Surgical Technique

acumed®

Acutrak®

Headless Compression Screw System

Acumed® is a global leader of innovative orthopaedic and medical solutions.

We are dedicated to developing products, service methods, and approaches that improve patient care.

Acutrak® Headless Compression Screw Surgical Technique

The Acutrak Headless Compression Screw System is designed to provide fixation in repairing fractures, performing joint fusions, and fixing osteotomies throughout the upper and lower extremities. The Acutrak family is comprised of the Acutrak Standard, Acutrak Mini, Acutrak Fusion, Acutrak Plus, Acutrak 4/5, and Acutrak 6/7 implants.

This system offers advanced implant technology with a continuously variable thread pitch and tapered profile. As a cannulated screw, Acutrak is designed to facilitate accurate percutaneous insertion while minimizing soft tissue dissection.

Indications for Use:

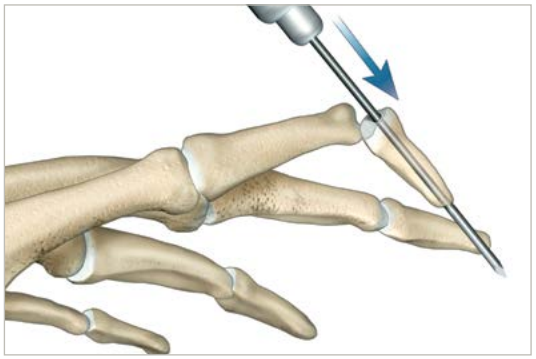
Acutrak Fusion, Mini, and Standard Screws: Intended as a fixation device for small bones, bone fragments, and osteotomies. It is not intended for interference or soft tissue fixation.

Acutrak 4/5, 6/7, and Plus: This fixation device may be used for fusions, fractures, or osteotomies of the clavicle, humerus, radius, ulna, ilium, femur, patella, fibula, tibia, talus, malleolus, and calcaneous.

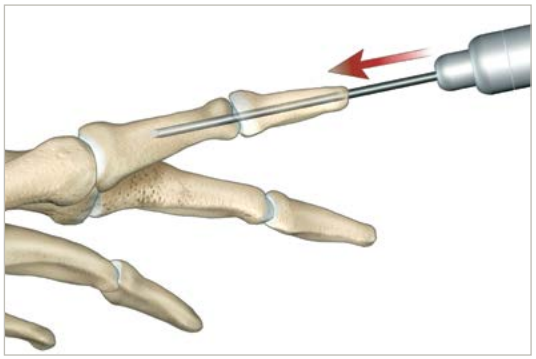
Contents

Acutrak Fusion Device Surgical Technique

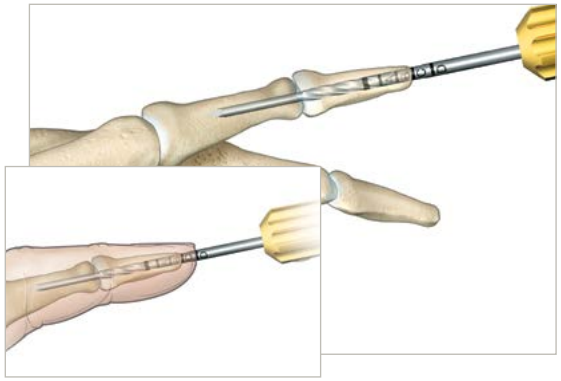
Preoperative Planning: Template to estimate screw length. Establish screw placement position, using drill scale as a reference.



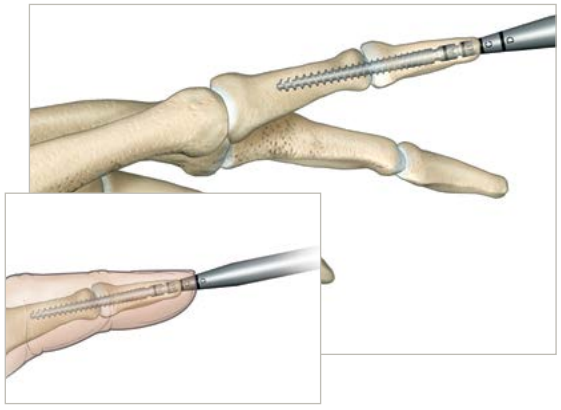
1 A double-ended .062″ Guide Wire (WS-1606DT) is advanced into the distal phalanx through a transverse incision over the distal inter-phalangeal joint.



