





Distal Plate System Design



The Abay Femur Distal Plate system:

- Is indicated for buttressing multifragmentary distal femur fractures including supra-condylar, intra-articular and extra-articular condylar fractures, periprosthetic fractures, fractures in normal or osteopenic bone, nonunions and malunions.
- Is anatomically contoured:
 - The Femur Condylar Plate arches to match the sagittal anatomy of the femoral shaft .
 - The articular end is shaped to match the contour of the lateral conidial .
- Compatible plate shaft Screw Holes for locking or non-locking screws
- Similar instrumentation & procedure steps as conventional metal plates
- * For further information please refer to the product instructions for use.

The Implants

The Plates are supplied sterile in different diameters & lengths:

Femur (Left/Right)

Referance No	Description	Right/Left	Length	Ubb
0401-07169	Femur Distal Anatomic Plate 7 Holes	Left	169 mm	8683109330138
0401-09200	Femur Distal Anatomic Plate 9 Holes	Left	200 mm	8683109330145
0402-07169	Femur Distal Anatomic Plate 7 Holes	Right	169 mm	8683109330152
0402-09200	Femur Distal Anatomic Plate 9 Holes	Right	200 mm	8683109330169





The Screws

Proprietary self-tapping titanium screws are used to fixate the plate:

All screws are provided non-sterile and are contained in the instrument tray.

LOCKING CORTICAL SCREWS

Ref. No	Description	Diameter	Length	Barcode
0401-015005	Locking Cortical Screw	5.0 mm	5 mm	8683109330556
0401-015024	Locking Cortical Screw	5.0 mm	24 mm	8683108330279
0401-015026	Locking Cortical Screw	5.0 mm	26 mm	8683109330280
0401-015028	Locking Cortical Screw	5.0 mm	28 mm	8683110330281
0401-015030	Locking Cortical Screw	5.0 mm	30 mm	8683111330282
0401-015032	Locking Cortical Screw	5.0 mm	32 mm	8683112330283
0401-015034	Locking Cortical Screw	5.0 mm	34 mm	8683113330284
0401-015036	Locking Cortical Screw	5.0 mm	36 mm	8683114330285
0401-015038	Locking Cortical Screw	5.0 mm	38 mm	8683115330286
0401-015040	Locking Cortical Screw	5.0 mm	40 mm	8683116330287
0401-015042	Locking Cortical Screw	5.0 mm	42 mm	8683117330288
0401-015044	Locking Cortical Screw	5.0 mm	44 mm	8683118330289
0401-015046	Locking Cortical Screw	5.0 mm	46 mm	8683119330290
0401-015048	Locking Cortical Screw	5.0 mm	48 mm	8683120330291
0401-015050	Locking Cortical Screw	5.0 mm	50 mm	8683121330292
0401-015055	Locking Cortical Screw	5.0 mm	55 mm	8683122330293
0401-015060	Locking Cortical Screw	5.0 mm	60 mm	8683123330294
0401-015065	Locking Cortical Screw	5.0 mm	65 mm	8683124330295
0401-015070	Locking Cortical Screw	5.0 mm	70 mm	8683125330296
0401-015075	Locking Cortical Screw	5.0 mm	75 mm	8683126330297
0401-015080	Locking Cortical Screw	5.0 mm	80 mm	8683127330298



0401-015032





Locking screwes in the plate hole



LOCKING CANSELLOUSE SCREWS

Ref. No	Description	Diamet er	Length	Barcode
0402-026506	Locking Cansellouse Screw	6.5 mm	6 mm	8683109330557
0402-026540	Locking Cansellouse Screw	6.5 mm	40 mm	8683109330300
0402-026545	Locking Cansellouse Screw	6.5 mm	45 mm	8683109330301
0402-026550	Locking Cansellouse Screw	6.5 mm	50 mm	8683109330302
0402-026555	Locking Cansellouse Screw	6.5 mm	55 mm	8683109330303
0402-026560	Locking Cansellouse Screw	6.5 mm	60 mm	8683109330304
0402-026565	Locking Cansellouse Screw	6.5 mm	65 mm	8683109330305
0402-026570	Locking Cansellouse Screw	6.5 mm	70 mm	8683109330306
0402-026575	Locking Cansellouse Screw	6.5 mm	75 mm	8683109330307
0402-026580	Locking Cansellouse Screw	6.5 mm	80 mm	8683109330308
0402-026585	Locking Cansellouse Screw	6.5 mm	85 mm	8683109330309
0402-026590	Locking Cansellouse Screw	6.5 mm	90 mm	8683109330310
0402-026595	Locking Cansellouse Screw	6.5 mm	95 mm	8683109330311
0402-0265100	Locking Cansellouse Screw	6.5 mm	100 mm	8683109330312
0402-0265105	Locking Cansellouse Screw	6.5 mm	105 mm	8683109330313
0402-0265110	Locking Cansellouse Screw	6.5 mm	110 mm	8683109330314







