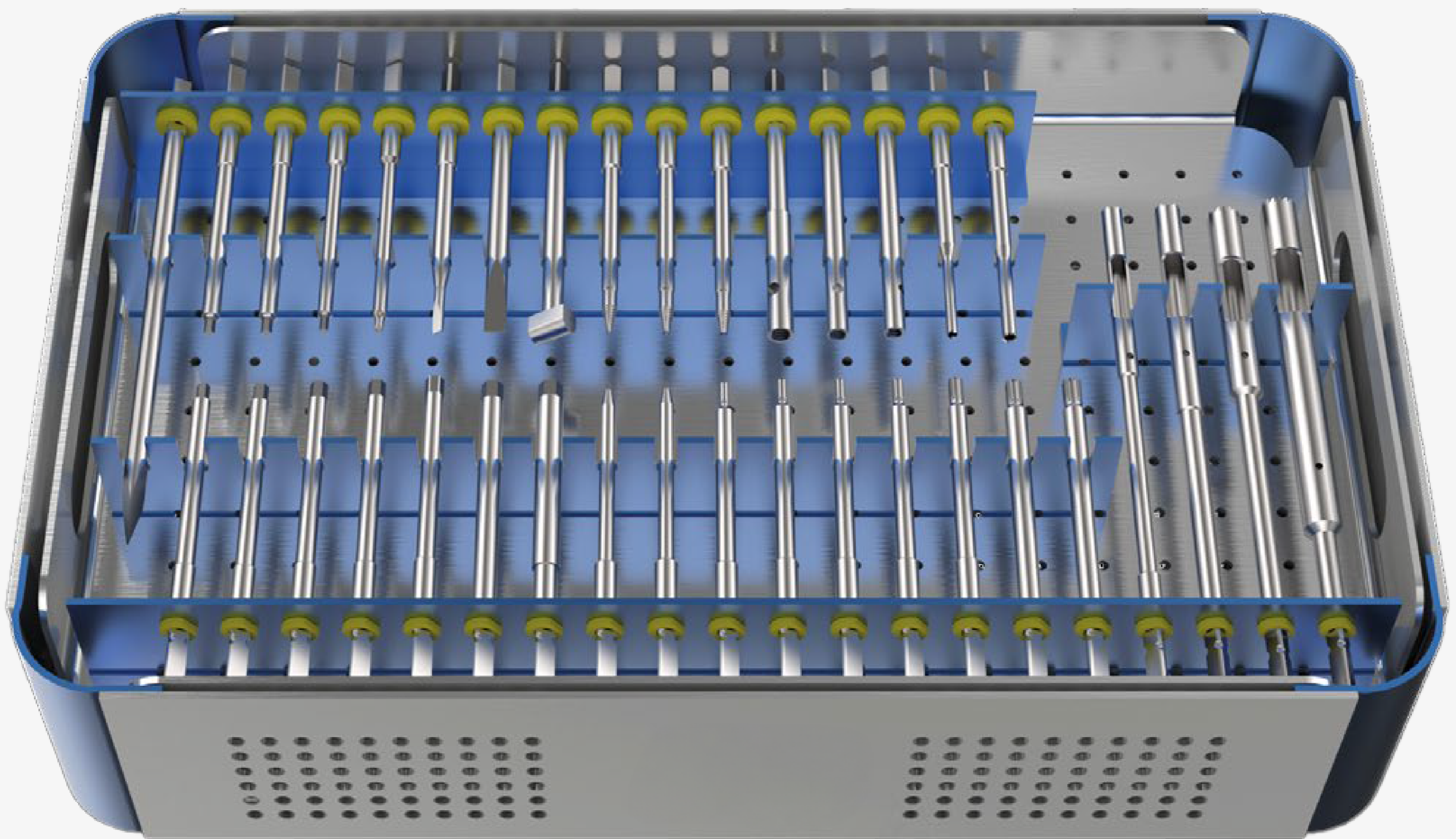


SCREW EXTRACTION SET

51 different instruments for extraction of damaged or undamaged bone screws.



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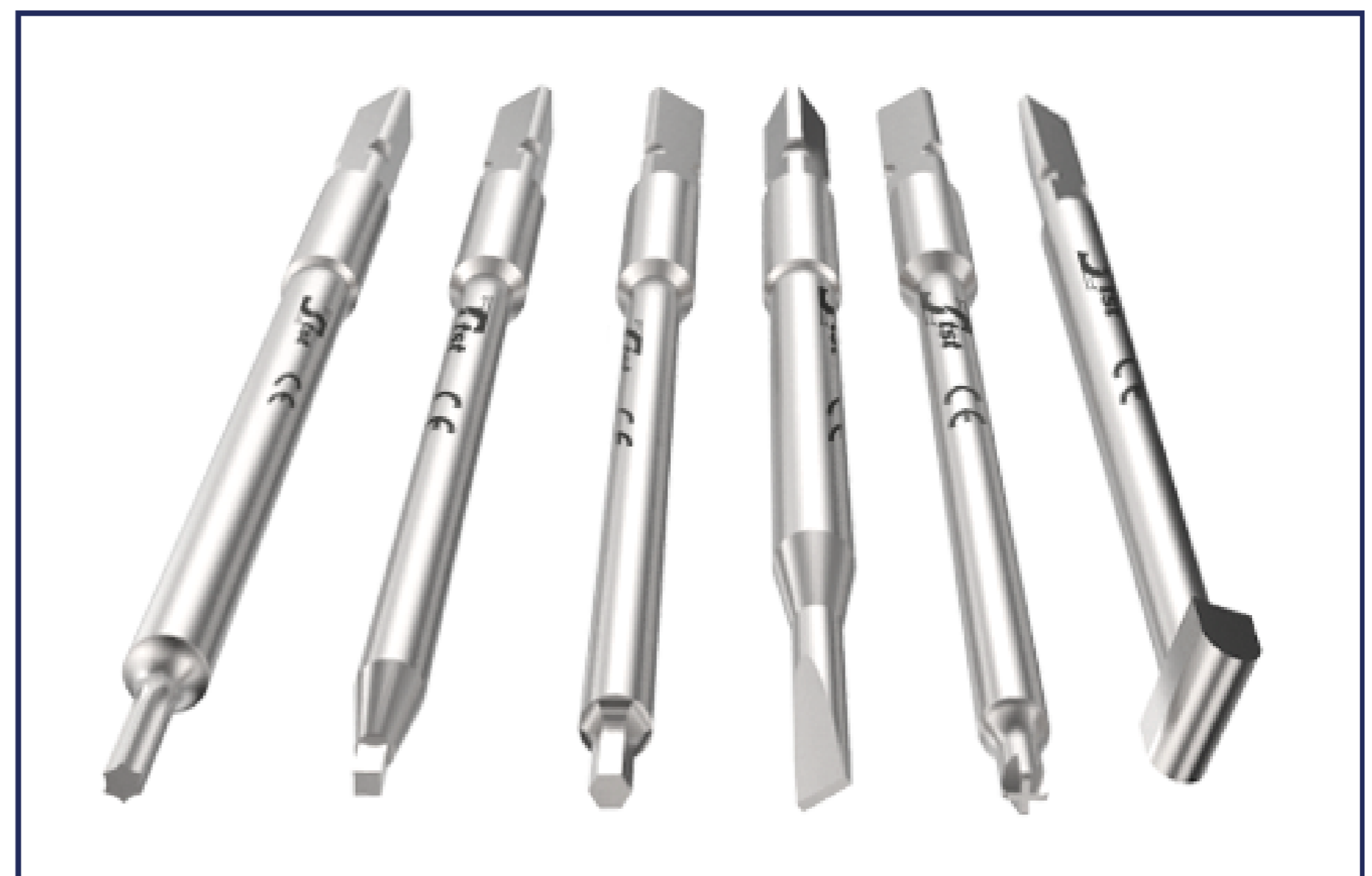
11 Set Detail

Introductions

In trauma and arthroplasty processes, set is developed to remove the screws in the case of screw breakage, screw head recess, scrapping and damages, composing of 51 instruments.

Instruments are designed for the removal processes of all screws as; locked-unlocked, head-headless, cannulated-uncannulated with both titanium and steel materials.

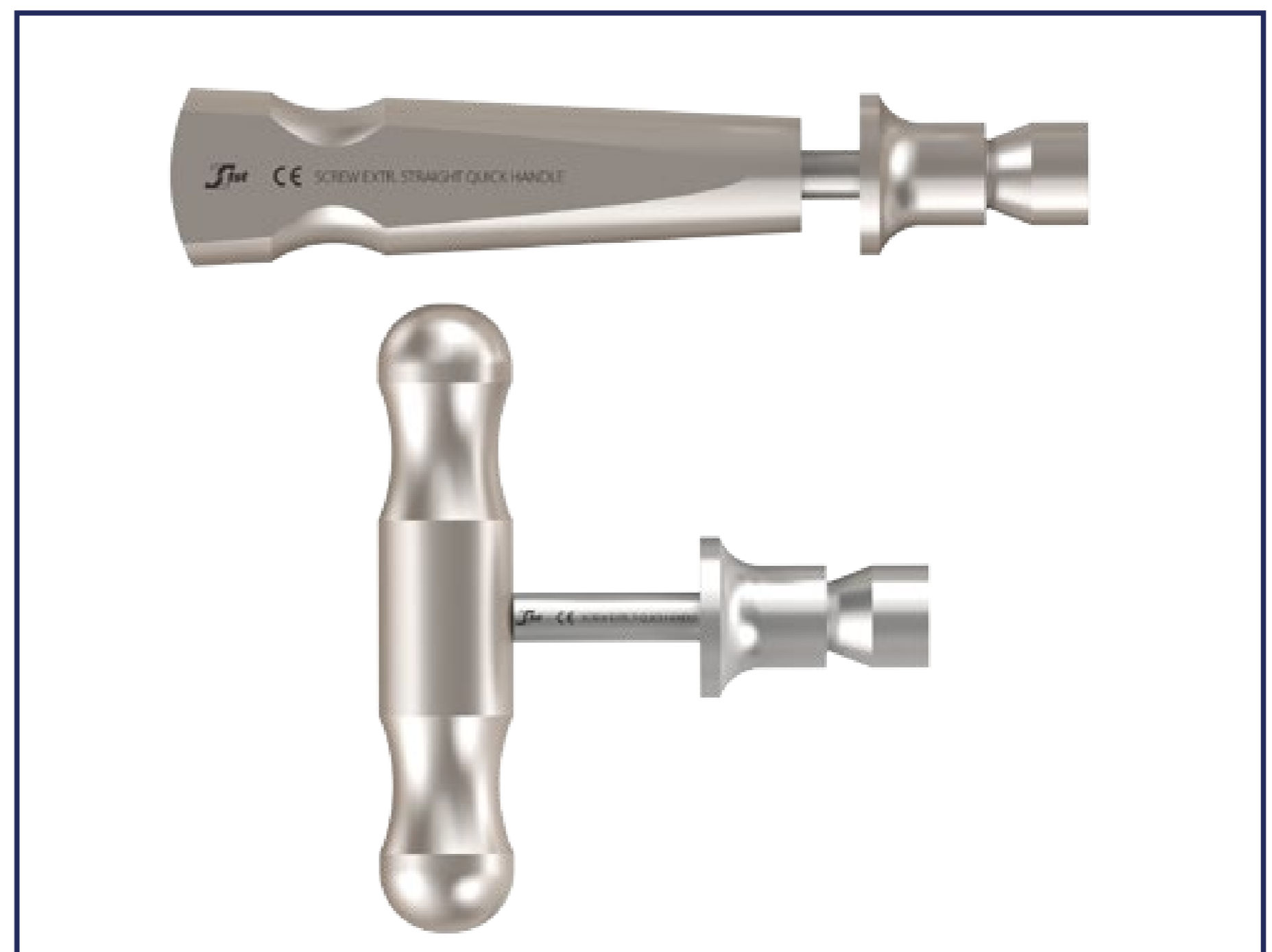
The set contains six different shapes of screwdriver blades including Hexagon, Star, Slot, Cross, Square and T-tipped. This instruments are compatible with screws in different head.