2 The joint is then reduced and the guide wire is driven proximally into the middle phalanx. The length of the implant can be determined by placing a second guide wire of the same length next to the first guide wire and subtracting the difference between the two.



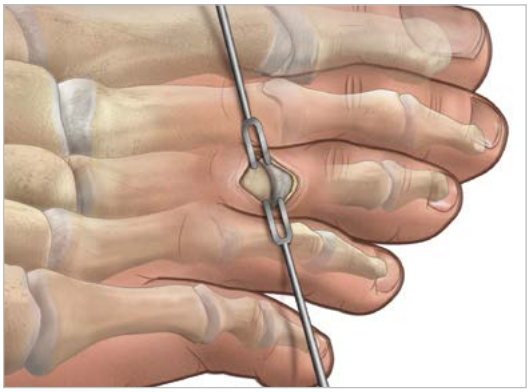
3 Remove the guide wire and make a short transverse (fish-mouth) incision in the tip of the distal phalanx and spread using a small clip (snap). Choose the appropriate size Acutrak Fusion Drill (ATM-0XX) and drill across the joint into the middle phalanx to the desired depth. The depth can be observed by the alphabetical markings on the drill.



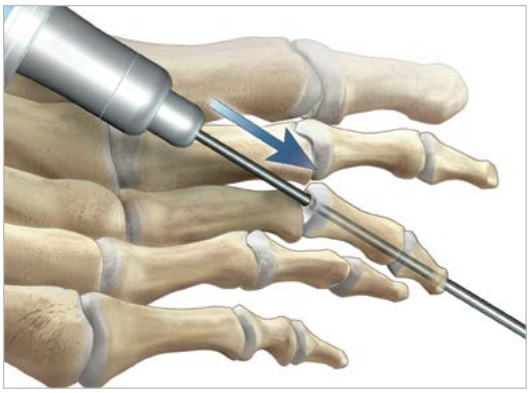
4 Withdraw the drill and install the chosen Acutrak Fusion Device (ATF-XXX-S) ensuring that the trailing end is buried within the tuft of the distal phalanx.

Tip: The alphabetical mark on the 1.5 mm Solid Hex Driver (HDF-1500) or 2 mm Solid Hex Driver (HD-2000) will be the same letter as on the drill once screw is fully seated.

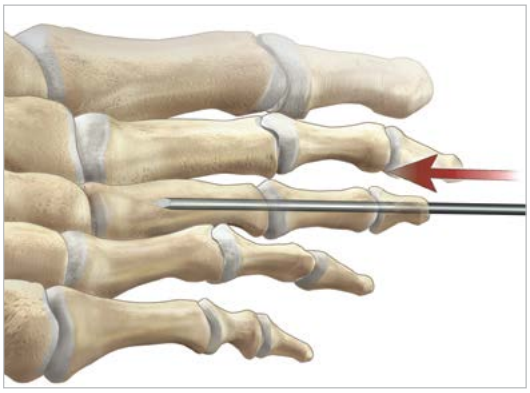
Hammertoe Fusion Set Surgical Technique



1 A transverse incision is made centered over the proximal interphalangeal (PIP) joint. For mallet toes, the incision is made over the distal interphalangeal (DIP) joint. If there is a combination mallet and hammertoe then a T incision is made. (Short horizontal portion over the DIP joint and the vertical portion residing proximal to the PIP joint.) The collateral ligament at the PIP joint on the proximal phalanx is incised. The extensor tendon is transected prior to this step in a horizontal fashion. It is peeled back sharply to expose the condyles as well as the juxtaarticular surfaces with a microsagittal small saw blade. 3 mm are resected proximally and 1–2 mm distally.



