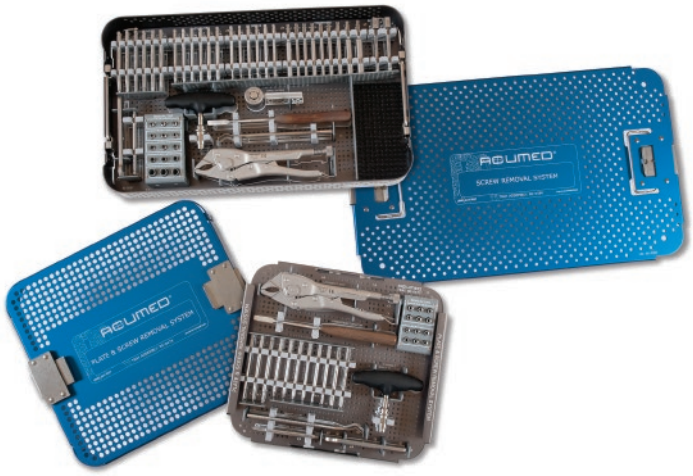
ACUMED®

Acutrak® Screw Removal Technique

Screw Removal Introduction

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.



Contents

The Acumed® Screw Removal System is a complement to our innovative Acumed® Plates and Acutrak® Headless Compression Screws. Each component of the extensive system is designed specifically for our plating systems and Acutrak® Screws, with customized geometry to exactly match our products. The versatility of the system is designed to allow you to use the instrumentation in screw removal situations you are presented with in surgery.

Solid Hex Driver

- Cannulation removed to increase strength

Easyout

- Cutting flutes to grasp stripped hex
- Geometry designed for screw removal

Left-Handed Drills

- Tip specifically designed for drilling titanium implants

Features and Benefits

Customized Design

The distinct geometry of the Acumed® Screw Removal System is tailored to match our product line to enable efficient removal in screw removal situations.

Ease of Use

All of our removal instrumentation is easy to assemble and use. A-O quick releases are provided on all instrumentation.

Trephine

- Tapered interior to encapsulate proximal portion of screw

Screw Removal Tip

- Force fit on threads to lock the screw

Impact Driver

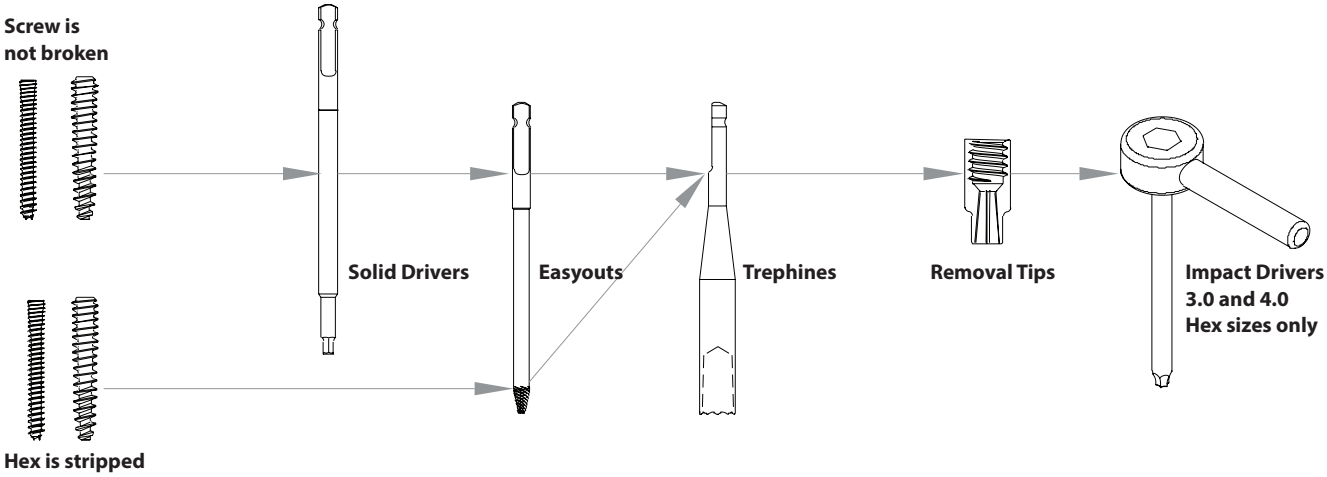
- For use with Acutrak® Plus, Acutrak® 6/7 and Acutrak 2® - 5.5 Headless Compression Screws