The set instruments are made of stainless steel material. Tables and set transport containers are suitable for autoclave sterilization.

Instruments can be used with both motor and holders due to quick plug-in properties.

Holders are in two different structures; Straight and T-holder.

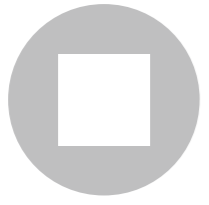


Warning:

This description is not sufficient by itself for direct and proper use of the instrument set intraoperatively. Instruction by a surgeon who is thoroughly trained and experienced in handling these instruments and in doing the procedure are highly recommended.



Star tipped instruments have six different sizes as T8, T10, T15, T20, T25 and T30.



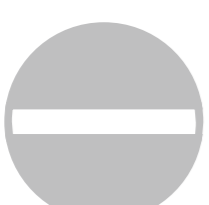
Square tipped instruments have two different sizes, including 1.2 mm and 1.5 mm.



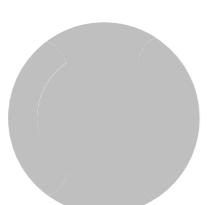
Hexagon tipped instruments; have nine different diameters, which are compatible with 1.5,1.7, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5 mm.



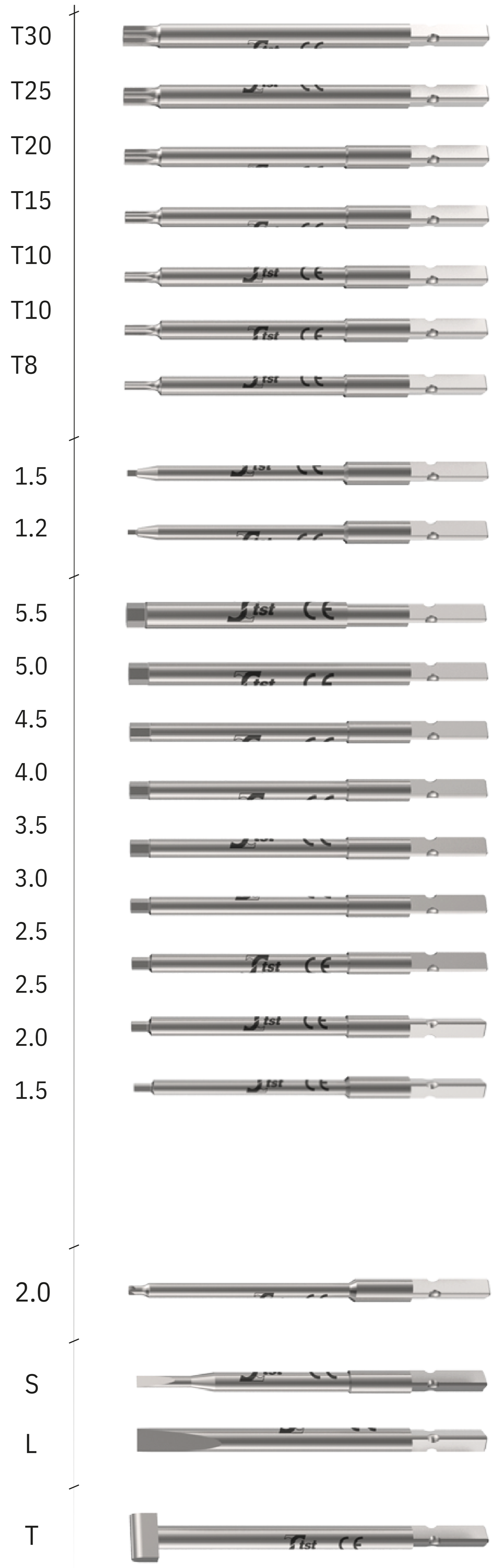
Crosshead-tip instrument has 2 mm tip width.



Slot screw driver tips are available in two different options for slotted screw.



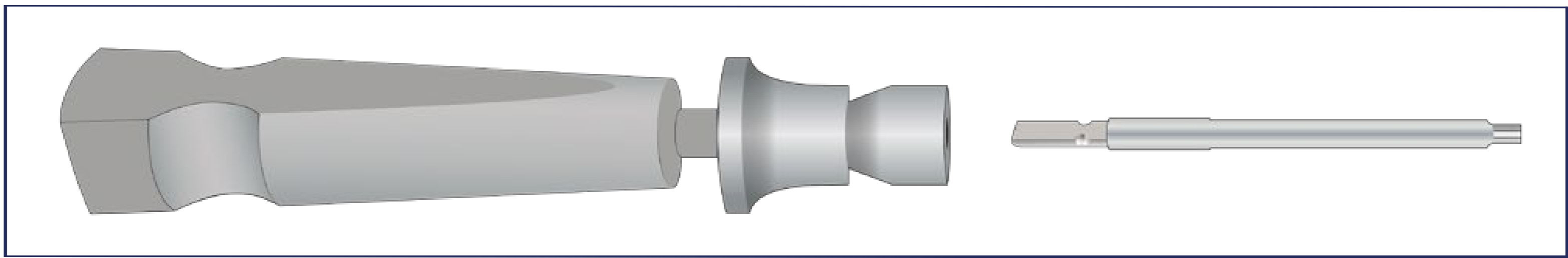
There is also a T-Pin Extractor in the set, which can be used for extracting pedicle screws, applied in spinal surgery.



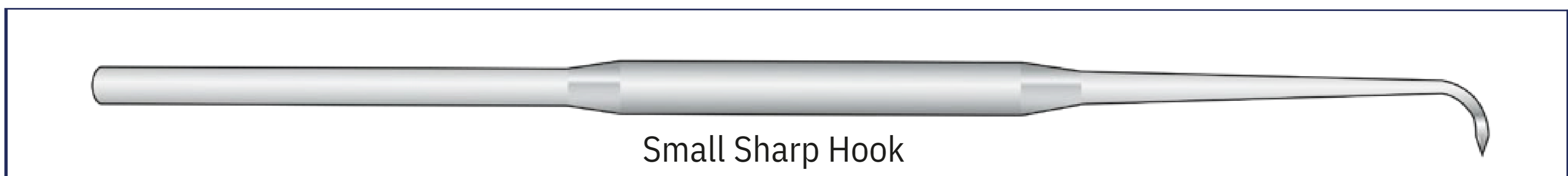
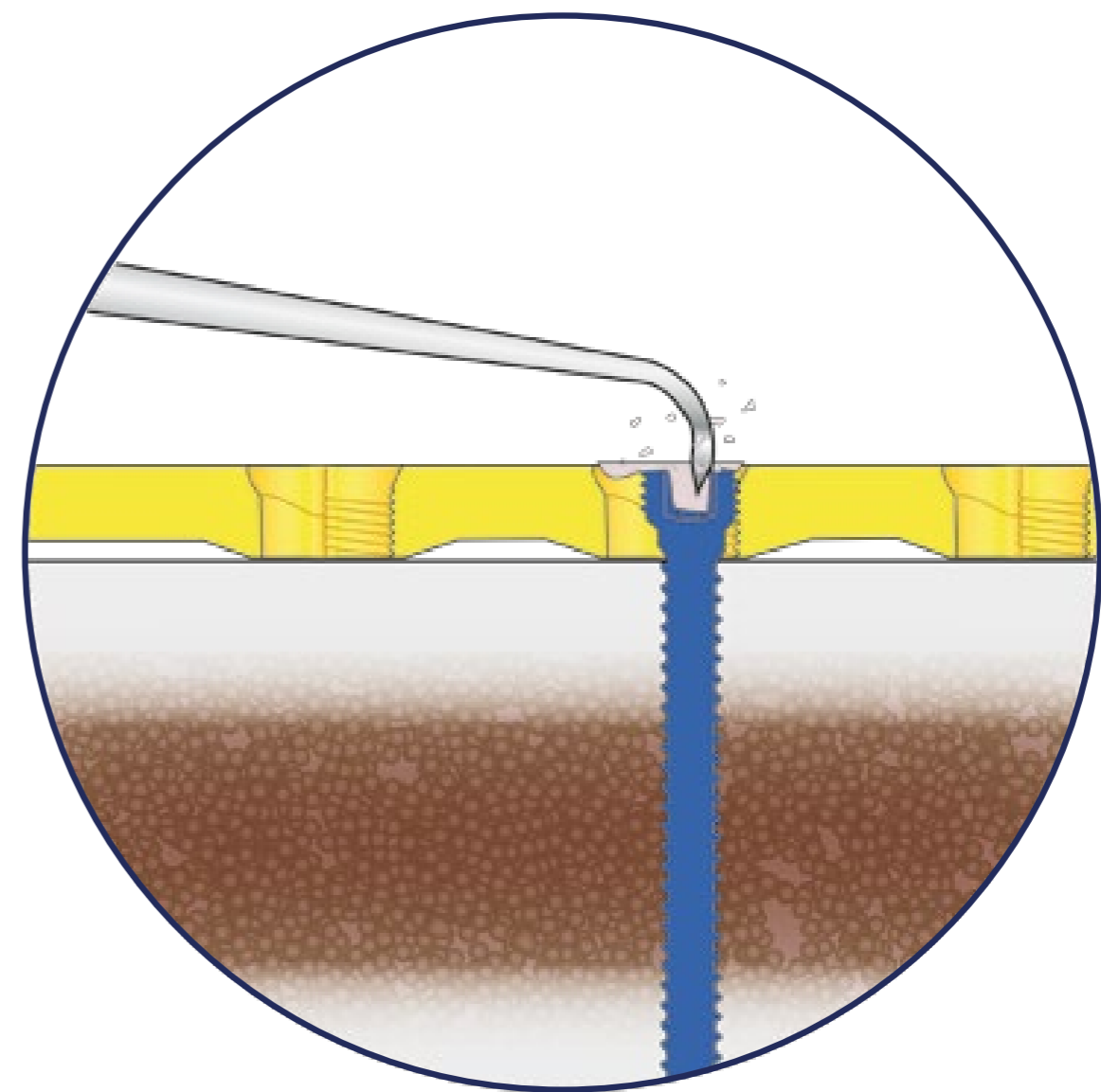
Usage

Preparation

In removal processes, the *Extractor Screw Drivers* and *Quick Handles* are determined by the type and diameter of the screws. The extractor is prepared to use by fitting to holder as in the picture.