Cancellouse Locking screwes in the plate hole



0402-026506



0402-026590

CORTICAL SCREWS

Ref. No	Description	Diameter	Length	Barcode
0403-034520	Cortical Screw	4.5 mm	20 mm	8683109330315
0403-034522	Cortical Screw	4.5 mm	22 mm	8683109330316
0403-034524	Cortical Screw	4.5 mm	24 mm	8683109330317
0403-034526	Cortical Screw	4.5 mm	26 mm	8683109330318
0403-034528	Cortical Screw	4.5 mm	28 mm	8683109330319
0403-034530	Cortical Screw	4.5 mm	30 mm	8683109330320
0403-034532	Cortical Screw	4.5 mm	32 mm	8683109330321
0403-034534	Cortical Screw	4.5 mm	34 mm	8683109330322
0403-034536	Cortical Screw	4.5 mm	36 mm	8683109330323
0403-034538	Cortical Screw	4.5 mm	38 mm	8683109330324
0403-034540	Cortical Screw	4.5 mm	40 mm	8683109330325
0403-034542	Cortical Screw	4.5 mm	42 mm	8683109330326
0403-034544	Cortical Screw	4.5 mm	44 mm	8683109330327
0403-034546	Cortical Screw	4.5 mm	46 mm	8683109330328
0403-034548	Cortical Screw	4.5 mm	48 mm	8683109330329
0403-034550	Cortical Screw	4.5 mm	50 mm	8683109330330
0403-034552	Cortical Screw	4.5 mm	52 mm	8683109330331
0403-034554	Cortical Screw	4.5 mm	54 mm	8683109330332
0403-034556	Cortical Screw	4.5 mm	56 mm	8683109330333
0403-034558	Cortical Screw	4.5 mm	58 mm	8683109330334
0403-034560	Cortical Screw	4.5 mm	60 mm	8683109330335



Cfr Peek Femur Distal Lateral Plate

Indications

cfr peek femur distal lateral plates intended for long bone fracture fixation.

Indications include:

- Diaphyseal, metaphyseal, extra- and intra-articular fractures
- Non-unions and malunions
- Normal and osteopenic bone
- Osteotomies

Contraindications

The product should not be used in the following cases:

- The state of bone structure and insufficiency of bone density
- Acute or chronic; local or systemic infections
- serious muscle, neurological or vascular diseases involving the bone in question
- Advanced osteoporosis
- Bone formation disorder
- Severe soft tissue damage
- Allergy to device raw material
- Immature patients with skeletal system

Patient Positioning

Place the patient in a supine position on a radiolucent tablea sterile tourniquet can be used ,especially for distal fractures confirm that an unhindered lateral and antero-posterior view under ouroscopy can be obtained



The skin incision starts at gerdy's tubercle and extends proximally to a direct lateral incision. the iliotibial band is incised in the same pattern. the joint capsule is then incised if intra-articular reduction needs to be performed or confirmed.



Procedure Steps

Step 1:Template Fracture Reductions

Draw key fragments of fracture and plan forces required to obtain reductions obtain order of reduction for fracture fragments identify the main articular fragment identify fracture pattern and method of plate fixation for simple metaphyseal fracture pattern anatomic reduction and interf-ragmentary compression is performed using a neutralization plate with 4 cortices above the fracture with tensioning of the plate for multifragemted metadiaphy-seal extension type fractures the plate should be much longer the plate should be two to three times the length of the fragmen-ted section 50% of the holes in the shaft component of the plate should be filled apply as many screws as possisle in the distal fragment to

achieve stability

Step 2: Fracture reduction

Expose the condyles

sublux the patella medially or invert the patella during knee "exiaon

anatomical reduction of the fracture should be performed either by direct visualization with the help of percutaneous clamps, or alternatively a bridging external fixator to aid with indirect reduction to correct the length, rotation, recurvatum and varus-valgus





