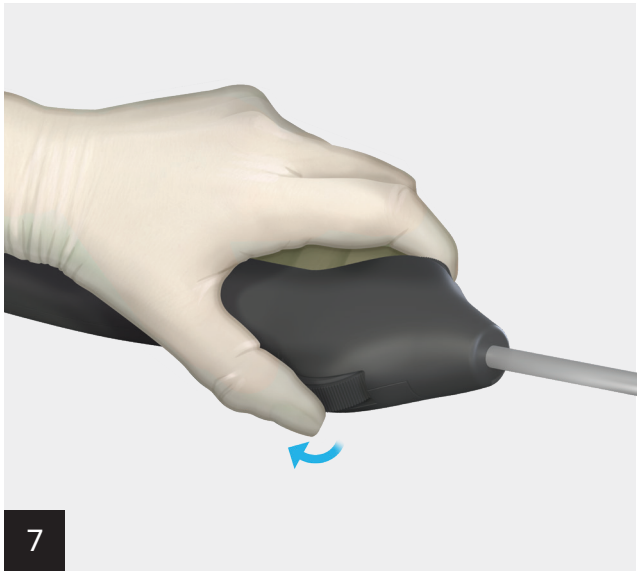
Note: The variable-angle guide can also be used for variable-angle locking titanium screws sizes 3.0 mm and below.



6

Place locking screws cranial of the fracture as required by drilling using the locking drill guide, measuring, and placing the screw. The screw is brought into contact with the plate and should be manually locked into place. Screw trajectories may be varied to incorporate the sacral body for maximum fixation strength of the cranial segment. Titanium variable-angle locking titanium screws may be used in sizes 3.0 mm and below, or a cortical screw can be placed in any of the universal holes in the Arthrex Ilial fracture plate. Ensure the screws avoid the fracture line.

Note: The variable-angle guide can also be used for variable-angle locking titanium screws sizes 3.0 mm and below.



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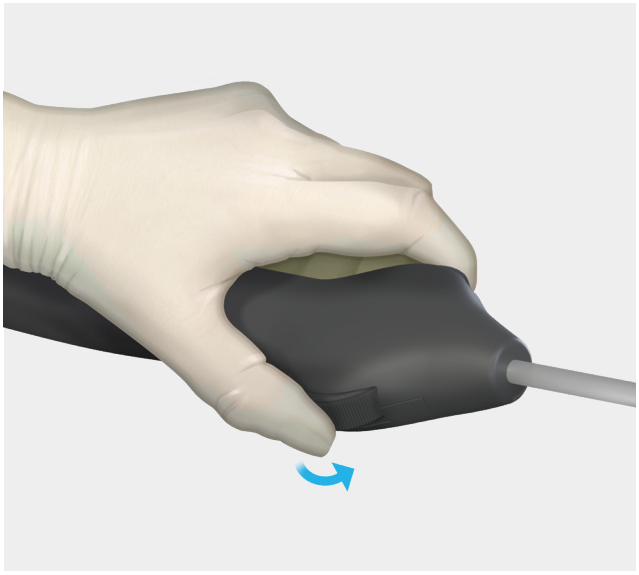
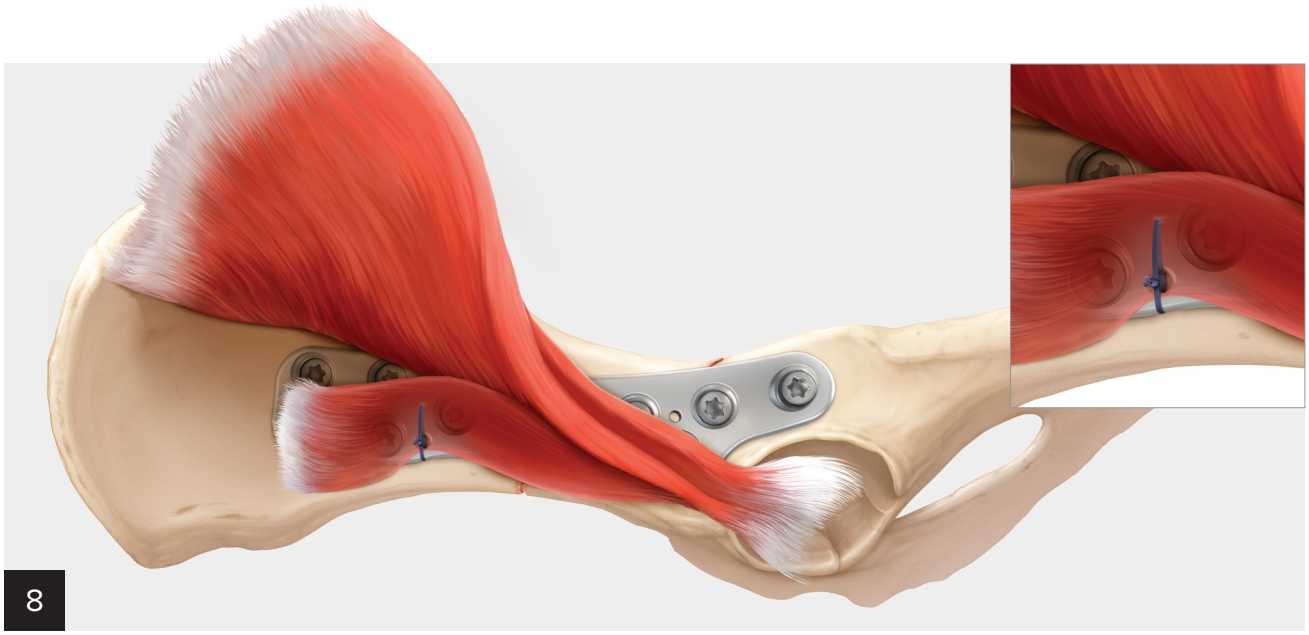