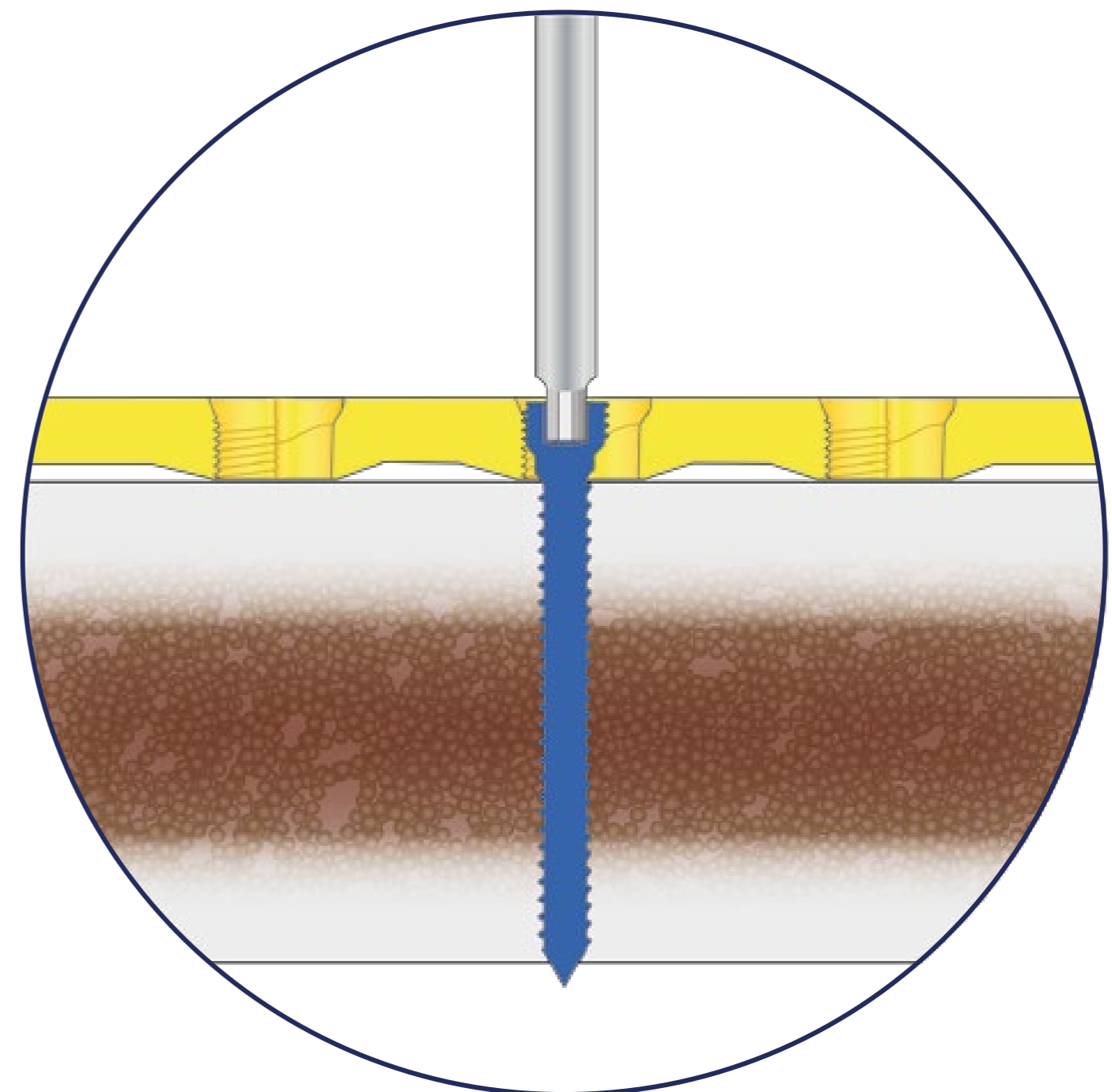
Screw head recess is cleaned from ingrown bone scraps and soft tissue remnants with *Sharp Hook* before removing screw. *Screw Extractor Spike Reamer* could be used if the screw is deeper than the bone surface.



The recess of the exposed screwhead's geometry and its condition are checked.

In the Case of the Screw Recess is Undamaged;

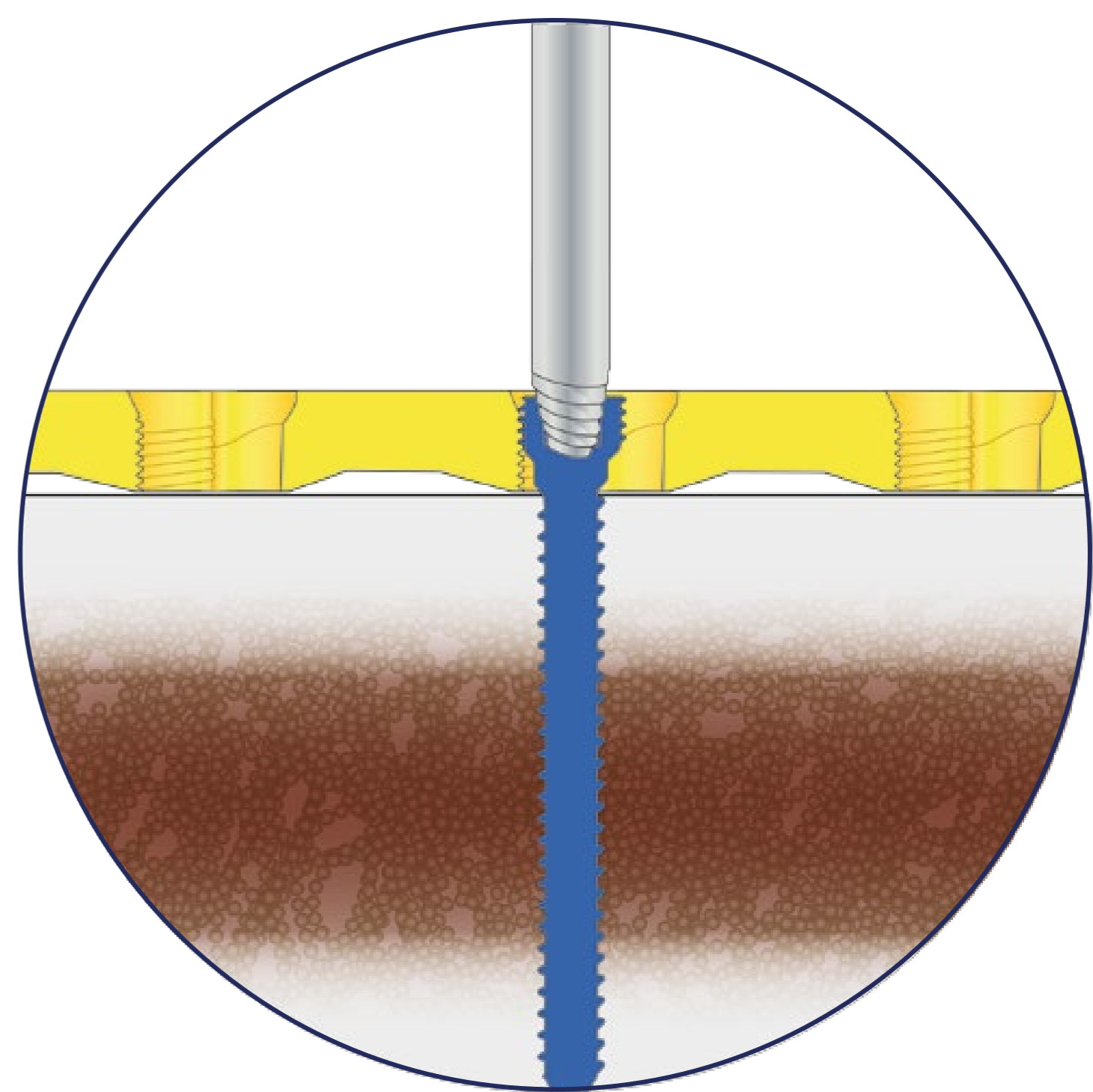
Insert the *Screwdriver* in all the screw recess. If necessary, lightly tap the *Screwdriver* with a *Hammer*. *Screwdriver* should be inserted on the same axis as the screw. If not, the screw recess or *Screwdriver* can be damaged. The extraction process carried out of counter clockwise.



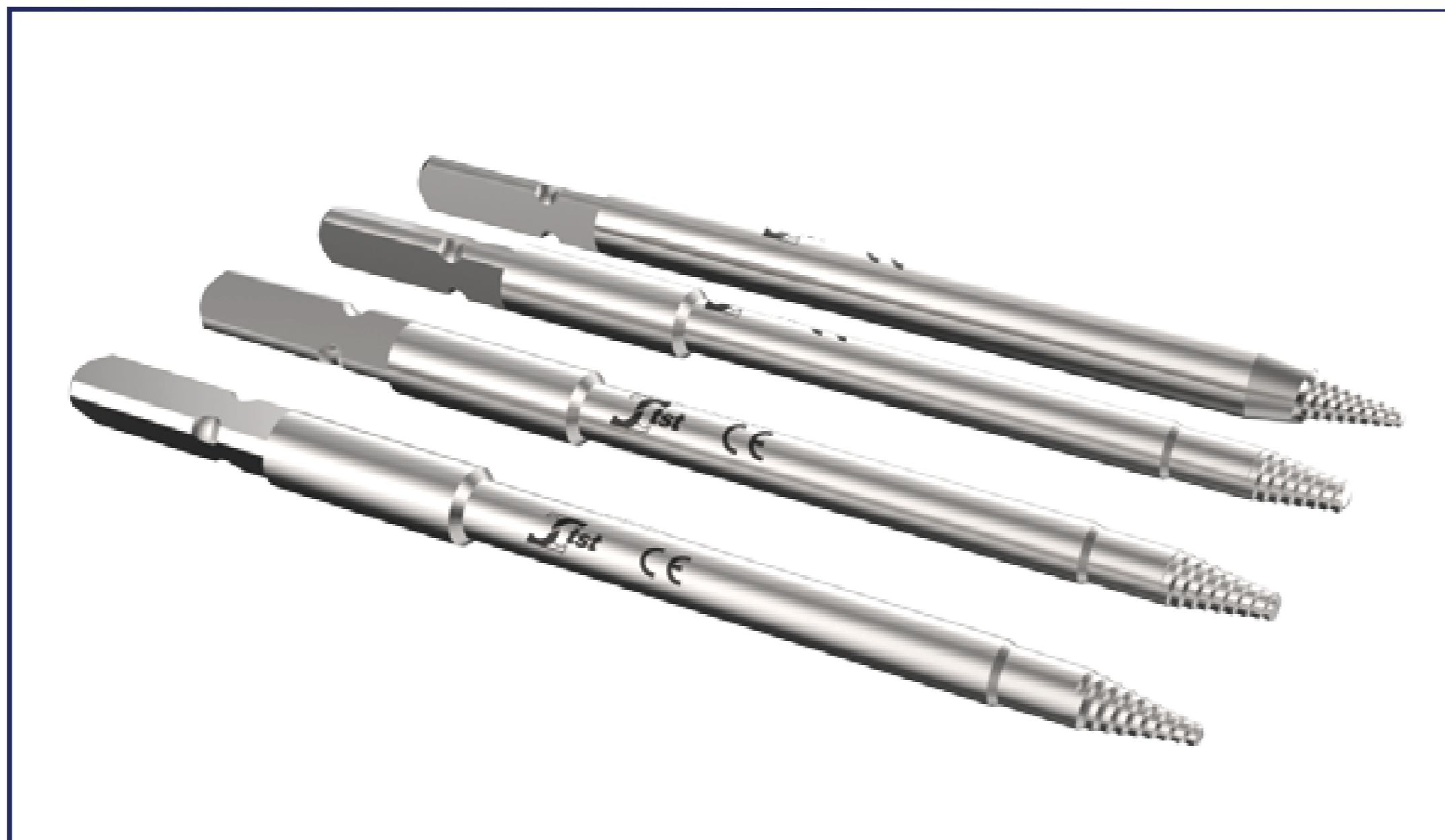
In the Case of the Screw Recess is Damaged;

In such cases as, screwdriver tip turns freely in the recess, the *Screw Extractor With Thread* is used to remove the damaged screw recess.

When the *Screw Extractor With Thread* is applied in the counter clockwise direction with special reverse threaded structure, it locks to the screw head and has high gripping and removing ability. There are four different sizes of *Screw Extractor With Inner Thread* suitable for 1.7 mm, 2.5 mm, 3.5 mm and 4 mm screwdriver inserts.



The *Screw Extractor With Thread* has a conical and reverse thread property. Once the conical tip is completely inserted into the damaged screw recess, then pressed and turned to counter clockwise, it should grasp and begin to remove the screw recess. It should be paid attention to ensure that the extractor is perpendicular (on the same axis) to the screw during the turn and sufficient pressure must be applied on the extractor. This practice should be done manually by applying sufficient pressure. Motor use is strictly not recommended.



There are four different sizes of the *Threaded Screwdriver* in the set.