Ref: 8111 - verbrugge

fracture reduction, once obtained, can be held provisionally with k-wires and / or reduction forceps.





assess each reduction under direct visualization at the trochlear region of the patellofemoral joint

Reduce the fracture fragments

use large pointed reduction forceps to reduce the fragments assess each reduction under direct visualization at the trochlear region of the patellofemoral joint



Step 3: Reduction of the Articular Surfaces and Definitive

Fixation of the Condyles

confirm anatomic reduction of the articular surface via direct visualization, palpation, and / or fluoroscopy







Step 4: Position Plate

use clinical examination and radiographic imaging to confirm that the plate is properly orient-ed on the condyle under a lateral image .because the shuft of the femur is frequently out of aligment with the distal fragment,proper plate placement can be detrmined by orienting the distal shape to that of the condyle

the goal is for the plate to be positioned parallel to the anterior portion of the lateral femoral condyl which is typicially internally rotated approximately 10-15* with respect to the vertical plane .The plate was designated such that the anterior edge of the implant parallels the anteri-or cortical margin at the metafizeal level

similarly, the posterior edge of the implant is curved to mimic the posterior anatomic curvature extending from the epiphseal to the metaphseal region



Step 5: Place temporary fixation

place temporary K wires of guide pins for locking screws for provisional fixation

advanced the K- wire until it reaches the medial wall of the femoral condyl obtain sagittal aligment and confirm with a lateral radiograph. reference the position of the plate to blumensaats line and subchondral margin of the trochlear groove

apply 2.0 mm plate fixation pin in the K-wire hole

obtain final confirmation of fracture aligment and implant position



Is parallel to both the distal femoral joint axis and the patellofemoral joint



secure the plate position on the lateral femoral condyle with at least 3 guide wires prior to inserting the first screw

Ref: 6912 - diameter 15 - 2.0 kirshner wire

Step 6: Reduction of the Shaft to

the Distal Segment

Stabilize the plate to the bone distally place a guidewire in the center hole of the distal aspect of the plate



Ref: 8105 - diameter 3.2/4.3mm coffee pot for drill bit

Step 7: Insert non locking screw

all of the 4.5 mm cortex screws must be inserted prior to insertion of locking screws

correct screw selection

select a screw approximately 2mm–3mm shorter than the measured length to avoid screw pene-trations through the medial cortex in metaphyseal fixation. add 2mm– 3mm to measured length for optimal bicortical shaft fixation

Ref: 6814 - diameter 3.2 drill bit



drilling through both cortices with the drill bit.



insert the 3.2 drill bit through the drill guide

Measure for screw length using the depth gauge

Ref: 6205 -depth gauge for long screws





select and insert the appropriate length 4.5 mm cortex screw using the screwdriver



Ref: 6304 -long screw driwer

Ref: 6003 - AA3.5mm screw driver shaft

0403-034532

important

all 4.5 mm cortex screws must be inserted and

tightened before insertion of locking screws



Ref: diamater 4.5 mm torque limiter screw driwer



important

confirm screw position and lenght prior

to final tightening with the 2.5 nm

torque limited handle

Confirm placement of the plate use lateral fluoroscopic imaging to confirm the anterior and posterior placement of the plate

The torque is automati-cally limited and a clearly audible click signifies that the torque limit has been reached.

Ref: 6003 - AA3.5mm screw driver shaft

Step 8: Stabilize the plate to the bone proximally

attach the drill sleeve to the threaded portion of a hole in the plate head

Assess placement of the plate before placing the locking screws check the length, rotation and the alignment through fluoroscopy



Ref: 6604 - diameter 3.2/4.3 mm sleeve for drill bit







Carefully drill the screw hole using the drill

Determine the screw length with the depth gauge

insert the appropriate length 5.0 mm locking screw with a screw driwer



Ref: 6304 -long screw driwer

Ref: 6003 - AA3.5mm screw driver shaft

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the screw has to be tightened manually. after one click, the optimum torque is reached



Ref: diamater 4.5 mm torque limiter screw driwer

Ref: 6003 - AA3.5mm screw driver shaft

With the torque wrench, the final locking of the screw must be done at 2.5 Nm.



Step 9: Stabilize the fracture to the bone distally with plate



once the articular surface is reduced, place locking screws to secure the plate and the alignment insert a 4.3 mm drill guide into head hole of the plate.