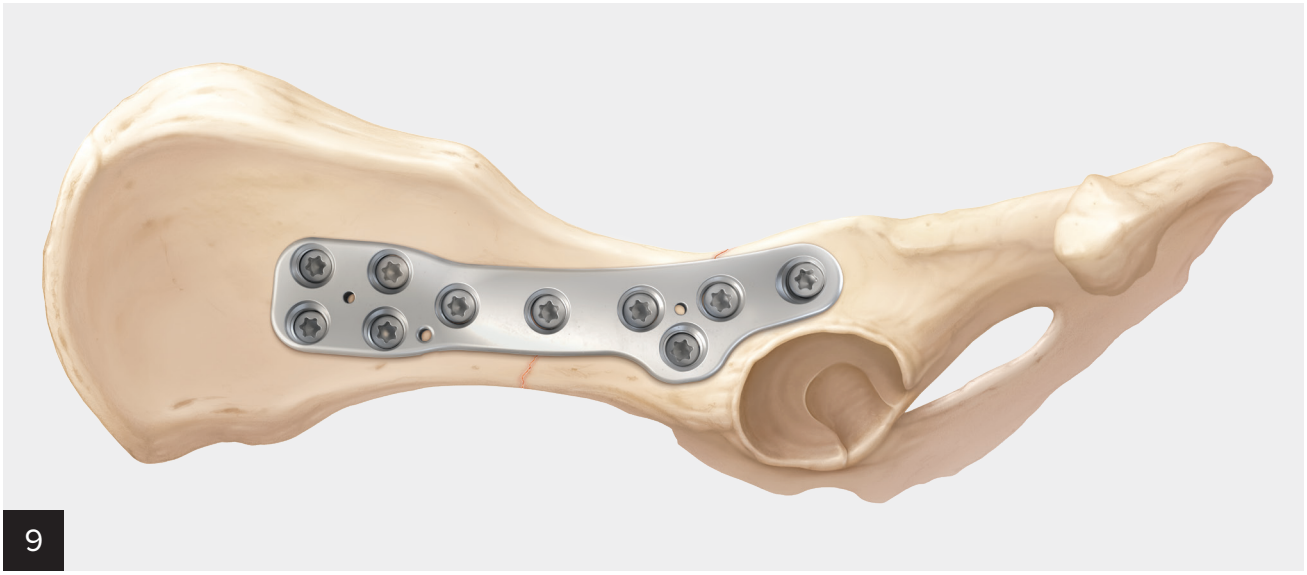
Secure VetSuture to the gluteal muscle in a mattress pattern, cut the needle from the suture, feed the suture end through the suture hole, and tie over the plate. A QuickPass™ SutureLasso™ suture passer may be used to aid in placement of the VetSuture. Finish with routine closure. The QuickPass SutureLasso suture passer is placed under the suture hole in the ilial plate. The nitinol loop is advanced by rolling the thumbwheel from top to bottom. Ensure the SutureLasso suture passer has passed through the suture hole, then place the VetSuture into the lasso and move the thumbwheel forward to tension the suture passer. Pull the suture through the suture hole and tie it in a routine fashion.