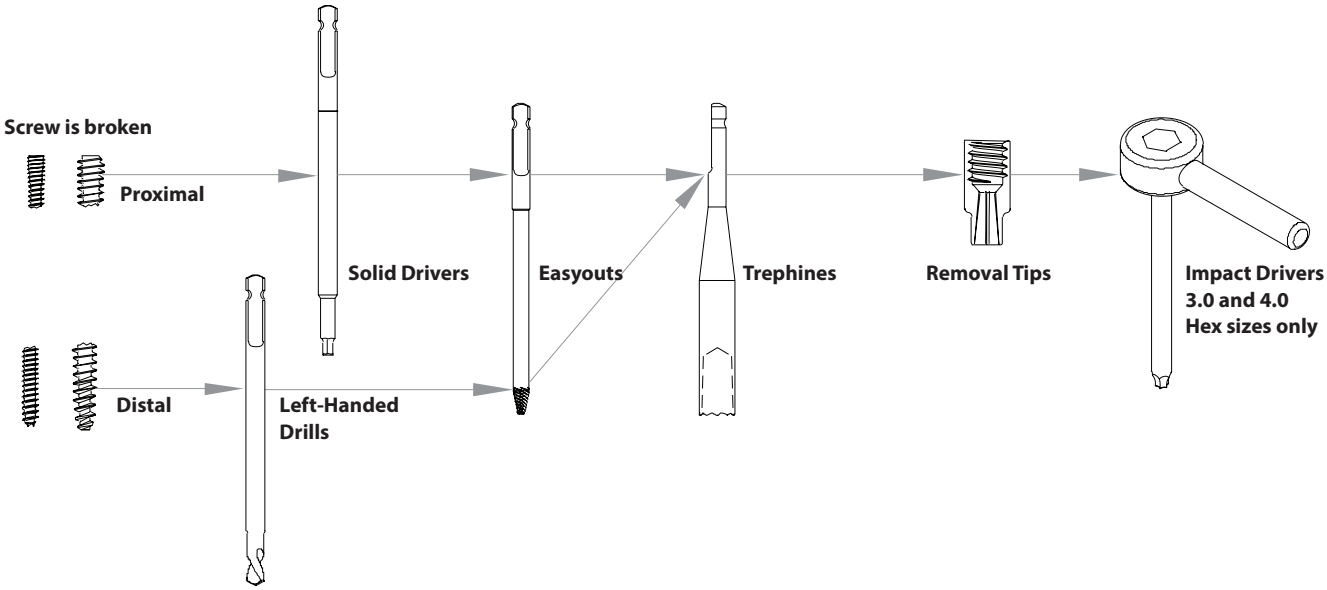
Screw Removal Tool Usage Chart

Screws	Solid Drivers									Easyouts						Left-Handed Drills					
	80-0583 (1.5 mm)	80-0632 (2.0 mm)	HPC-0025 (2.5 mm)	80-0633 (3.0 mm)	80-0634 (3.5 mm)	80-0635 (4.0 mm)	80-0636 (Cruciform)	80-0759 (T8)	80-0760 (T15)	80-0598 (1.5 mm)	80-0599 (2.0 mm)	80-0600 (2.5 mm)	80-0601 (3.0 mm)	80-0602 (3.5 mm)	80-0604 (4.0 mm)	80-0399 (1.5 mm)	80-0400 (2.0 mm)	80-0401 (2.5 mm)	80-0402 (3.0 mm)	80-0403 (3.5 mm)	80-0404 (4.0 mm)
Acutrak® Mini	■									■						■					
Acutrak® Standard < 20 mm		■									■						■				
Acutrak® Standard > 20 mm		■									■						■				
Acutrak® 4/5			■									■						■			
Acutrak® Plus				■									■						■		
Acutrak® 6/7						■									■						■
Acutrak 2® Micro	■									■						■					
Acutrak 2® Mini		■									■						■				
Acutrak 2® Standard			■									■						■			
Acutrak 2® - 5.5				■									■						■		
2.3 CO Screws	■									■								■			
2.7 CO, COL and Tap-Loc® Screws			■									■						■			
3.5 CO, COL and Tap-Loc® Screws			■									■							■		
2.7 Hexalobe Screws								■			■								■		
3.0 Hexalobe Screws									■			■							■		
3.5 Hexalobe Screws									■				■							■	
Cruciform Screws							■											■			

Screws	Trephines												Removal Tips					Impact Drivers	