Screw Drive Screw Sizes Recess(mm)		Screw Extractor With Thread				Screw Extractor Drill			
		1.7 mm	2.5 mm	3.5 mm	4.0 mm	3.0 mm	5.0 mm	6.0 mm	7.0 mm
	1.5, 2.0, 2.5	█				█			
	T8, T10	█				█			
	1.2, 1.5	█				█			
	2.0	█				█			
	2.5, 3.5, 4.0		█			█	█		
	T15, T20		█			█	█		
	4.5, 5.0, 5.5			█			█	█	
	T25			█			█	█	
	5.5				█		█	█	
	T30				█		█	█	

Table 1

Suitable screwdriver diameter and screw recess shapes that can be used according to the dimensions of threaded screwdrivers on the side table are given. This value could vary indistinctly depending on the degree of damage of the screw head recess.

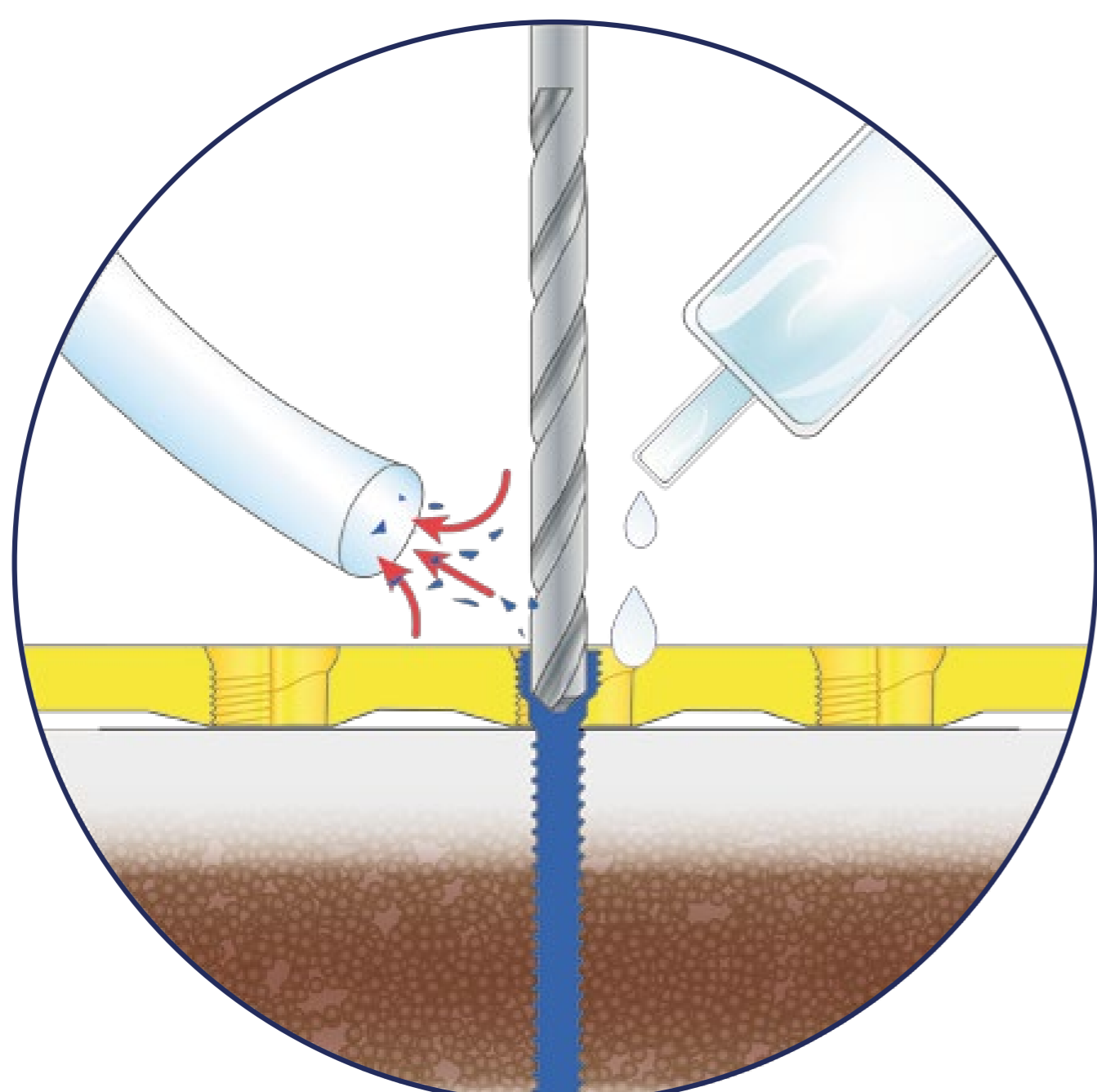
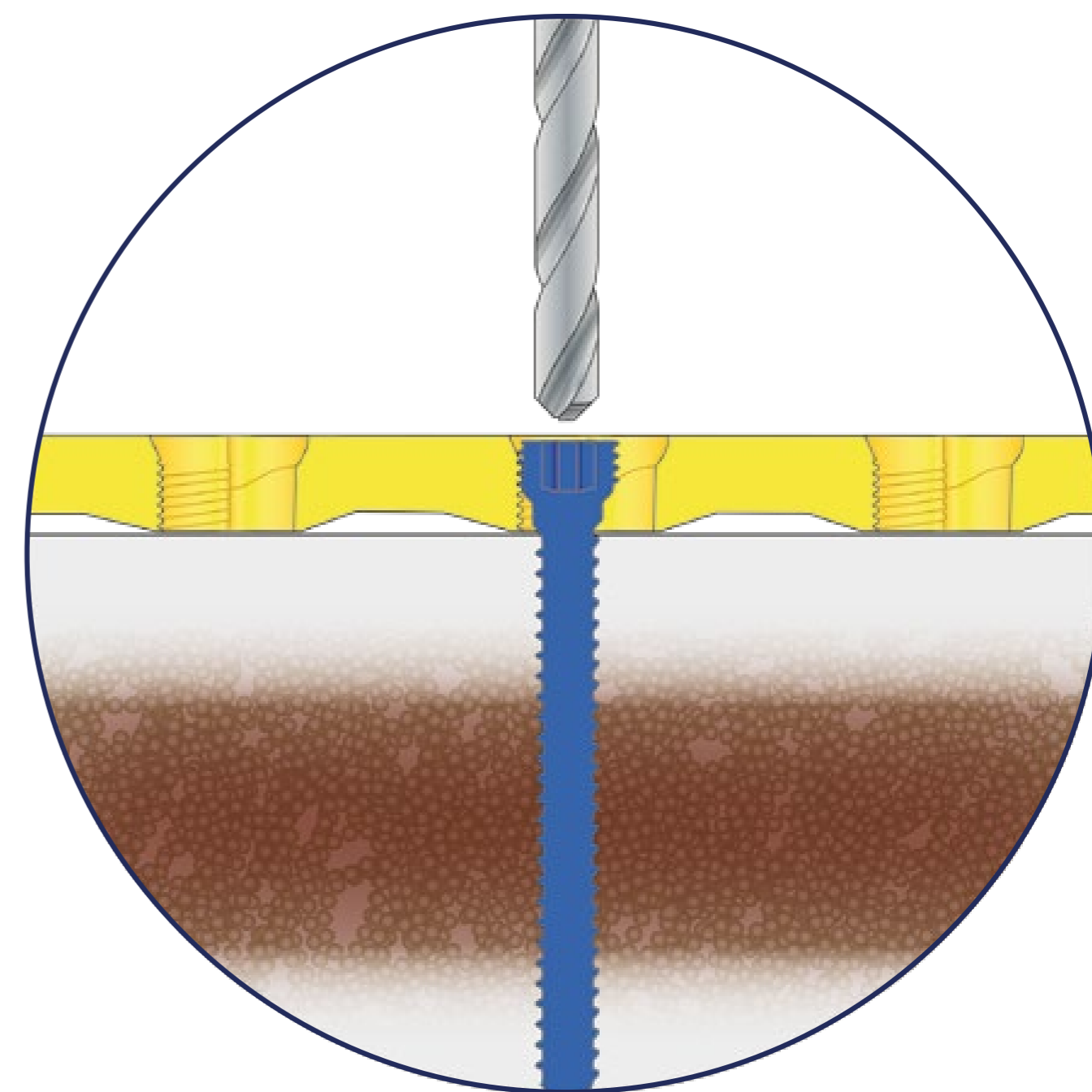
In the Case of the Screw Recess is Damaged and Threaded Screwdriver Rotates Freely in Damaged Screw Recess;

The damaged screw recess is fragmented by carving with an appropriate drill.

Four different (3, 5, 6, 7 mm) diameters of carbide (diamond) drills are available in the set. They are used for drilling; hard metal materials as titanium and steel.

The head diameter of the damaged screw remaining in the threaded hole of the plate is determined. Then the proper drill is determined and attached to the motor.

Please check Table 1 for the suitable drill selection.

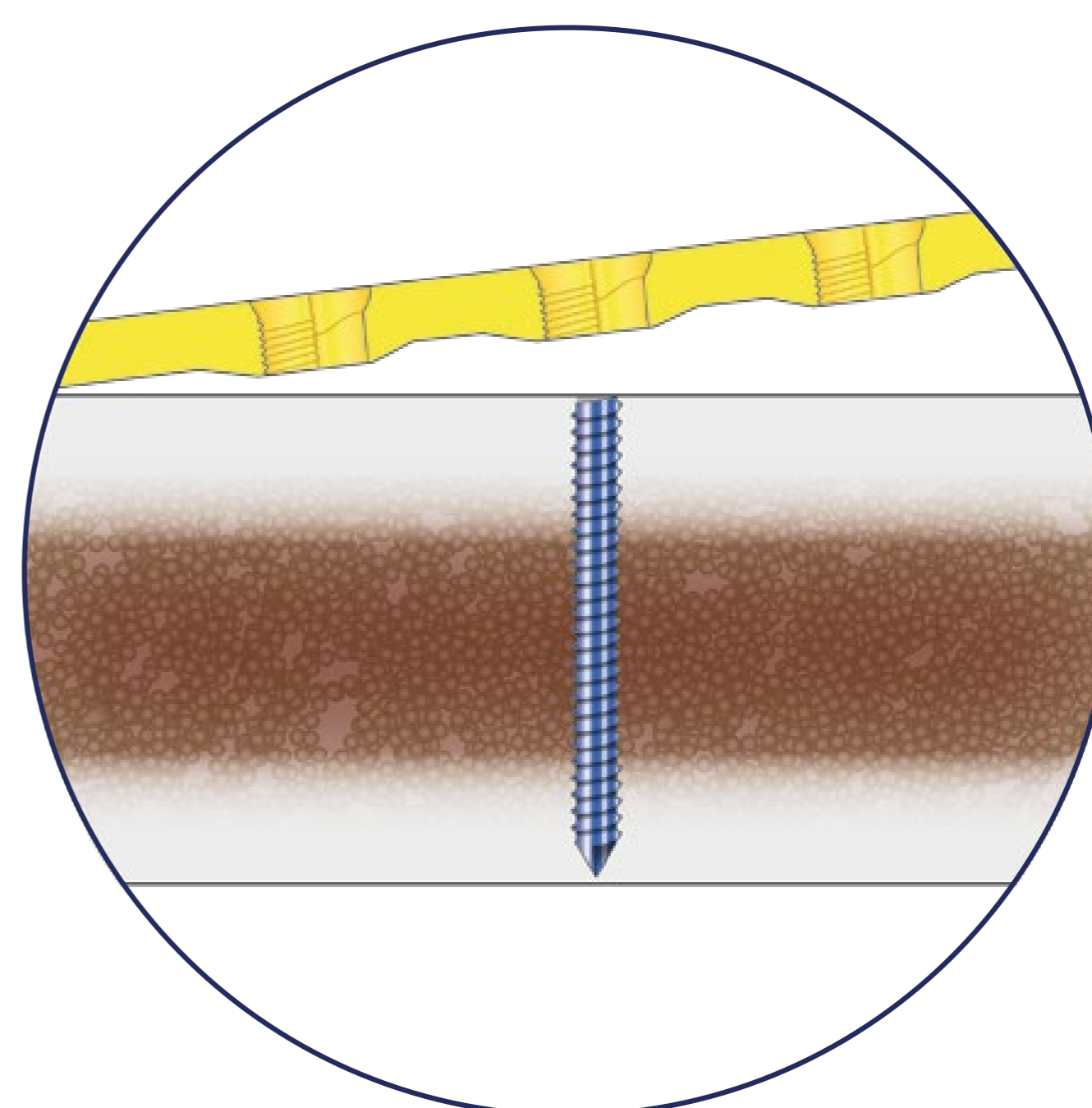


The head of the screw is centered, the head of the screw is carefully carved.