Note: If the plate is placed against the bone, the suture may need to be placed prior to bringing the plate to the bone with screw fixation.



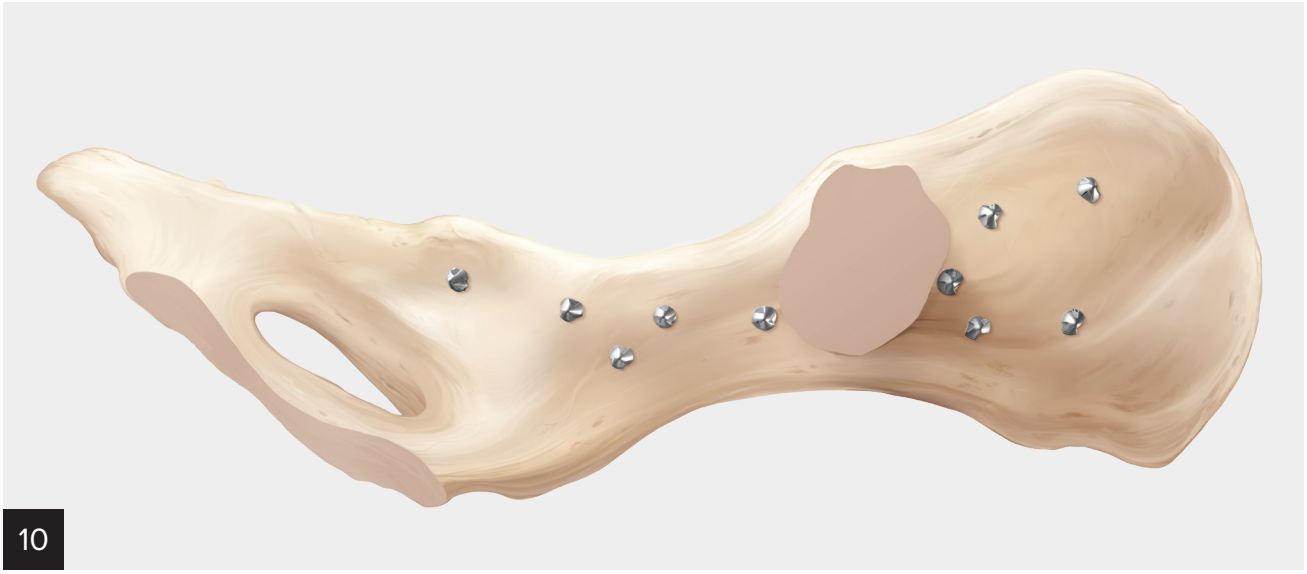
8

Finish with routine closure.