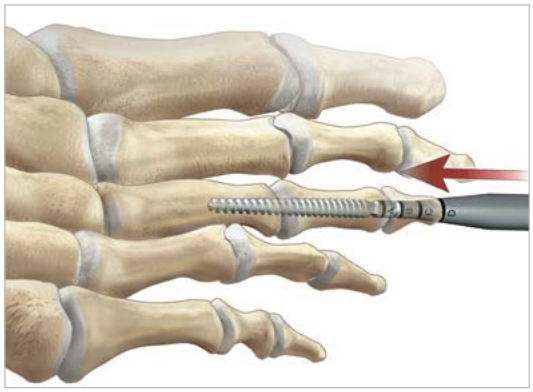
2 Under fluoroscopy, the double tipped .062″ Guide Wire (WS-1606DT) is then used to pre-drill. The wire is drilled antigrade through the center of the middle phalanx exiting the top of the toe resting plantar to the nail. The IP joint is aligned in neutral extension while the PIP joint is reduced into neutral extension and translation.



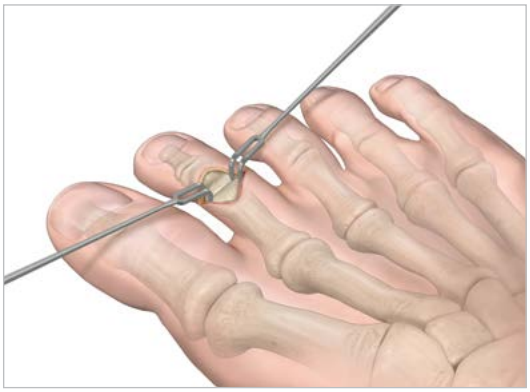
3 The guide wire is driven retrograde to provide provisional fixation. Its position is checked with imaging in both planes to ensure proper alignment and guide wire position.

4 The guide wire is removed and the appropriate sized Acutrak Fusion screw is inserted. Reduce one joint at a time. Observe the tip as it passes through the middle phalanx until it protrudes 2–3 mm. Then engage it into the proximal phalanx with the screwdriver in place and advance the screw. If only the PIP joint is being fused, the screw should be advanced to ensure proximal end is buried proximal to the IP joint. Otherwise for mallet as well as combination mallet and hammertoes, the screw should be flush with the distal tuft.

Tip: The smaller 24 mm Acutrak Fusion Device without tip may be used for the shorter, fourth and fifth toes. Also for isolated DIP fusions a shorter screw is used.



Hammertoe Fusion Set Alternative Surgical Technique



1 Arthroplasty of the proximal interphalangeal joint (PIPJ) can be performed in any manner that includes adequate resection to allow for realignment and removal of the cartilage from both proximal and middle phalanges. The recommended procedure includes a longitudinal incision with resection of the distal end of the proximal phalanx and removal of the middle phalanx cartilage with a curette or roungeur. Care should be taken not to remove excessive bone from the middle phalanx, as this bone is typically very short and over-resection will compromise fixation.

2 The toe is drilled to accept the screw. First insert the hand drill retrograde into the proximal phalanx. Care should be taken to ensure that the reamer stays in the intramedullary canal and does not break the cortex. Next the hand drill is driven prograde from the middle phalanx out the tip of the toe distally. The proper exit point on the toe is at the apex just under the nail.

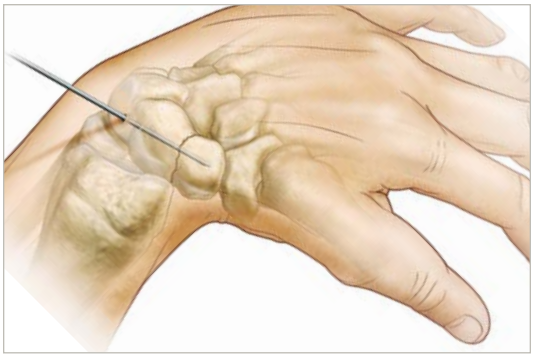
3 The hand drill is now used to realign the toe by inserting it retrograde from the exit point on the tip of the toe across the PIPJ into the proximal phalanx. During this step the alignment of the toe is assessed. Screw length is then determined by directly reading the measurement from the drill shaft. Be sure to fully insert the drill (and not over insert) to ensure a proper length measurement. The drill bit has markings that account for the over-insertion necessary for the hammertoe application. Fluoroscopy can be used at this point to document proper insertion of the drill.