During this process, the metal particles are eliminated by washing and aspiration.

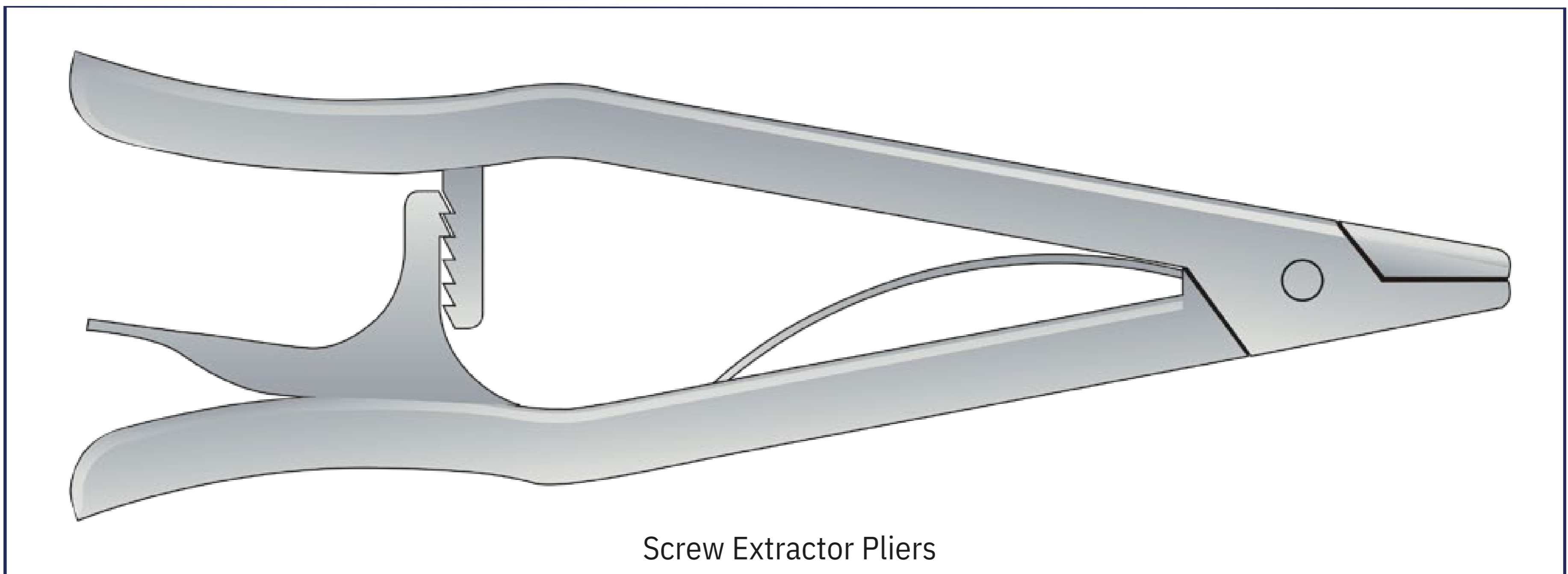
The carving process is continued till the head of the screw is shivered and separated from the body. (The motor must be continued without stopping for an effective engraving operation by applying the same level in sufficient force and as the drill screw axis.) When the screw head is broken the plate is separated from the screw.

Drills are disposable. Used drills must not be used again by reprocessing or sterilization.



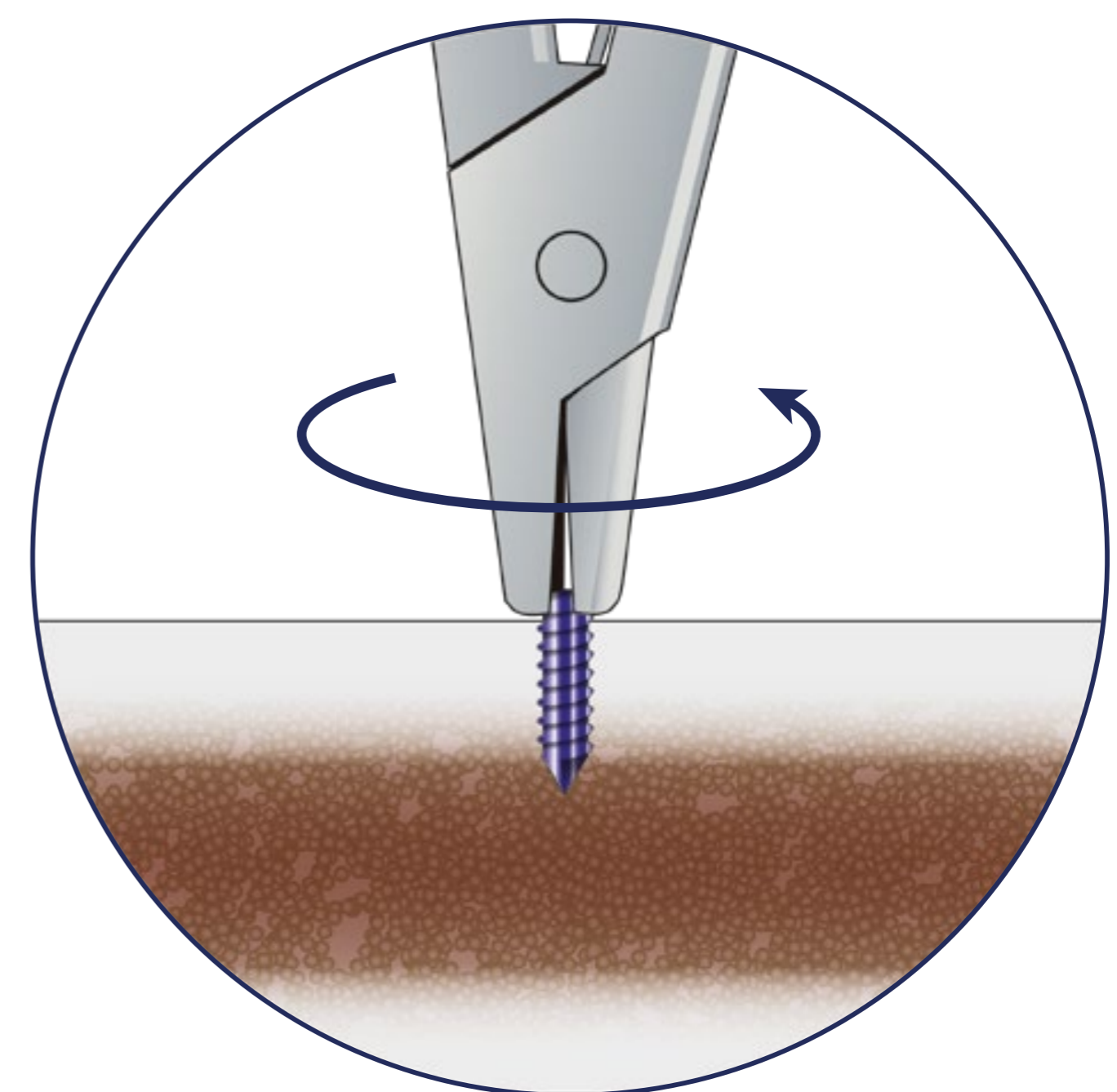
In Case of Fractured Head Screw is Partially Outside of the Bone Surface;

In such cases, the *Screw Extractor Pliers* should be used for the purpose of removing short broken screws.



The screw caught by the *Screw Extractor Pliers* is removed by turning it counterclockwise.

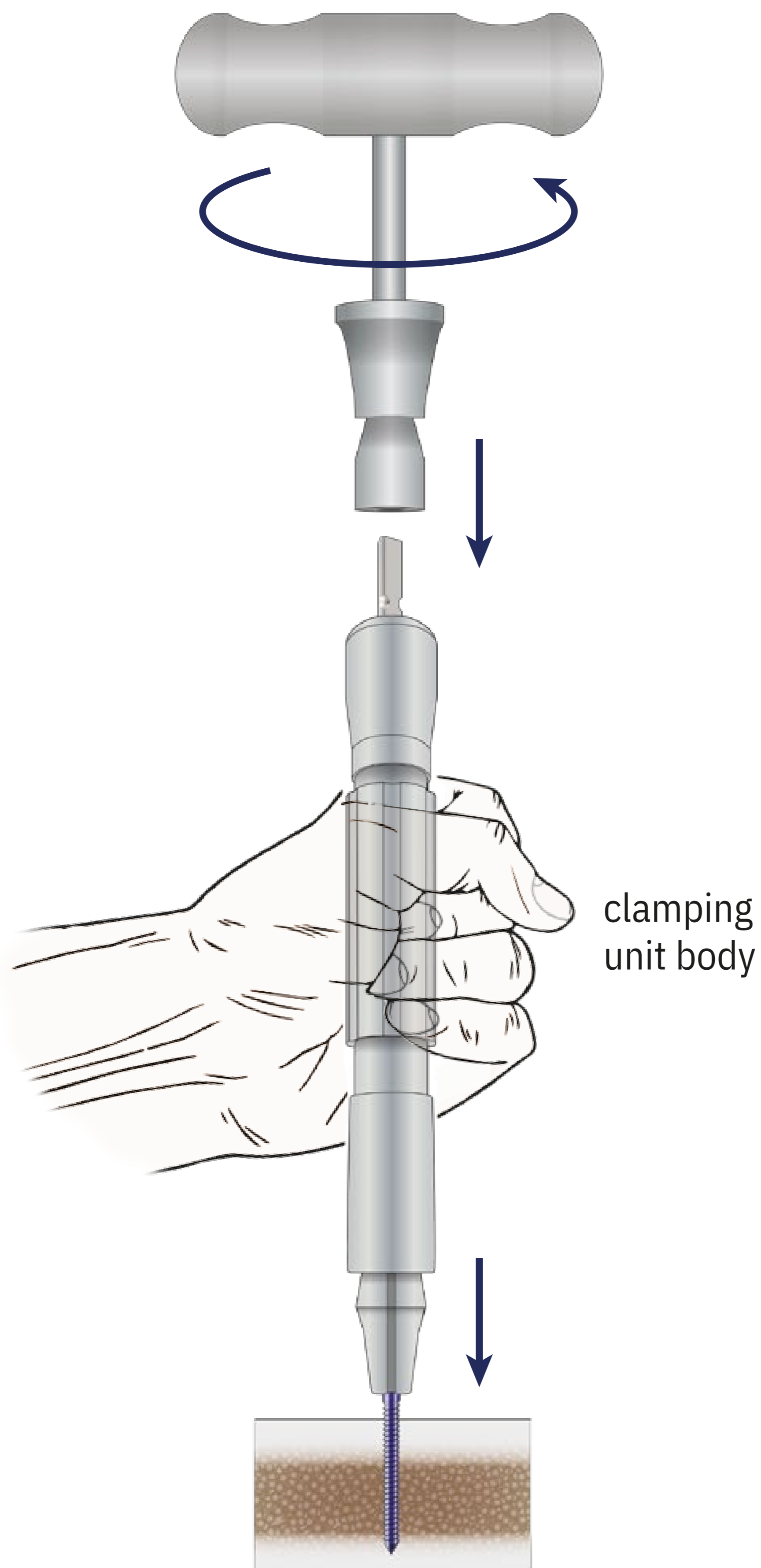
Upward pulling or pushing motion should not be done.