	80-0205	80-0206	80-0207	80-0208	80-0209	80-0210	80-0211	80-0212	80-0213	80-0214	80-0216	80-0217	80-0612	80-0613	80-0614	80-0615	80-0616	80-0605 (3.0 mm)	80-0606 (4.0 mm)
Acutrak® Mini						■								■					
Acutrak® Standard < 20 mm					■									■					
Acutrak® Standard > 20 mm				■											■				
Acutrak® 4/5			■													■			
Acutrak® Plus		■															■	■	
Acutrak® 6/7	■																■		■
Acutrak 2® Micro									■				■						
Acutrak 2® Mini								■						■					
Acutrak 2® Standard							■								■				
Acutrak 2® - 5.5										■						■		■	
2.3 CO Screws												■							
2.7 CO, COL and Tap-Loc® Screws												■	■						
3.5 CO, COL and Tap-Loc® Screws											■			■					
2.7 Hexalobe Screws												■	■						
3.0 Hexalobe Screws											■		■						
3.5 Hexalobe Screws											■				■				
Cruciform Screws												■	■						

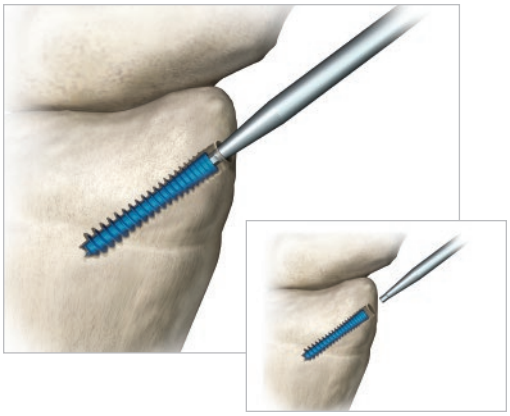
Acutrak® Screw Removal Steps





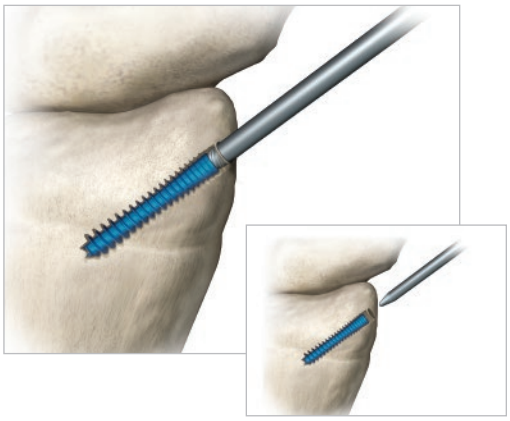
Acutrak® Screw Removal Surgical Technique

The Acumed® Screw Removal System is designed for straightforward and efficient screw removal. The following pages detail proper removal techniques, including tips and guidelines for removing screws when there is resistance or other difficulties.