Note: As the hand drill is removed, the insertion depth is determined. Carefully remove the drill from the toe and as the drill is almost fully removed, begin moving the distal interphalangeal joint (DIPJ). As the drill passes out of the joint, it will begin to move freely. At this point, the insertion depth can be determined by the markings on the drill shaft.

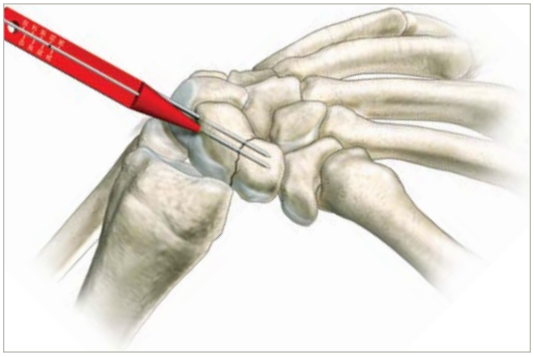
4 **Screw insertion:** Once the appropriate screw size is determined, the drill is removed and the screw is inserted. The screw is driven retrograde until the tip is visible exiting the middle phalanx. Once the tip is protruding into the joint, it is inserted into the proximal phalanx and the toe aligned. Now the screw is fully inserted. During insertion, significant torque can be generated; this may require firm stabilization of the toe to prevent rotation of the fragments.

5 The stabilization of the PIPJ is assessed by manual manipulation of the toe. Lack of movement indicates adequate fixation. The screw driver is then disengaged without full removal from the toe. The DIPJ is then manipulated to ensure that the screw is fully inserted past the DIPJ. Complete insertion is determined when there is fluid motion of the DIPJ without crepitus.

Acutrak Mini Surgical Technique

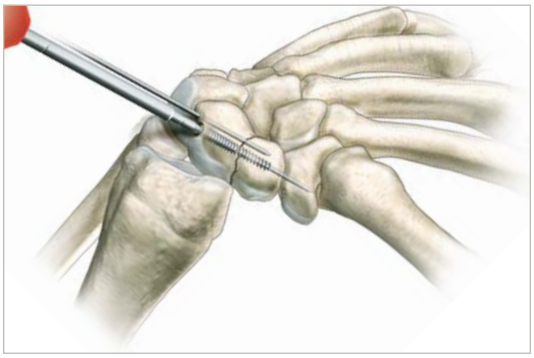


1 Secure the fracture with a .035″ x 5.75″ ST Guide Wire (WS-0906ST).



2 Place second guide wire at screw placement location until guide wire is 2 mm from the far cortex. Measure guide wire to estimate drill depth with the Mini Acutrak Screw Sizer (ATM-070) and advance the guide wire through the far cortex.

3 Drill to determined length. Advance Mini Acutrak Bone Drill (ATM-078) slowly, clearing debris regularly.

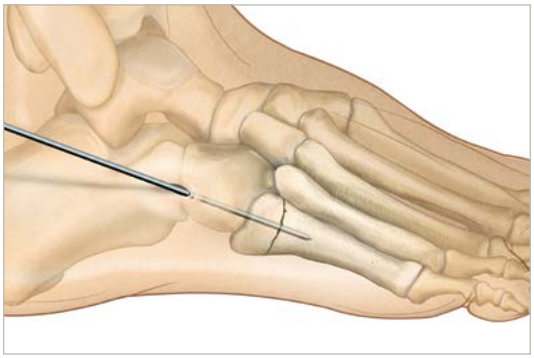


4 Using the 1.5 mm Cannulated Hex Driver (HD-1509), install an implant that is one size (2 mm) under drill depth so the screw can be buried 2 mm without overt pressure on the near cortex.