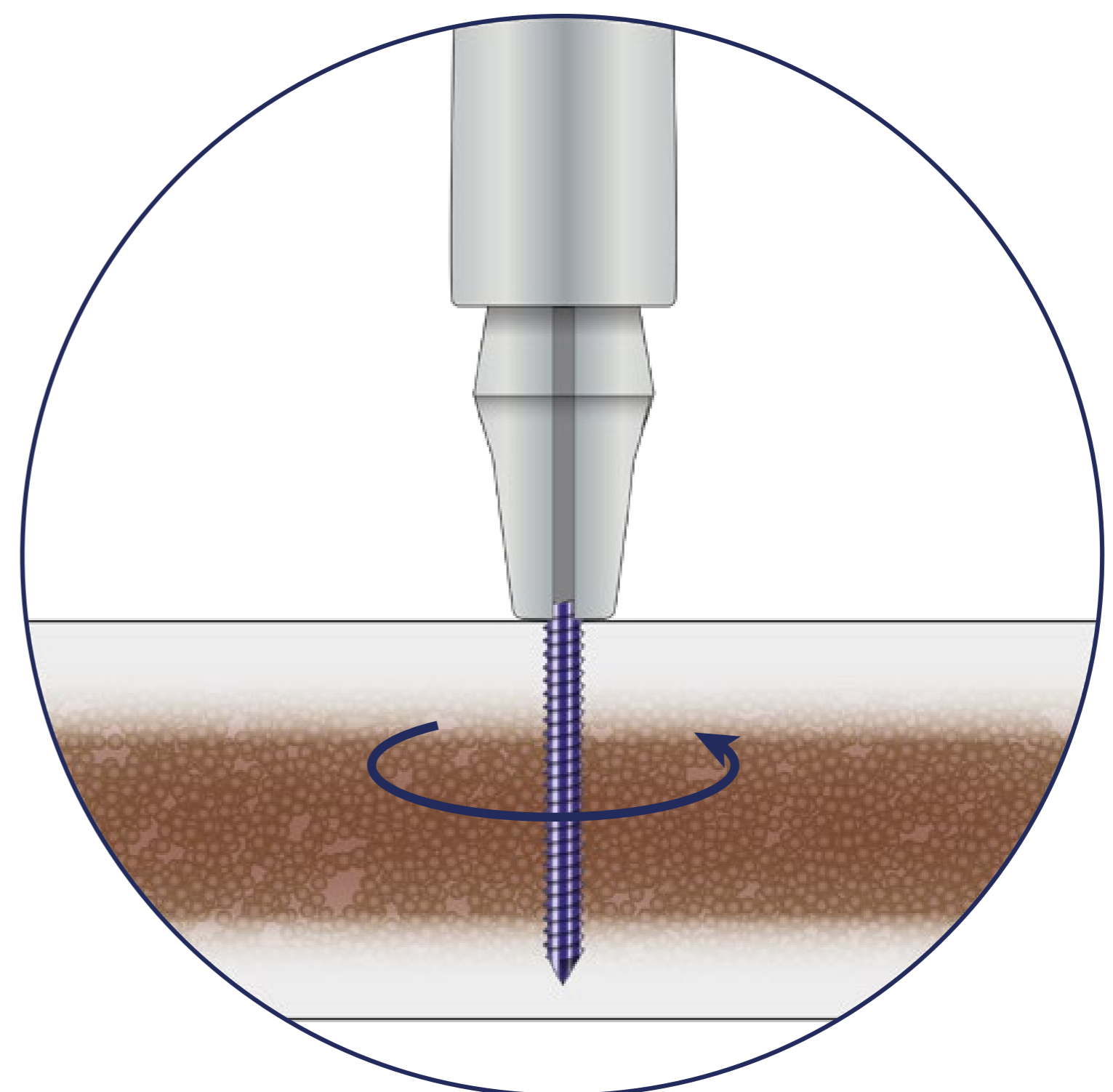
When some part of fractured head long size screw is outside of the bone surface we can use the *Broken Screw Extractor*.

Broken Screw Extractor is available in two different sizes (3.5 mm and 4.5 mm). If the screw diameter 3.5 mm-4.5 mm or less, 3.5 mm *Broken Screw Extractor* is used. If the screw diameter 4.5 mm-5 mm, 4.5 mm *Broken Screw Extractor* is used.

The remover is attached to the *T- Quick Holder* after clamping unit body the *T-Holder* is turned counter clockwise thus the screw is caught by bit of remover.

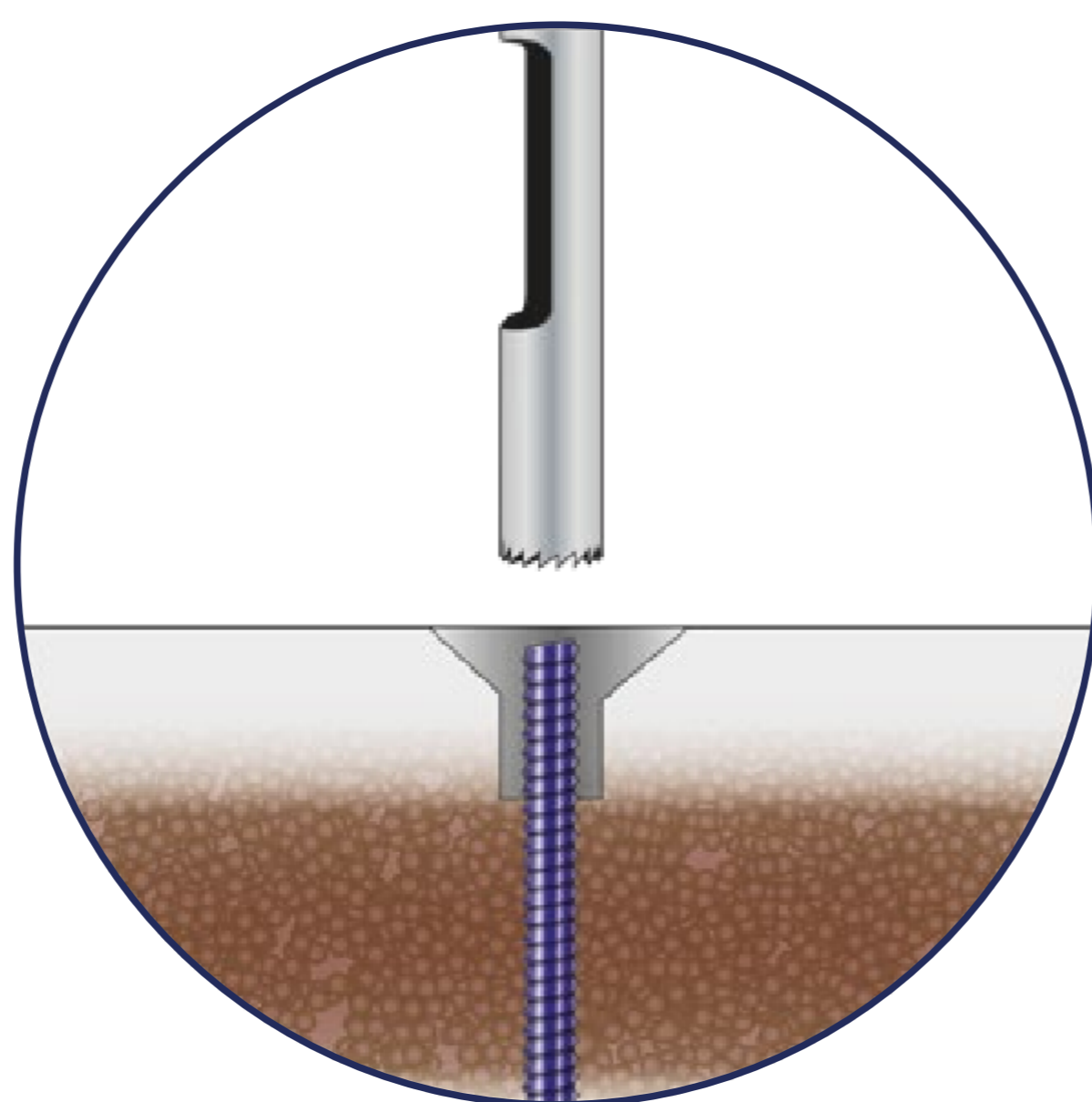
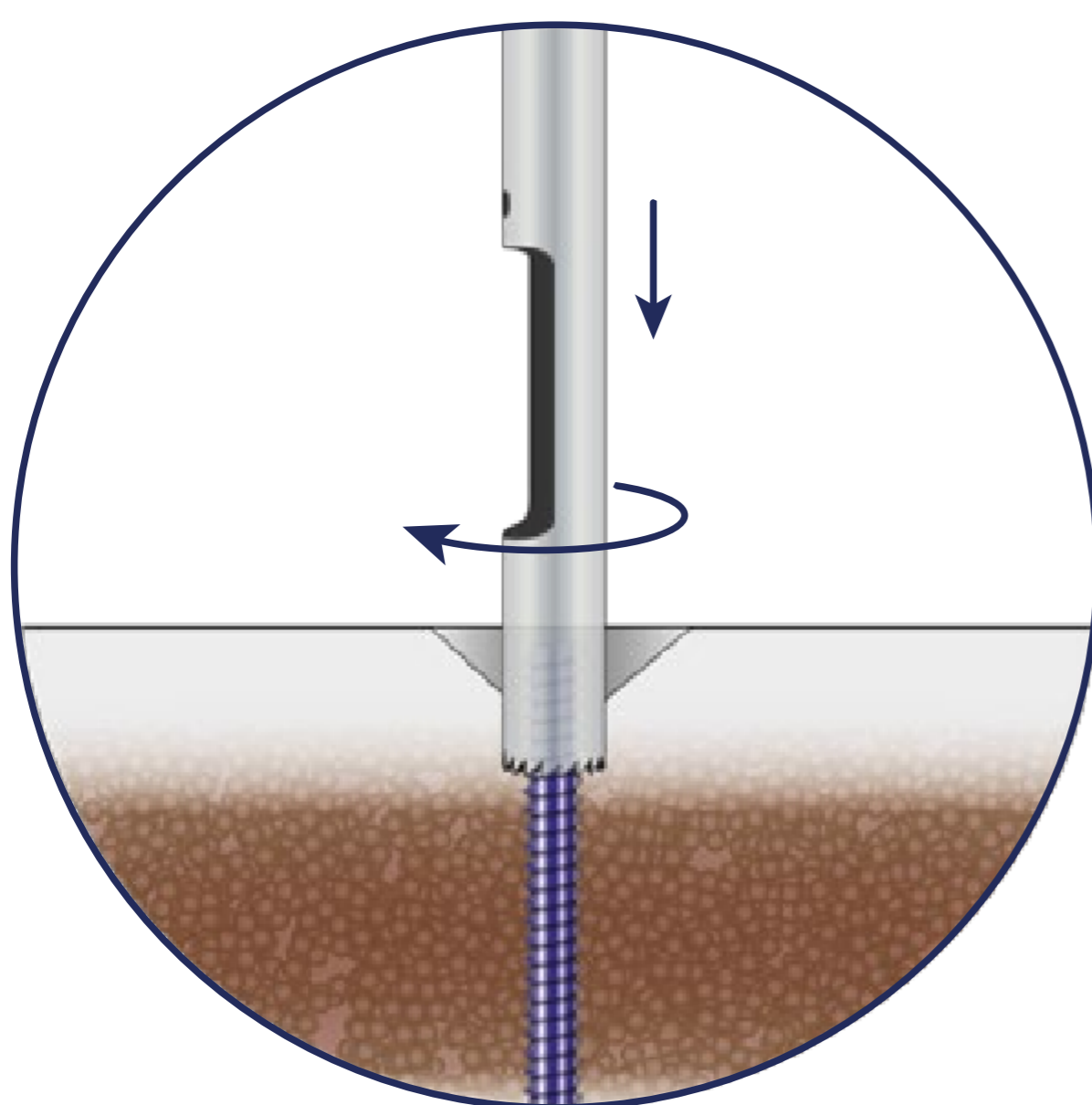
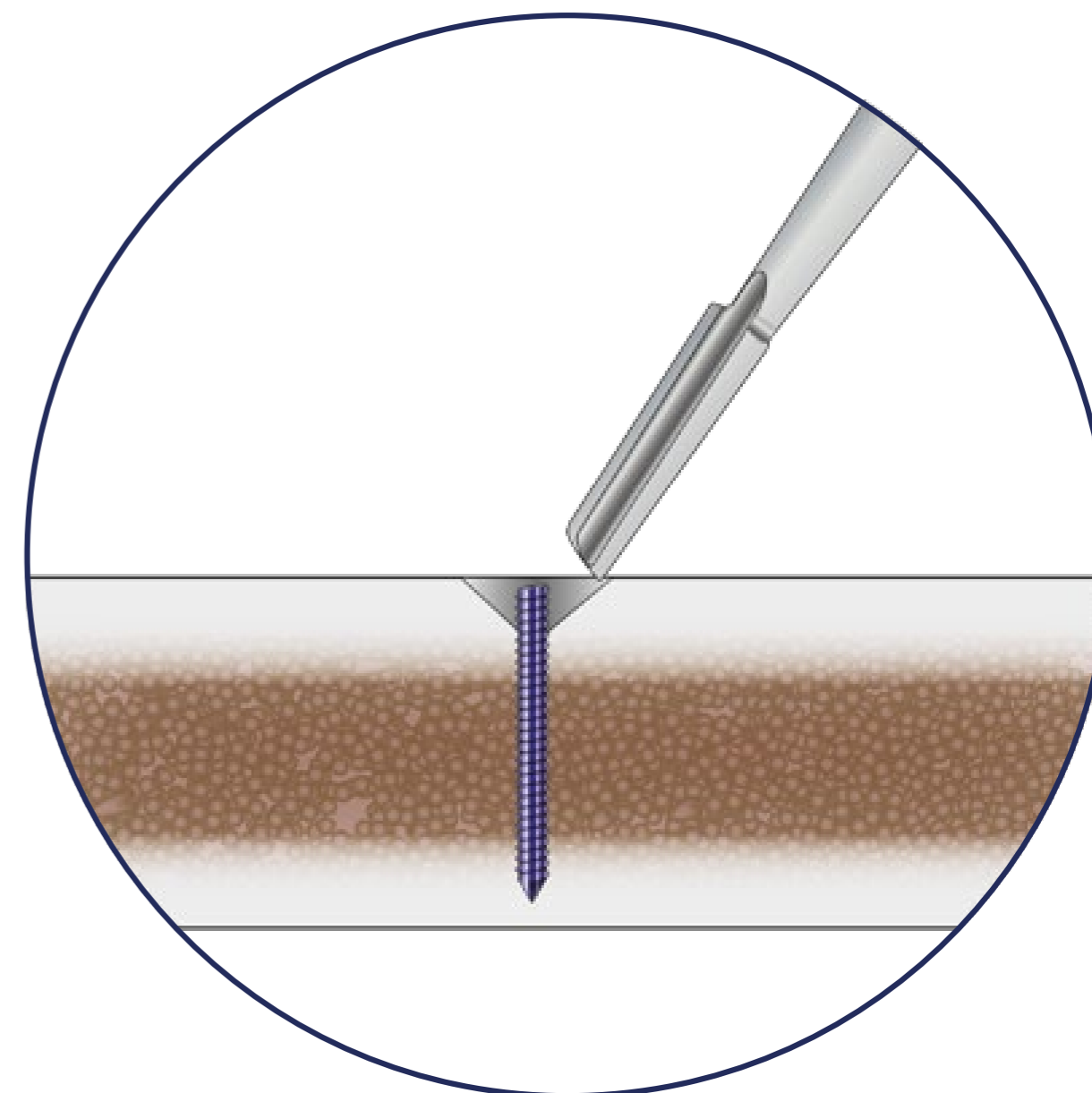