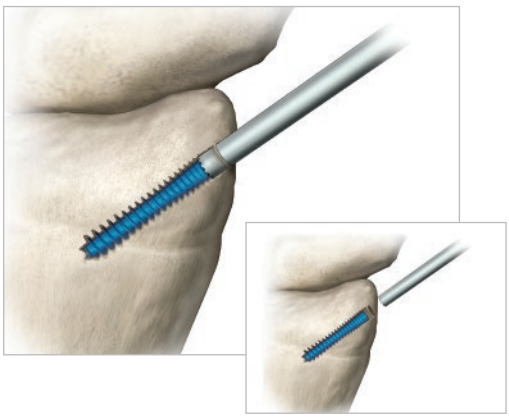
1 USING THE DRIVER

- Clean out the hex in the screw.
- Using the solid hex driver, try to remove the screw. It may help to advance the screw approximately a quarter turn to break the bond between the titanium and the bone.
- Turn the driver slowly and firmly making sure to keep the driver in line with the screw.
- If there is resistance or a risk of breakage, proceed to the next step.



2 USING THE EASYOUTS

- Make sure the hex is clear.
- The Easyouts should be turned by hand.
- Turn the Easyout counter-clockwise with firm constant pressure in line with the screw. It may help to offset the Easyout by a couple of degrees so it wedges into the head of the screw.
- If the Easyout is spinning, tap it with a mallet to move it further inside the hex.
- If the Easyout doesn't engage the hex or strips the hex, proceed to the next step.



3 USING THE TREPHINES

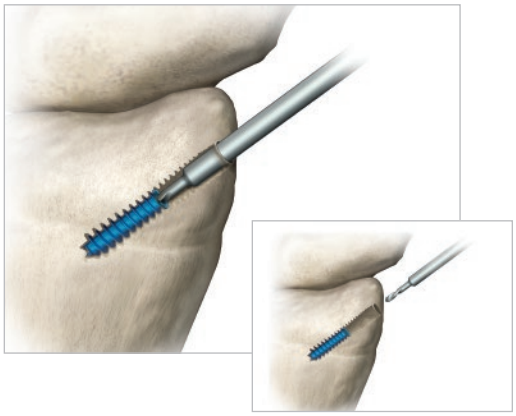
- The Trephines are designed for specific screws and for coring small amounts of bone away from the screw while internally engaging on the threads of the screw.
- The Trephines need to be used under power, at low rpm's, high pressure, and in reverse.
- A guide wire may be used to help line up the Trephine, which is cannulated, but it is not required.
- If using a guide wire, insert the guide wire into the screw's cannulation and then place the Trephine over the guide wire and push down until it contacts the bone around the screw.
- If not using a guide wire just place the Trephine over the end of the screw.
- If the Trephine engages the screw, the screw will start to back out of the hole. Keep rotating until the screw is completely out of the hole.
- If the Trephine doesn't engage the screw, stop and proceed to the next step. The removal tip is designed to fit in the core created by the Trephine.

4 USING THE REMOVAL TIP

- Thread the removal tip on the end of the supplied quick release shaft and place over the screw.
- The screw removal tip should be used by hand.
- Firmly tap the tip onto the end of the screw.
- A mallet may be used to make sure the tip is firmly attached to the screw.
- Rotate the tip counter-clockwise until the screw is removed.

5 USING THE LEFT-HANDED DRILL

- If the screw is broken and the proximal portion of the screw is removed, assess the amount of the screw that is left.
- If you have more than half of the screw, use the same size left-handed drill as the hex size of the screw you are removing.
- If you have less then half of the screw, use the next smallest left-handed drill.
- Using the drill in reverse, insert the drill tip into the cannulation of the fragment.
- With a low to medium drill speed and high pressure, drill out the cannulation to a depth of approximately 4 mm to 5 mm.
- The drill flutes may serve to remove the fragment.
- If the drill does not remove the fragment, use the same size Easyout to remove it.