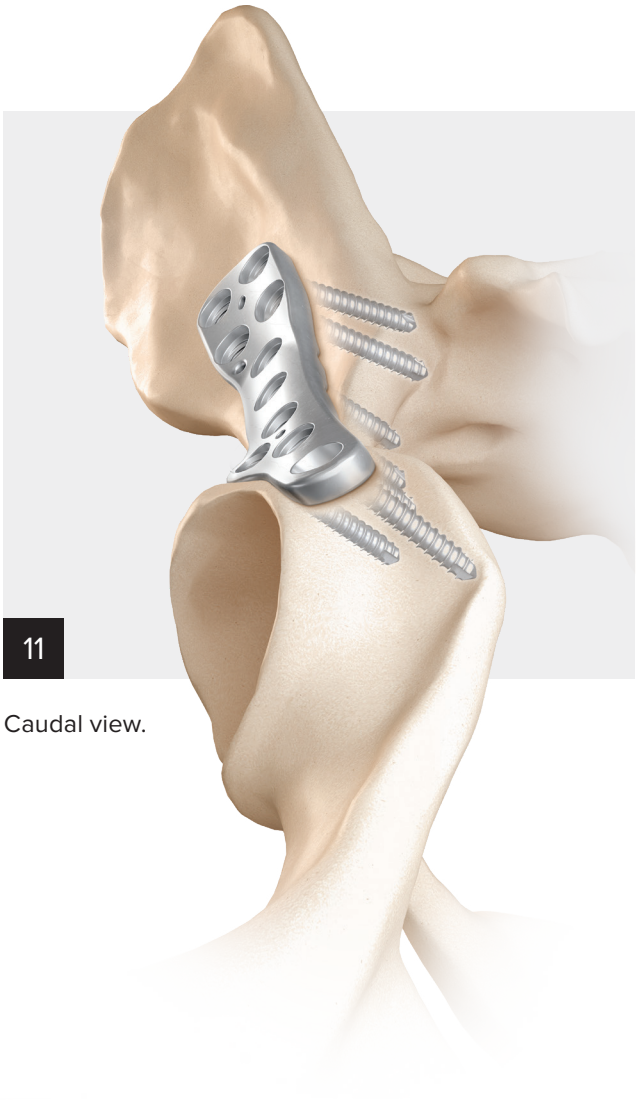
9

Lateral view.