The screw extraction process is completed by turning the *T-Holder* counter clockwise.



In Case of Fractured Head Screw is Fully Inside the Bone Surface;

A screw centered space is opened by using the *Screw Extractor Bone Gouge*, in order to use the *Hollow Reamer*. (If the screw tip can be grasped by the *Screw Extractor Pliers*, it could be done as well.)



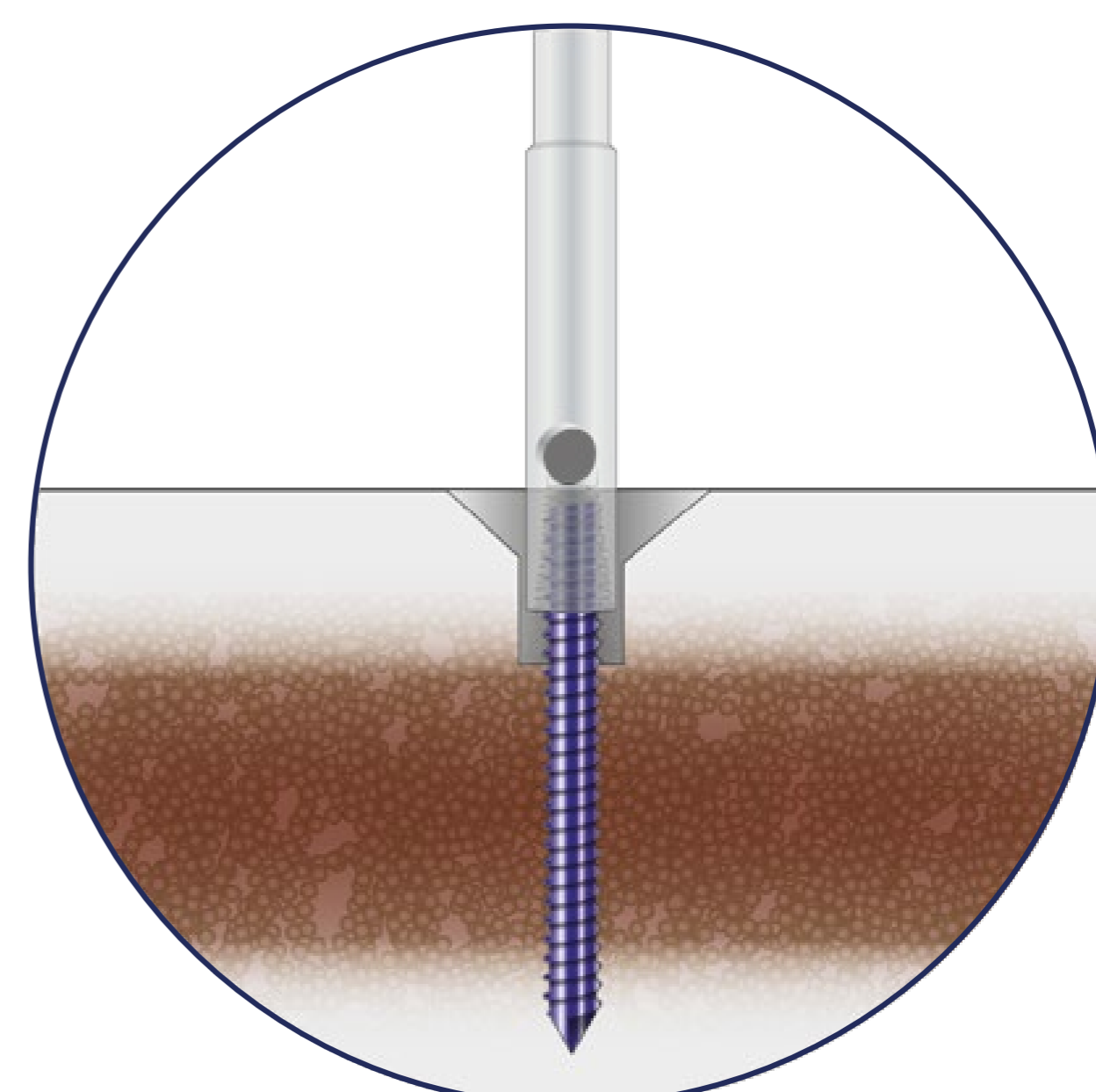
Then, through screw by using *Hollow Reamer* which designed as saw tipped, 6 mm depth hole around screw is opened. Process could be applied manually or by using a motor.

Please see Table 2 for the suitable *Hollow Reamer* selection.

Screw can be hold from threads by making gently pushes on screw with *Inner Thread Screw Extractor*. Conical and *Inner Threaded Extractor* is turned counter clockwise thus a strong gripping is made. In this way extraction is completed.

During the extraction process, extractors should be on the same line with the screw axis. Various sizes of *Inner Thread Screw Extractors* are available according to screw body diameter. Different types of *Inner Thread Screw Extractors* are available for 3.5 mm, 4.5 mm, 5 mm, 5.5 mm to 6.5 mm diameter screws.

Please check Table 3 for suitable *Inner Thread Screw Extractor*.



Fluoroscopic control is recommended after removing bone screws.



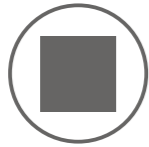

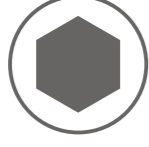
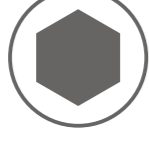


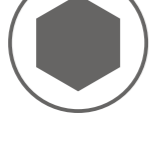



Screw Drive Recess	Screw Sizes (mm)	Screw Extractor Hollow Reamer					
		2.0 mm	2.7 mm	4.0 mm	5.0 mm	6.5 mm	8.0 mm
	1.5, 2.0	█					
	T8, T10	█					
	1.2, 1.5	█					
	2.0	█					
	2.5, 3.0		█				
	3.5, 4.0			█			
	T15, T20			█			
	4.5, 5.0				█		
	5.5, 6.0, 6.5					█	
	T25					█	
	7.3						█
	T30						█