6 USING THE IMPACT DRIVERS

- The impact drivers are designed to be used with Acutrak® Plus, Acutrak® 6/7 and Acutrak 2® - 5.5 screws. They should only be used if all the preceding removal steps did not remove the screw.
- To use the impact driver, place the tip of the impact driver in the screw hex.
- Place the impact driver handle over the hex end of the impact driver.
- Using a mallet lightly tap the impact driver to wedge the tip into the screw hex.
- Rotate the impact driver counter-clockwise until the screw is removed.

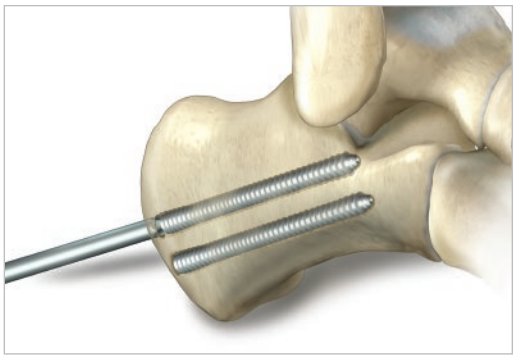
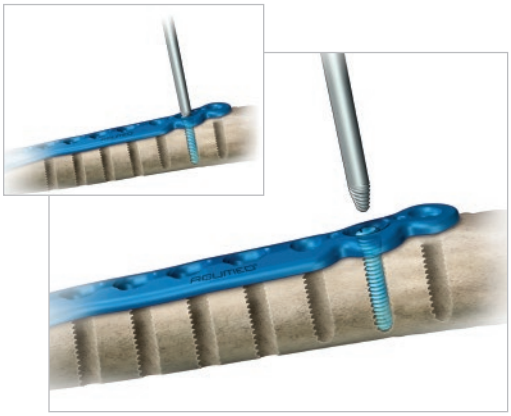


Plate Screw Removal Surgical Technique

Techniques for plate screw removal are similar to those of the Acutrak® Screw removal, but not exactly the same. So be sure to carefully follow the tips and guidelines as described.

1 USING THE DRIVER

- Clean out the hex in the screw.
- Use the solid hex driver to try and remove the screw. It may help to initially try and advance the screw approximately a quarter turn to break the bond between the titanium and the bone.
- Turn the driver slowly and firmly making sure to keep the driver in line with the screw.
- If there is resistance or a risk of breakage, proceed to the next step.



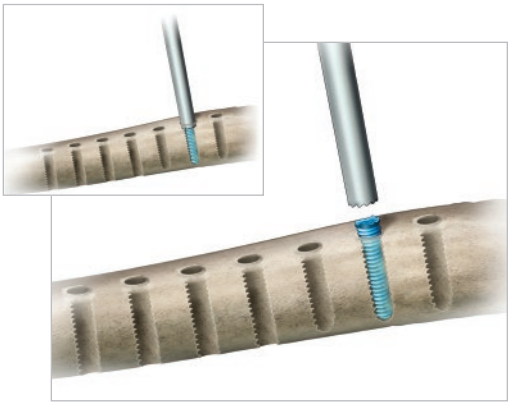
2 USING THE EASYOUTS

- Make sure the hex is clear.
- The Easyouts should be turned by hand.
- Turn the Easyout counter-clockwise with firm constant pressure in line with the screw.
- It may help to offset the Easyout by a couple degrees so it wedges into the head of the screw.
- If the Easyout is spinning, tap it with a mallet to get it further inside the hex.
- If the Easyout does not engage the hex or if there is a risk of splitting, proceed to next step.