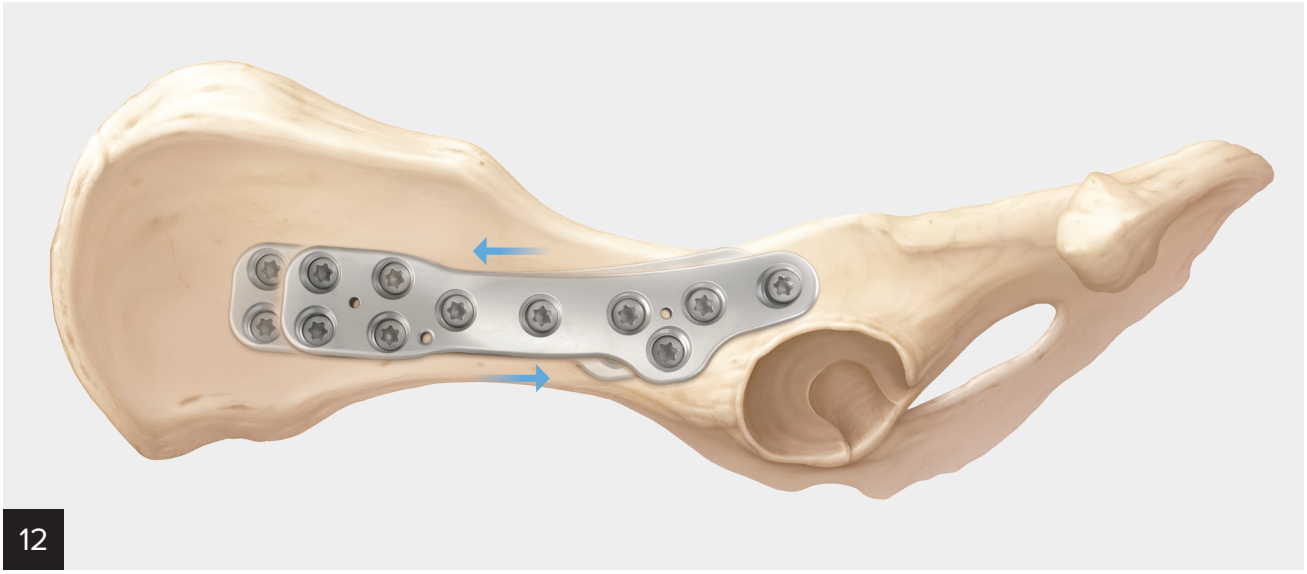
10

Medial screw trajectory view, with outline of the sacral body.



11

Caudal view.



12

Depending on the fracture pattern, placement of the plate can be crainial or caudal.

Surgical Pearls

- The plate may be shifted cranial or caudal as desired by the surgeon and given the specific fracture type
- Care must be taken with large plate contours as screw trajectories will be altered
- Screw trajectories vary and should be noted prior to locking drill guide insertion
- The locking drill guide must be inserted parallel to the screw hole. This is not always perpendicular to the plate
- Using a second sterile plate as a reference guide may be helpful in understanding screw trajectories
- The nitinol loop of the QuickPass™ SutureLasso™ suture passer is advanced by rolling the thumbwheel from top to bottom
- The QuickPass SutureLasso suture passer may be helpful in passing the suture end through the plate during gluteal closure
- A variable-angle screw or cortical screw may be used to change screw angulation for maximal engagement of the sacral body
- Care should be taken to not penetrate the spinal canal

Notes

Suture Reference Chart

Plate Size	Plate	VetSuture	Product Description
1.6 mm/2.0 mm		VAR-**R316**	Polydioxanone 3-0, SH, TP, ½ C
		VAR-**R317**	Polydioxanone 2-0, SH, TP, ½ C
		VAR-**J8665**	Polypropylene 3-0, FS-2, Rev Ctg, ⅜ C
2.0 mm/2.4 mm		VAR-**R334**	Polydioxanone 0, CT-2, TP, ½ C
		VAR-**R340**	Polydioxanone 0, CT-1, TP, ½ C
		VAR-**R467**	Polydioxanone 0, CP-1, Rev Ctg, ½ C
3.0 mm/3.5 mm		VAR-**R468**	Polydioxanone 1, CP-1, Rev Ctg, ½ C
			
			

Ordering Information

Illial Fracture Plates

Product Description	Item Number
1.6 mm Ilial Fracture Plates (Gold)	
Ilial fracture plate, titanium, 1.6 mm, left **(a)** Ilial fracture plate, titanium, 1.6 mm, right **(b)**	VAR-**3116I-L** VAR-**3116I-R**
2.0 mm Ilial Fracture Plates (Blue)	
Ilial fracture plate, titanium, 2.0 mm, left **(c)** Ilial fracture plate, titanium, 2.0 mm, right **(d)**	VAR-**3120I-L** VAR-**3120I-R**
2.4 mm Ilial Fracture Plates (Green)	
Ilial fracture plate, titanium, 2.4 mm, left **(e)** Ilial fracture plate, titanium, 2.4 mm, right **(f)**	VAR-**3124I-L** VAR-**3124I-R**
3.0 mm Ilial Fracture Plates (Purple)	
Ilial fracture plate, titanium, 3.0 mm, left **(g)** Ilial fracture plate, titanium, 3.0 mm, right **(h)**	VAR-**3130I-L** VAR-**3130I-R**
3.5 mm Ilial Fracture Plates (Matte)	
Ilial fracture plate, SS, 3.5 mm, left **(i)** Ilial fracture plate, SS, 3.5 mm, right **(j)** Ilial fracture plate, long, SS, 3.5 mm, left **(k)** Ilial fracture plate, long, 3.5 amm, right **(l)**	VAR-**3035I-L** VAR-**3035I-R** VAR-**3035IL-L** VAR-**3035IL-R**