Tip: If resistance is met upon insertion: Stop, remove the screw and drill at least one size deeper or install a smaller screw. Dense bone can make a screw difficult to bury.

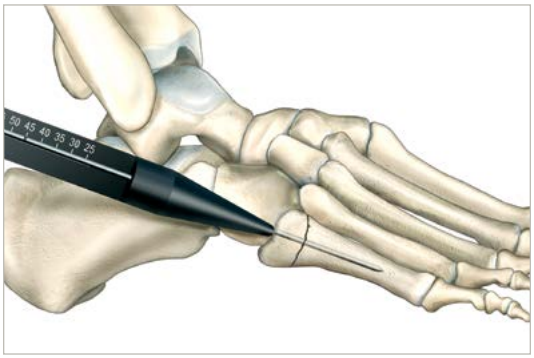
Acutrak 4/5 Surgical Technique

1 Insert a .054″ x 7″ ST Guide Wire (WS-1407ST) at desired screw placement location and advance through the near cortex and into the medullary canal. Check for proper guide wire placement and continue advancing guide wire to desired depth.

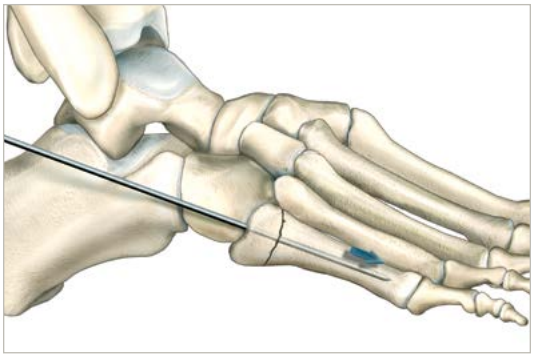


2 Measure wire depth to indicate screw length.

Tip: Measure off laser mark closest to the end of the guide wire.

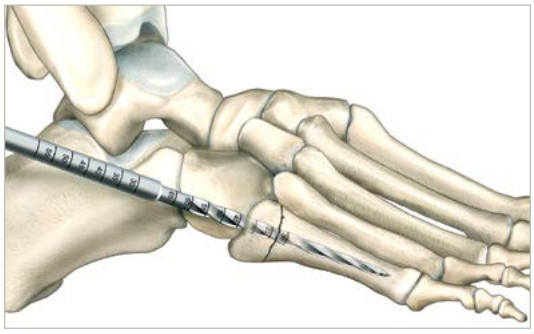


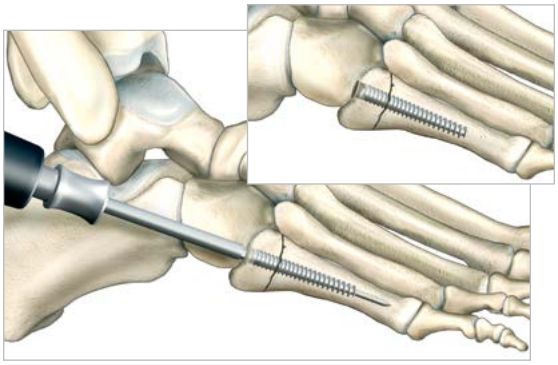
3 Drill to determined length. Advance drill slowly, clearing debris regularly.



4 Drill to measured depth, advancing the Acutrak 4/5 Cannulated Standard Drill (AM-5010) slowly, clearing debris regularly.

Tip: Use the Acutrak 4/5 Standard Cannulated Drill (AM-5010) or Acutrak 4/5 Cannulated Dense Bone Drill (AM-5014), based on surgeon preference. The drill with green epoxy banding, gold coloring, and/or **DENSE BONE** laser marking identifies the dense bone drill.





5 Select an implant that is one size under drill depth in order to bury the screw below the cortical surface. Use either the 2.5 mm Cannulated Power Driver Tip (HP-2515) or 2.5 mm Cannulated Hex Driver (HD-2515) to insert implant.