CARA

Ref: 6815 - diameter 4.3 drill bit

Evaluate the intercondylar notch use the notch view to ensure that penetration through the intercondylar notch did not occur

insert the 4.3 drill bit through the drill guide ,parallel to the joint axis and perpendicular to the anterior half of the lateral femoral condyle





meassure for screw lenght to meassure for screw length,read off the calibrated 4.3 mm drill bit remove the drill bit and drill guide



Ref: 8104 - guide for diameter 6.5 mm screws

use overdrilled fully threaded screws through the plate to provide interfragmentary compression



before placing the locking screws check the length, rotation and the alignment through fluoroscopy



place the guidedrill for the screws in the distal portion of the plate parallel to the joint line



Ref: 6304 -long screw driwer



0402-026560

The torque is automatically limited and a clearly audible click signifies that the torque limit has

With the torque wrench, the final locking of the screw must be done at 2.5 Nm.



Ref: diamater 4.5 mm torque limiter screw driwer



once the articular surface is reduced, place other locking screws to secure the plate and the alignment



Attaching the Distal Segment to the head and Placement of the Additional Screws





repeat as necessary to insert additional locking screws.

the plate can be locked to the distal segment and then used to manipulate the distal segment relative to the shaft for flexionextension reduction



Check the final construct with lateral radiographs



Ref: 6304 -long screw driwer

Ref: 6003 - AA3.5mm screw driver shaft



0401-015005



attaching the distal segment to the shaft and placement of the additional screws



Ref: 6003 - AA3.5mm screw driver shaft



Wound Closure

Irrigation, hemostasis, and drain copiously irrigate the wound irrigate until backflow is clear cauterize peripheral bleeding vessels

Deep Closure

Superficial closur subcutaneous with 2-0 vicryl and skin closure with 3-0 vicryl

and suture or staples

Superficial closure

subcutaneous with 2-0 vicryl and skin closure with 3-0 vicryl and suture or staples

Dressings soft incision dressings over the distal femur

Write comprehensive admission orders advance diet as tolerated pain control prescribe appropriate DVT prophylaxis wound management remove dressings POD2 foley out when ambulating check appropriate labs antibiotics

Check radiographs in postop check placement of implants

Initiate physical therapy on POD 1

Appropriate medical management and medical consultation

Rehabilitation

Provides post-operative management and rehabilitation postop: 2-3 week postoperative visit continue physical therapy and range of motion exercises discontinue DVT prophylaxis wound check repeat radiographs of femur staples/ sutures removed diagnose and management of early complications start toe partial weight-bearing at 8 weeks and continue for 4-6 weeks postop: ~ 3 month postoperative visit repeat radiographs of the femur diagnosis and management of late complications postop: 1 year postoperative visit

Plate Removal



opt[°]onal:

Implant removal Instruct^ons to extract an cfr peek plate, use the 3.5mm screw dr^over to remove all the 5.0 mm screws ^on the plate.





Ref: 6003 - AA3.5mm screw driver shaft



No	Product No	Product Name	T
1	7802	4.5 mm screw instrumantation set	1
2	8110	big retractor	1
3	6304	long screw driwer	1
4	6203	AA3.5mm fixe handlescrew driwer	1
5	6305	diamater 4.5 mm torque limiter screw driwer	1
6	8111	verbrugge	1
7	8109	reduction forceps	1





No	Produc No	Product Name	Qty
1	7910	4.5mm screw instrumantation set tray	1
2	6912	diameter 15- 2.0 kirshner wire tube	1
3	8105	diameter 3.2/4.3mm coffee pot for drill bit	1
4	6604	diameter 3.2/4.3 mm sleeve for drill bit	1
5	6003	AA3.5mm screw driver shaft	1
6	8101	chamfer for diamater 4.5 mm screws	1
7	6509	screw holder	1
8	6106	diamater 5.0 mm reverse helical screw extractor	1
9	8107	diamater 4.5 mm key	1
10	6815	diameter 4.3 mm drill bit	1
11	6814	diameter 3.2 drill bit	1
12	6009	t-handle quick coupling holder	1
13	6104	extractor for diameter 5.0 mm screws	1
14	6103	extractor for diameter 4.5 mm screws	1
15	8103	guide for diameter 4.5mm screws	1
16	8104	guide for diameter 6.5 mm screws	1
17	6205	depth gauge for long screws	1