(a)


(b)


(c)


(d)


(e)


(f)


(g)


(h)


(i)


(j)


(k)


(l)

Screws

Product Description	Item Number
1.6 mm Low-Profile Cortical, Variable Angle, Titanium	
Low-profile cortical screw 1.6 mm × 6-20 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 × 6-20 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, Locking, Variable Angle, Titanium	
Low-profile cortical screw 2.0 mm × 6-30 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 locking screw 2.0 mm × 6-30 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**
Low-profile variable-angle screw 2.0 mm × 6-30 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**
2.4 mm Low-Profile Cortical, Locking, Variable Angle, Titanium	
Low-profile cortical screw 2.4 mm × 8-30 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 locking screw 2.4 mm × 8-30 mm Sizes: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-**8924L-08** to **-30**
Low-profile variable-angle screw 2.4 mm × 8-30 mm Sizes: 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30 mm	VAR-**8924V-08** to **-30**
2.7 mm Low-Profile Cortical, Locking, Stainless Steel	
Low-profile cortical screw 2.7 mm × 10-34 mm Sizes: 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34 mm	VAR-**8827-10** to **-34**
Low-profile locking screw 2.7 mm × 10-34 mm Sizes: 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34 mm	VAR-**8827L-10** to **-34**
3.0 mm Low-Profile Cortical, Locking, Variable Angle, Titanium	
Low-profile cortical screw 3.0 mm × 8-40 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 locking screw 3.0 mm × 8-40 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**
Low-profile variable-angle screw 3.0 mm × 8-40 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**

Screws cont.

Product Description	Item Number
3.5 mm Low-Profile Cortical, Locking, Stainless Steel	
Low-profile cortical screw 3.5 mm × 16-60 mm Sizes: 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-**8835-16** to -**60**
Low-profile locking screw 3.5 mm × 16-60 mm Sizes: 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-16** to -**60**
4.0 mm Low-Profile, Locking, Stainless Steel	
Low-profile locking screw 4.0 mm × 18-60 mm Sizes: 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60 mm	VAR-**8840L-18** to -**60**

Disposables and Limited Reusables

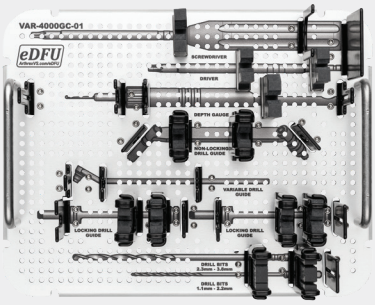
Product Description	Item Number
Drill bit, solid, AO, 1.1 mm (1.6 mm)	VAR-**4016D**
Drill bit, solid, AO, 1.5 mm (2.0 mm)	VAR-**4020D**
Drill bit, solid, AO, 1.8 mm (2.4 mm)	VAR-**4024D**
Drill bit, solid, AO 2.0 (2.7 mm)	VAR-**8944-22**
Drill bit, solid, AO, 2.3 mm (3.0 mm)	VAR-**4030D**
Drill bit, solid, AO, 2.5 mm (3.5 mm)	VAR-**8943-30**
Drill bit, solid, AO, 2.8 mm (3.5 mm)	VAR-**4035D**
Drill bit, solid, AO, 3.5 mm (4.0 mm)	VAR-**4040D**
Drill bit, solid, short, AO, 1.1 mm (1.6 mm)	VAR-**4016SD**
Drill bit, solid, short, AO, 1.5 mm (2.0 mm)	VAR-**4020SD**
Drill bit, solid, short, AO, 1.8 mm (2.4 mm)	VAR-**4024SD**
Drill bit, solid, short, AO, 2.3 mm (3.0 mm)	VAR-**4030SD**
Guidewire w/ trocar tip, 0.86 mm × 80 mm	VAR-**8929K**
Guidewire w/ trocar tip, 1.1 mm × 150 mm	VAR-**8933K**
Guidewire w/ trocar tip, 1.3 mm × 150 mm	VAR-**8937K**