Tip: If excessive resistance is met upon insertion: Stop, remove the screw and drill at least one size deeper or install a smaller screw.

Acutrak 6/7 Surgical Technique

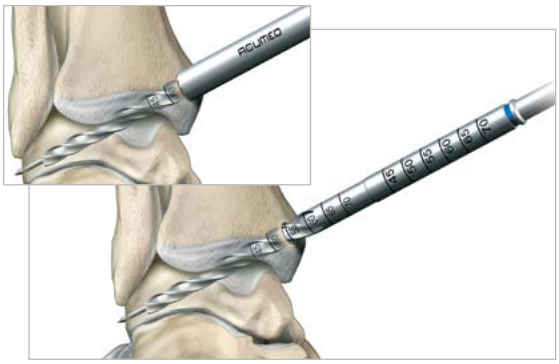
1 Place .094″ x 8″ ST Guide Wire (WS-2408ST) at screw placement location. If needed, use the Acutrak 6/7 Cannula (AP-67001).

2 Measure guide wire using the Acutrak 6/7 Screw Sizer (AP-67005) to estimate screw depth. Advance guide wire through far cortex.

Tip: Measure off laser mark closest to the end of the guide wire.

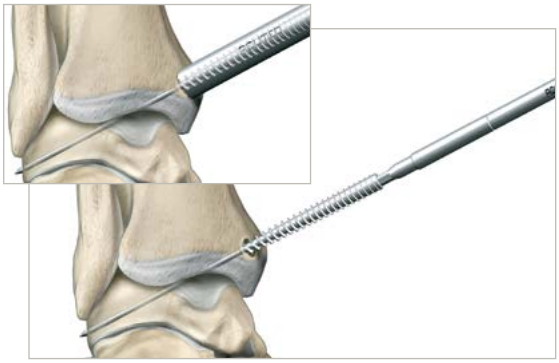
3 Using the Acutrak 6/7 Cannulated Drill (AP-670XX), drill to measured depth, advancing drill slowly, and clearing debris regularly.

Tip: Use Use Acutrak 6/7 Cannulated Drill (AP-670XX) or Acutrak Cannulated Dense Drill (AP-670XX), based on surgeon preference. The drill with green epoxy banding, gold coloring and/or **DENSE BONE** lasermarking identifies the dense bone drill.



4 Select an implant that is one size under drill depth in order to bury the screw below the cortical surface. Use the 4 mm Cannulated Hex Driver Tip (HT-4000) to insert implant.

Tip: The Ratchet T-handle with Tri-Lobe Quick Adapter (MS-8043) has a ratcheting feature. If desired, adjust metal housing to engage ratcheting feature.



5 If excessive resistance is met upon insertion: Stop, remove the screw and drill at least one size deeper or install a smaller screw.

Ordering Information

Acutrak® Fusion Screws or Implants

14 mm Acutrak Fusion Device	ATF-140-S
16 mm Acutrak Fusion Device	ATF-160-S
18 mm Acutrak Fusion Device	ATF-180-S
20 mm Acutrak Fusion Device	ATF-200-S
22 mm Acutrak Fusion Device	ATF-220-S
24 mm Acutrak Fusion Device	ATF-240-S
27 mm Acutrak Fusion Device	ATF-270-S
32 mm Acutrak Fusion Device	ATF-320-S
37 mm Acutrak Fusion Device	ATF-370-S

Acutrak® Fusion Instruments

.062″ DT-Guide Wire	WS-1606DT
24 mm Acutrak Fusion Drill	ATF-024
32 mm Acutrak Fusion Drill	ATF-032
37 mm Acutrak Fusion Drill	ATF-037
1.5 mm Solid Hex Driver	HDF-1500
2 mm Solid Hex Driver	HD-2000
Drill Handle	ATF-040
Hex Wrench	AT-7004
Acutrak Fusion Instrument Tray	ATF-060
Instrument Organizer	ATF-061

Acutrak® Fusion X-ray Template

Acutrak Fusion X-ray Template	FATF-04

Acutrak® Hammertoe Fusion Screws or Implants

30 mm Acutrak Fusion Device 6 mm Nose	30-0033-S
24 mm Acutrak Fusion Device	ATF-240-S