3 USING THE LEFT-HANDED DRILL

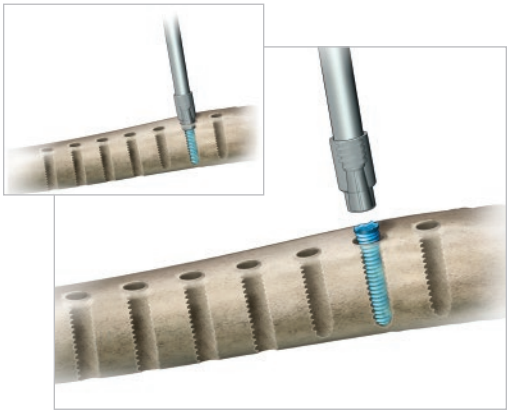
- Use the left-handed drill inverse to remove the head of the screw.
- The drill may act as an Easyout and remove the screw instead of removing the head. Regardless, you should remove the plate from the bone.
- If one of the screws could not be removed and the drill did not remove the head, use a burr to cut the plate on either side of the remaining screw and then remove the plate.
- Use suction to vacuum up the chips.
- Once the plate is removed go to the next step.

4 USING THE TREPHINES



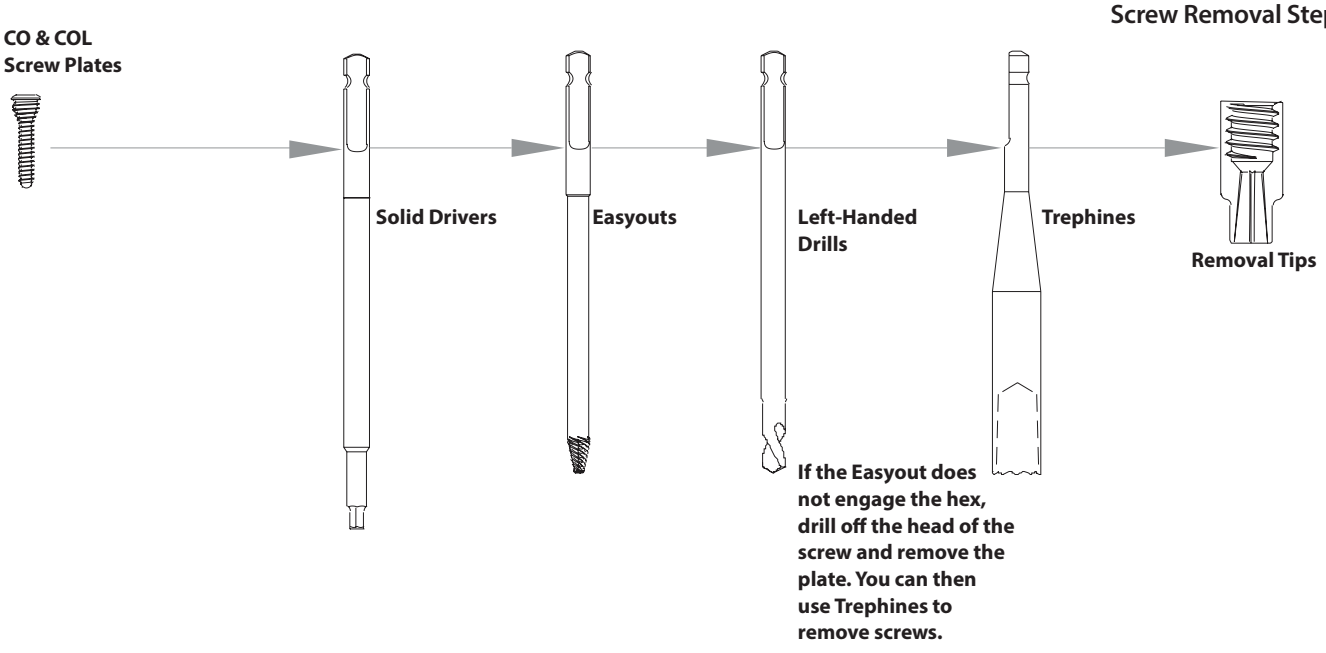
- The Trephines are designed for specific screws and for coring small amounts of bone away from the screw while internally engaging on the threads of the screw.
- The Trephines need to be used under power, at low rpm's, high pressure and in reverse.
- A guide wire may be used to help line up the Trephine, which is cannulated, but it is not required.
- If using a guide wire, insert the guide wire into the screw's cannulation and then place the Trephine over the guide wire and push down until it contacts the bone around the screw.
- If not using a guide wire just place the Trephine over the end of the screw.
- If the Trephine engages the screw, the screw will start to back out of the hole. Keep rotating until the screw is completely out of the hole.
- If the Trephine doesn't engage the screw, stop and proceed to the next step. The removal tip is designed to fit in the core created by the Trephine.