Instruments

Product Description	Item Number
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 screwdriver (2.7 mm/3.0 mm)	VAR-**8944DH**
T15 driver (3.5 mm/4.0 mm)	VAR-**8941DH**
T6 screwdriver (1.6 mm/2.0 mm)	VAR-**4020-02**
T8 screwdriver (2.4 mm)	VAR-**4024-02**
Screw holding forceps (2.7 mm/3.0 mm)	VAR-**8943-08**
T15 screwdriver (3.5 mm)	VAR-**8943-10**
Locking plate holder, 2.0 mm	VAR-**4020-03**
Locking plate holder, 2.4 mm	VAR-**4024-03**
Locking plate holder, 2.7 mm/3.0 mm	VAR-**8950-09**
Locking plate holder, 3.5 mm	VAR-**8954-07**
Screw holding forceps	VAR-**8941F**

Product Description	Item Number
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, 2.7 mm	VAR-**8950-07**
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 (1.6 mm)	VAR-**4016TDG**
Tap/drill guide, 2.0 mm/1.5 mm (2.0 mm)	VAR-**4020TDG**
Tap/drill guide, 2.4 mm/1.8 mm (2.4 mm)	VAR-**4024TDG**
2.0 mm/3.0 mm nonlocking drill guide	VAR-**8943-31**
Tap/drill guide, 3.0 mm/2.3 mm (3.0 mm)	VAR-**4030TDG**
Drill guide (3.5 mm)	VAR-**8943-14**
BB-Tak, small, threaded	VAR-**8933TBB**
BB-Tak, small	VAR-**8933BB**
BB-Tak, large	VAR-**8941BB**
BB-Tak, large, threaded	VAR-**8941TBB**
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**
Bone tap, 2.7 mm	VAR-**4027T**
Bone tap, 3.0 mm	VAR-**4030T**
K-wire drill guide, 0.86 mm (1.6 mm/2.0 mm)	VAR-**4020KDG**
K-wire drill guide, 1.14 mm (2.4 mm)	VAR-**4024KDG**
K-wire drill guide, 1.14 mm (2.7 mm/3.0 mm)	VAR-**4030KDG**
K-wire drill guide, 1.3 mm (3.5 mm)	VAR-**4035KDG**
Bending plug, cannulated, 1.6 mm/2.0 mm	VAR-**4020-04**
Bending plug, cannulated, 2.4 mm	VAR-**4024-04**
Bending plug, cannulated, 2.7 mm	VAR-**4027-04**
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/3.5 mm broad)	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, needlenose	VAR-**4000-16**
Pointed reduction forceps	VAR-**4000-17**
Reduction forceps, guidewire	VAR-**4000-18**
Sharp hook	VAR-**4000-19**
Termite forceps	VAR-**4000-20**
Toothed reduction forceps, Kocher	VAR-**4000-21**

Cases and Caddies

Image	Product Description	Item Number
	OrthoLine™ case	VAR-**4000GC**
	Generic case insert	VAR-**4000GC-01**
	1.6 mm Screw caddy	VAR-**3016SC-01**
	2.0 mm Screw caddy	VAR-**3020SC-01**
	2.4 mm Screw caddy	VAR-**3024SC-01**

Cases and Caddies

Image	Product Description	Item Number
	3.0 mm Screw caddy	VAR-**3030SC-01**
	2.7 mm Screw caddy	VAR-**4027SC-01**
	3.0 mm Screw caddy	VAR-**3030SC-01**
	3.5 mm/4.0 mm Screw caddy	VAR-**4035SC-02**
	Bending plug caddy	VAR-**4000BPC**

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Arthrex manufacturer, authorized representative, and importer information (Arthrex eIFUs)

US patent information

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