Acutrak® Hammertoe Fusion Instruments

1.5 mm Narrow Solid Driver Assembly	80-0098
1.5 mm Narrow Solid Hex Tip, Quick Connect	80-0094
Hex Wrench	AT-7004
24 mm Acutrak Fusion Drill	ATF-024
Drill Handle	ATF-040
.062″ DT Guide Wire	WS-1606DT
Hammertoe Tray Screw and Instrument Caddy	80-0258
Hammertoe Fusion Set Tray	80-0259

Acutrak® Mini Screws or Implants

8 mm Mini Acutrak Fixation Screw	ATM-008-S
10 mm Mini Acutrak Fixation Screw	ATM-100-S
12 mm Mini Acutrak Fixation Screw	ATM-120-S
14 mm Mini Acutrak Fixation Screw	ATM-140-S
16 mm Mini Acutrak Fixation Screw	ATM-160-S
18 mm Mini Acutrak Fixation Screw	ATM-180-S
20 mm Mini Acutrak Fixation Screw	ATM-200-S
22 mm Mini Acutrak Fixation Screw	ATM-220-S
24 mm Mini Acutrak Fixation Screw	ATM-240-S
26 mm Mini Acutrak Fixation Screw	ATM-260-S

Acutrak® Mini Instrumentation

.035″ x 5.75″ ST Guide Wire	WS-0906ST
Mini Acutrak Bone Drill	ATM-078
Long, Cannulated Drill	ATM-099
1.5 mm Cannulated Hex Driver Assembly	HD-1509
1.5 mm Solid Hex Driver	HDM-1500
Mini Acutrak Screw Sizer	ATM-070
Plunger	ATM-060
Drill Handle Assembly	ATM-050
Hex Wrench	AT-7004
Mini Acutrak Tray	ATM-031

Acutrak® Standard Instrumentation

.045″ x 6″ ST Guide Wire	WS-1106ST
Standard Acutrak Tapered Cannulated Drill	AT-7032
2 mm Cannulated Hex Driver Assembly	HD-2011
2 mm Solid Hex Driver Assembly	HDL-2000
Acutrak Drill Handle	AT-0003
Hex Wrench	AT-7004
Standard Acutrak Screw Sizer	AT-7010
Standard Acutrak Tray	AT-7017
Standard Acutrak Cannula Assembly	AT-7020
Acutrak Plunger Assembly	AT-7060

Acutrak® Mini X-ray Template

Mini Acutrak X-ray Template	FATM-01

Acutrak® Standard X-ray Template

Standard Acutrak X-ray Template	FATR-06

Acutrak® Screws or Implants

12.5 mm Standard Acutrak Fixation Screw	AT-1125-S
15 mm Standard Acutrak Fixation Screw	AT-1150-S
17.5 mm Standard Acutrak Fixation Screw	AT-1175-S
20 mm Standard Acutrak Fixation Screw	AT-1200-S
22.5 mm Standard Acutrak Fixation Screw	AT-1225-S
22.5 mm Standard Acutrak Fixation Screw	AT-1250-S
27.5 mm Standard Acutrak Fixation Screw	AT-1275-S
30 mm Standard Acutrak Fixation Screw	AT-1300-S

Acutrak® 4/5 Screws or Implants

25 mm Acutrak 4/5 Bone Screw	AM-0025-S
30 mm Acutrak 4/5 Bone Screw	AM-0030-S
35 mm Acutrak 4/5 Bone Screw	AM-0035-S
40 mm Acutrak 4/5 Bone Screw	AM-0040-S
45 mm Acutrak 4/5 Bone Screw	AM-0045-S
50 mm Acutrak 4/5 Bone Screw	AM-0050-S