5 USING THE REMOVAL TIP



- Thread the removal tip on the end of the supplied quick release shaft and place over the screw.
- The screw removal tip should be used by hand.
- Firmly tap the tip onto the end of the screw.
- A mallet may be used to make sure the tip is firmly attached to the screw.
- Rotate the tip counter-clockwise until the screw is removed.

Screw Removal Steps



Acutrak® Removal Ordering Information

Acutrak® Screw Removal	Part #	Qty Per Set
1.5 mm Quick Release Solid Hex Driver	80-0583	2
2.0 mm Quick Release Solid Hex Driver	80-0632	2
2.5 mm Quick Release Solid Hex Driver	HPC-0025	2
3.0 mm Quick Release Solid Hex Driver	80-0633	2
3.5 mm Quick Release Solid Hex Driver	80-0634	2
4.0 mm Quick Release Solid Hex Driver	80-0635	2
1.5 mm Easyout	80-0598	2
2.0 mm Easyout	80-0599	2
2.5 mm Easyout	80-0600	2
3.0 mm Easyout	80-0601	2
3.5 mm Easyout	80-0602	2
4.0 mm Easyout	80-0603	2
1.5 mm Left-Handed Drill	80-0399	2
2.0 mm Left-Handed Drill	80-0400	2
2.5 mm Left-Handed Drill	80-0401	2
3.0 mm Left-Handed Drill	80-0402	2
3.5 mm Left-Handed Drill	80-0403	2
4.0 mm Left-Handed Drill	80-0404	2
Acutrak® Mini Trephine	80-0210	2
Acutrak® Standard Trephine < 20 mm	80-0209	1
Acutrak® Standard Trephine > 20 mm	80-0208	1
4/5 Trephine	80-0207	2
Plus Trephine	80-0206	2
6/7 Trephine	80-0205	2
Acutrak 2® Standard Trephine	80-0211	2
Acutrak 2® Mini Trephine	80-0212	2
Acutrak 2® Micro Trephine	80-0213	2
Acutrak 2® - 5.5 Trephine	80-0214	2
3.0 mm Impact Driver Tip	80-0605	1
4.0 mm Impact Driver Tip	80-0606	1
Micro Removal Tip	80-0612	3
Mini Removal Tip	80-0613	3
Standard Removal Tip	80-0614	3
Large Removal Tip	80-0615	3
Extra Large Removal Tip	80-0616	3
Screw Removal Tip Shaft	80-0610	1
Removal Tip Wrench	80-0611	1
Impact Driver Handle	80-0607	1
Vise Grips Teleflex: KM48600	80-0617	1
T-Handle, Silicone, A-O Connector	80-0637	1
Periosteal Elevator	MS-46211	1
Sharp Hook	PL-CL06	1
Acutrak® & Acutrak 2® Screw Removal Tray Assembly	80-0586	1