Table 2







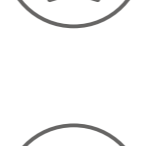

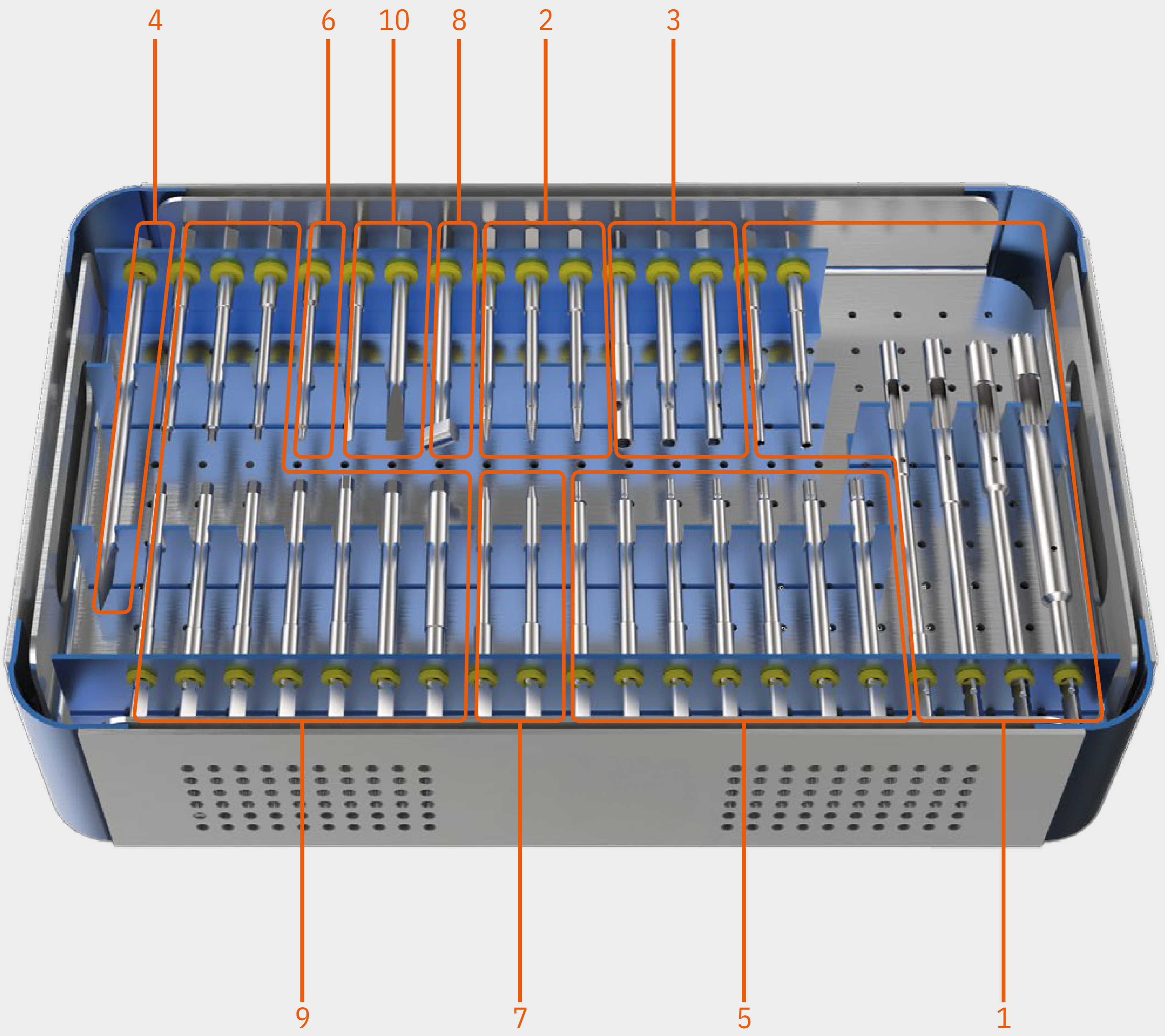
Screw Drive Recess	Screw Sizes (mm)	Screw Extractor With Inner Thread				
		3.5 mm	4.5 mm	5.0 mm	5.5 mm	6.5 mm
	3.5, 4.0	█				
	T15, T20	█				
	4.5		█			
	5.0			█		
	5.5, 6.0				█	
	6.5, 7.5					█
	T25					█
	T30					█

Table 3

Set Detail

Tray 1

N°	Code	Reference	Description	Qty
1	02121002020	ZQ2161RN	SCREW EXTR. HOLLOW REAMER 2.0 MM	1
	02121002027	ZQ2164RN	SCREW EXTR. HOLLOW REAMER 2.7 MM	1
	02121002040	ZQ2168RN	SCREW EXTR. HOLLOW REAMER 4.0 MM	1
	02121002050	ZQ2171RN	SCREW EXTR. HOLLOW REAMER 5.0 MM	1
	02121002065	ZQ2174RN	SCREW EXTR. HOLLOW REAMER 6.5 MM	1
	02121002080	ZQ2177RN	SCREW EXTR. HOLLOW REAMER 8.0 MM	1
2	02121000001	ZQ2154RN	SCREW EXTRACTOR WITH THREAD Ø 2.5 MM	1
	02121000002	ZQ2156RN	SCREW EXTRACTOR WITH THREAD Ø 3.5 MM	1
	02161000005	ZQ2157RN	SCREW EXTRACTOR WITH THREAD Ø 4.0 MM	1
3	02121000003	ZQ2180RN	SCREW EXTRACTOR WITH INNER THREAD Ø 3.5 MM	1
	02121000007	ZQ2182RN	SCREW EXTRACTOR WITH INNER THREAD Ø 4.5 MM	1
	02121000008	ZQ2185RN	SCREW EXTRACTOR WITH INNER THREAD Ø 6.5 MM	1
4	02121002150	ZQ1947RN	SCREW EXTR. SPIKE REAMER 5 MM	1
5	02121003300	ZQ2134RN	SCREW EXTR. SCREWDRIVER STAR TIP T30	1
	02121003250	JQ2132RN	SCREW EXTR. SCREWDRIVER STAR TIP T25	1
	02121003200	ZQ2131RN	SCREW EXTR. SCREWDRIVER STAR TIP T20	1
	02121003150	JQ2130RN	SCREW EXTR. SCREWDRIVER STAR TIP T15	1
	02121003100	JQ2129RN	SCREW EXTR. SCREWDRIVER STAR TIP T10	2
	02121003080	JQ2127RN	SCREW EXTR. SCREWDRIVER STAR TIP T8	1
	02121004020	JQ2108RN	SCREW EXTR. SCREWDRIVER CROSS TIP 2.0 MM	1
	02121004015	JQ2093RN	SCREW EXTR. SCREWDRIVER SQUARE TIP 1.5 MM	1
7	02121004012	JQ2092RN	SCREW EXTR. SCREWDRIVER SQUARE TIP 1.2 MM	1
	02121004000	ZQ1335RN	SCREW EXTR. PEDICUL SCREWDRIVER T-TIP	1
8	02121005055	ZQ2087RN	SCREW EXTR. SCREWDRIVER HEX. TIP 5.5 MM SCREW	1
	02121005050	ZQ2086RN	EXTR. SCREWDRIVER HEX. TIP 5.0 MM SCREW EXTR.	1
	02121005045	ZQ2085RN	SCREWDRIVER HEX. TIP 4.5 MM SCREW EXTR.	1
	02121005040	ZQ2084RN	SCREWDRIVER HEX. TIP 4.0 MM SCREW EXTR.	1
	02121005035	JQ2083RN	SCREWDRIVER HEX. TIP 3.5 MM SCREW EXTR.	1
	02121005030	ZQ2082RN	SCREWDRIVER HEX. TIP 3.0 MM SCREW EXTR.	1
	02121005025	JQ2081RN	SCREWDRIVER HEX. TIP 2.5 MM SCREW EXTR.	2
	02121005020	ZQ2080RN	SCREWDRIVER HEX. TIP 2.0 MM SCREW EXTR.	1
	02121005015	ZQ2079RN	SCREWDRIVER HEX. TIP 1.5 MM SCREW EXTR.	1
	02121003000	ZQ2100RN	SCREWDRIVER SLOTTED TIP S	1
10	02121001000	ZQ2101RN	SCREW EXTR. SCREWDRIVER SLOTTED TIP L	1
	000201700		SCREW EXTR. DESIGN TRAY	1



|Tray 2

N°	Code	Reference	Description
11	02083000002	ZQ1947RN	SMALL SHARP HOOK
12	02121006001	ZQ1240RN	SCREW EXTR. BONE GOUGE
13	02121006002	ZQ2189RN	SCREW EXTR. T-QUICK HANDLE
14	02121006003	ZQ2188RN	SCREW EXTR. STRAIGHT QUICK HANDLE
15	02121001030	DZ1178R	SCREW EXTR. DRILL 3.0 MM
	02121001050	ZQ2144RN	SCREW EXTR. DRILL 5.0 MM
	02121001060	ZQ2147RN	SCREW EXTR. DRILL 6.0 MM
	02121001070	ZQ2150RN	SCREW EXTR. DRILL 7.0 MM
16	02121001035	ZQ2115RN	3.5 MM BROKEN SCREW EXTRACTOR
	02121001045	ZQ2116RN	4.5 MM BROKEN SCREW EXTRACTOR
17	02121006004	ZQ2121RN	SCREW EXTR. PLIERS
18	02161000017	DZ2251RN	SCREW EXTRACTOR WITH THREAD Ø 1.7 MM
	00340215080		CONTAINER

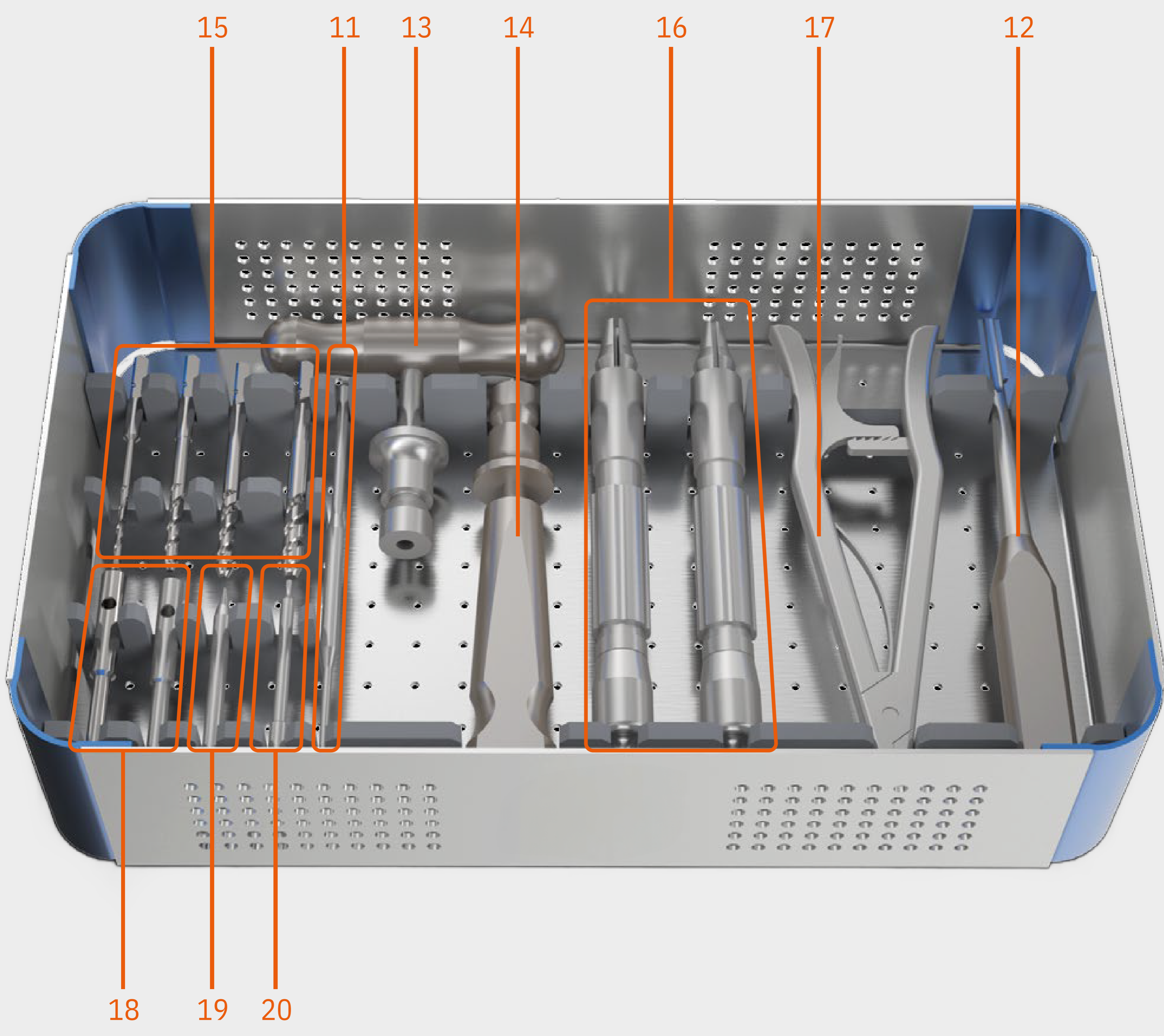
Additional Options Available for Order

Torx mini fragment :

- T4 (Reference : DZ5315RN)
- T5 (Reference : DZ5316RN)
- T6 (Reference : DZ5317RN)
- T7 (Reference : DZ5318RN)

Single-Use CE-Certified Tungsten Drills:

- 2,6 mm (Reference : 40.5657.026)
- 3,4 mm (Reference : 40.5657.034)
- 4,7 mm (Reference : 40.5657.047)
- 6,2 mm (Reference : 40.5657.062)



SCREW EXTRACTION SET