Acutrak® 4/5 Instrumentation

.054″ x 7″ ST Guide Wire	WS-1407ST
Acutrak 4/5 Cannulated Standard Drill	AM-5010
Acutrak 4/5 Cannulated Dense Bone Drill	AM-5014
2.5 mm Cannulated Power Driver Tip	HP-2515
Acutrak 4/5 Screw Sizer	AM-5020
Acutrak 4/5 Tray	AM-5040
Acutrak Plus Probe	AP-0402
Generic Cannula Assembly	MS-2000

Acutrak® 4/5 X-ray Template

Acutrak 4/5 X-ray Template	

Acutrak® 6/7 Screws or Implants

40 mm Acutrak 6/7 Fixation Screw	AP-6740-S
45 mm Acutrak 6/7 Fixation Screw	AP-6745-S
50 mm Acutrak 6/7 Fixation Screw	AP-6750-S
55 mm Acutrak 6/7 Fixation Screw	AP-6755-S
60 mm Acutrak 6/7 Fixation Screw	AP-6760-S
65 mm Acutrak 6/7 Fixation Screw	AP-6765-S
70 mm Acutrak 6/7 Fixation Screw	AP-6770-S
75 mm Acutrak 6/7 Fixation Screw	AP-6775-S
80 mm Acutrak 6/7 Fixation Screw	AP-6780-S
85 mm Acutrak 6/7 Fixation Screw	AP-6785-S
90 mm Acutrak 6/7 Fixation Screw	AP-6790-S
95 mm Acutrak 6/7 Fixation Screw	AP-6795-S
100 mm Acutrak 6/7 Fixation Screw	AP-67100-S

Acutrak® 6/7 Instrumentation

.094″ x 8″ ST Guide Wire	WS-2408ST
.094″ x 8″ ST Guide Wire, Threaded	WS-2408STT
Acutrak 6/7 Cannula Assembly	AP-67001
Acutrak 6/7 Probe	AP-67004
Acutrak 6/7 Screw Sizer	AP-67005
4 mm Easy Out with Trocar Tip	AP-67008
Acutrak 6/7 Cannulated Drill, 40 mm–65 mm	AP-67011
Acutrak 6/7 Cannulated Drill, 70 mm–85 mm	AP-67012
Acutrak 6/7 Cannulated Drill, 90 mm–120 mm	AP-67013
Acutrak 6/7 Cannulated Dense Drill, 40 mm–65 mm	AP-67014
Acutrak 6/7 Cannulated Dense Drill, 70 mm–85 mm	AP-67015
Acutrak 6/7 Cannulated Dense Drill, 90 mm–120 mm	AP-67016
Acutrak 6/7 Tray	AP-67020
4 mm Cannulated Hex Driver Tip	HT-4000
4 mm Solid Hex Driver Tip	HT-4001
Ratchet T-Handle with Tri-Lobe Quick Adapter	MS-8043

Acutrak® 6/7 X-ray Template

Acutrak 6/7 X-ray Template	FAAP-02

Acutrak® Plus Screws or Implants

35 mm Acutrak Fixation Screw	AP-0035-S
40 mm Acutrak Fixation Screw	AP-0040-S
45 mm Acutrak Fixation Screw	AP-0045-S
50 mm Acutrak Fixation Screw	AP-0050-S
55 mm Acutrak Fixation Screw	AP-0055-S
60 mm Acutrak Fixation Screw	AP-0060-S
65 mm Acutrak Fixation Screw	AP-0065-S
70 mm Acutrak Fixation Screw	AP-0070-S
75 mm Acutrak Fixation Screw	AP-0075-S
80 mm Acutrak Fixation Screw	AP-0080-S

Acutrak® Plus Instruments

.062″ x 9″ STT Guide Wire	WS-1609STT
Acutrak Plus Cannulated Drill	AP-0100
Acutrak Plus Cannulated Dense Bone Drill	AP-0104
3 mm Cannulated Driver Assembly	HD-3016
3 mm T-Handle Driver Assembly	TH-3000
Thin Screw Sizer	AP-0204
Acutrak Plus Probe	AP-0402
Acutrak Plus Tray	AP-0500
Generic Cannula Assembly	MS-2000

Acutrak® Plus X-ray Template

Acutrak Plus X-ray Template	FAAP-01

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