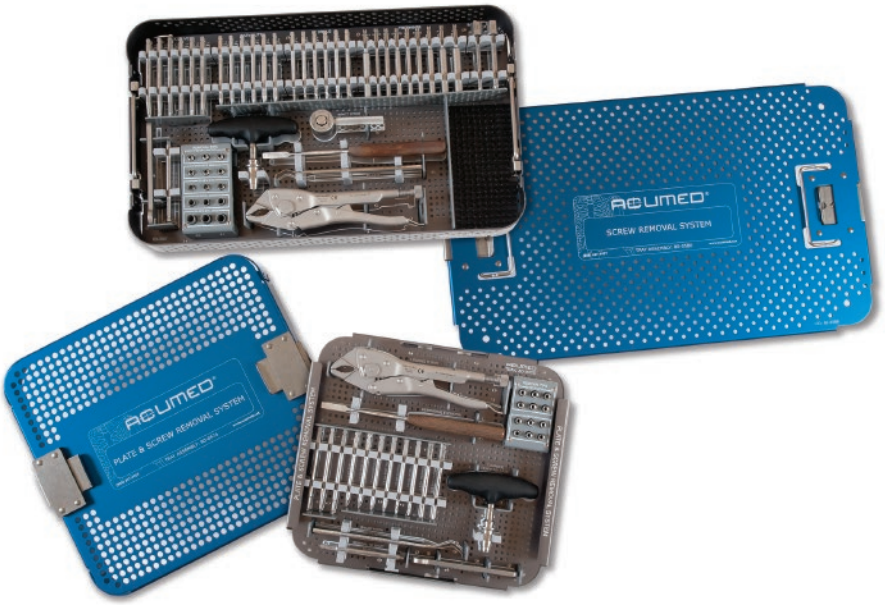
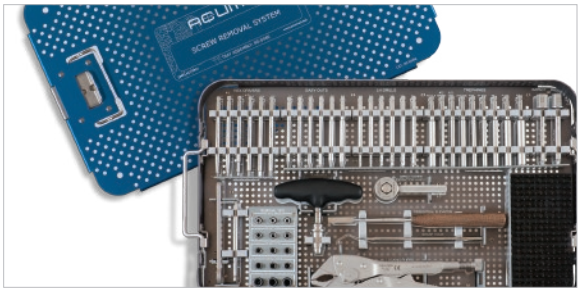
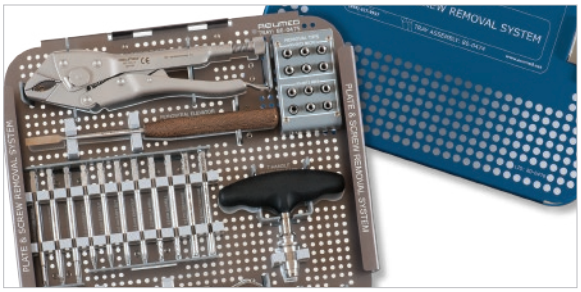


Plate Screw Removal Ordering Information

Plate Screw Removal	Part #	Qty per Set
3.5 CO Trephine	80-0216	2
2.7 -2.3 CO Trephine	80-0217	2
2.5 mm Left-Handed Drill	80-0401	2
3.0 mm Left-Handed Drill	80-0402	2
1.5 mm Solid Hex Driver Tip, Quick Release	80-0583	2
1.5 mm Easyout	80-0598	4
2.5 mm Easyout	80-0600	4
Screw Removal Tip Shaft	80-0610	1
Removal Tip Wrench	80-0611	1
Micro Removal Tip	80-0612	6
Mini Removal Tip	80-0613	6
Locking Pliers, Small	80-0617	1
Cruciform Driver Tip, Quick Release	80-0636	2
T-Handle, Small, Fixed, Quick Release Connector	80-0637	1
2.5 mm Quick Release Solid Hex Driver	HPC-0025	2
Periosteal Elevator	MS-46211	1
Sharp Hook	PL-CL06	1
Universal Tray Plate & Screw Removal Assembly	80-0474	1

To learn more about the full line of Acumed® innovative surgical solutions, including the Screw Removal System, please contact your local Acumed® Sales Representative or call 888-627-9957.





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