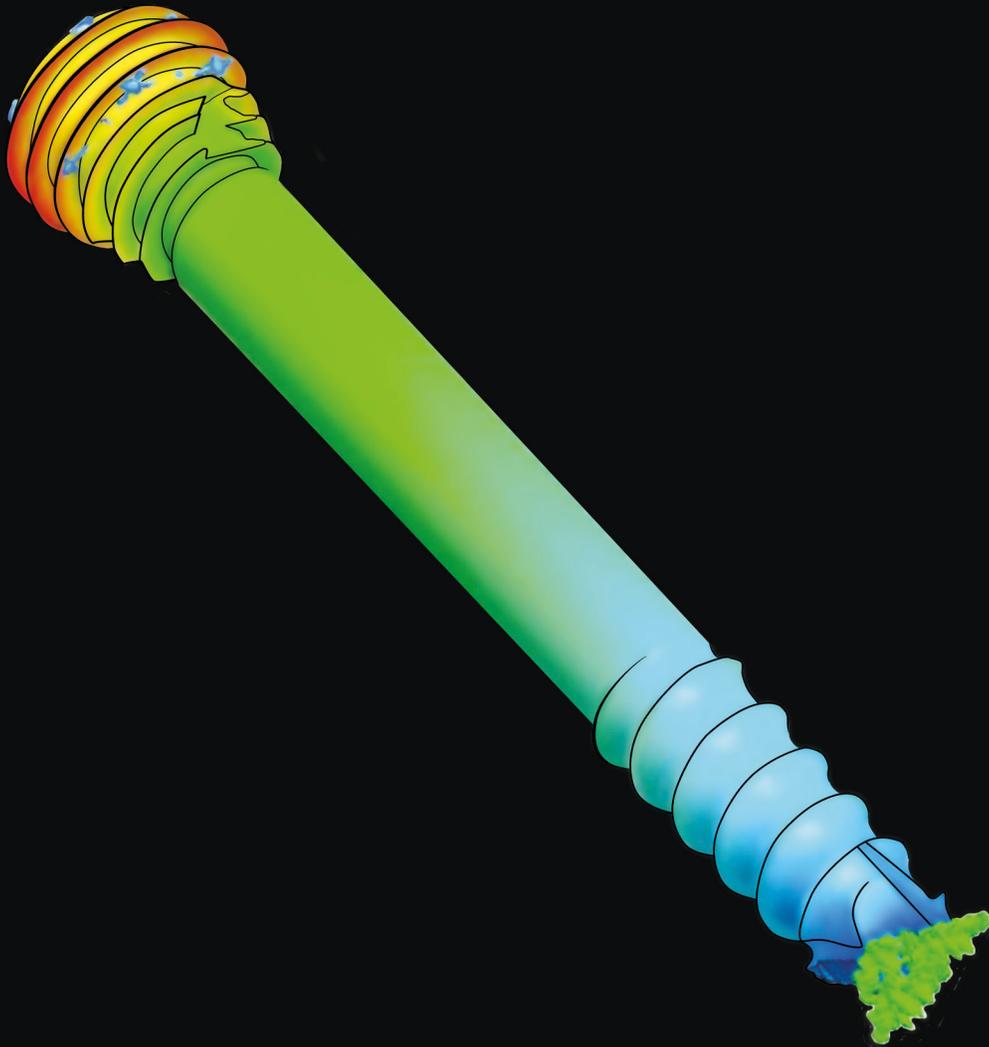


# SURGICAL TECHNIQUE

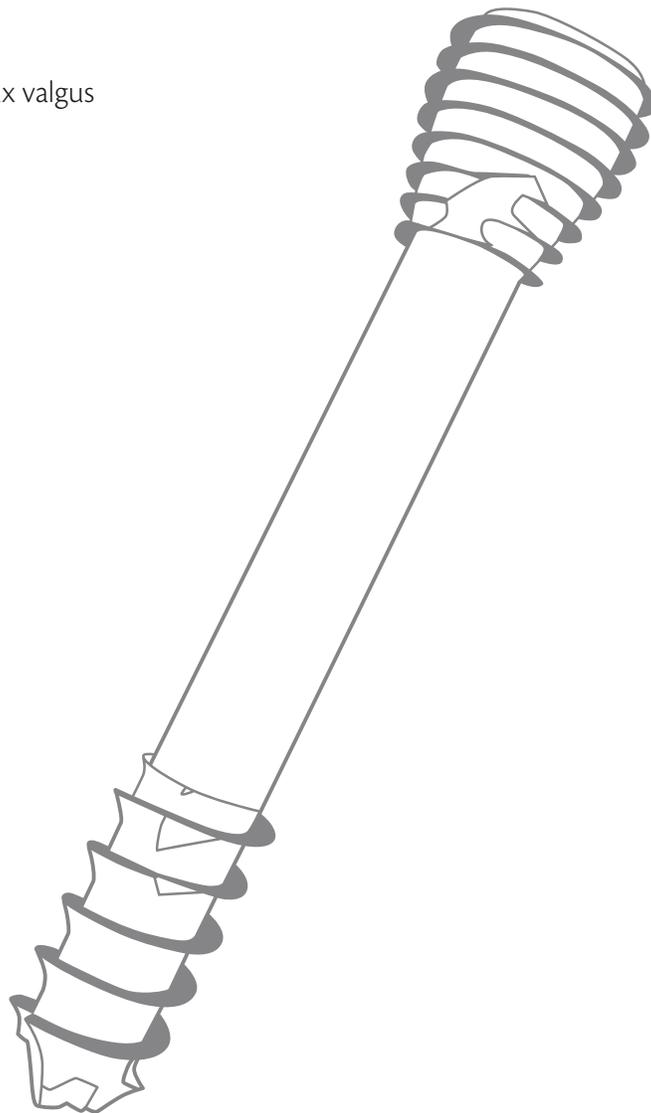
## HFS Herbert cannulated compression screw



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This description of the technique is not sufficient for the immediate clinical application of this product, practical learning with a surgeon experienced in the use of these products is strongly recommended.

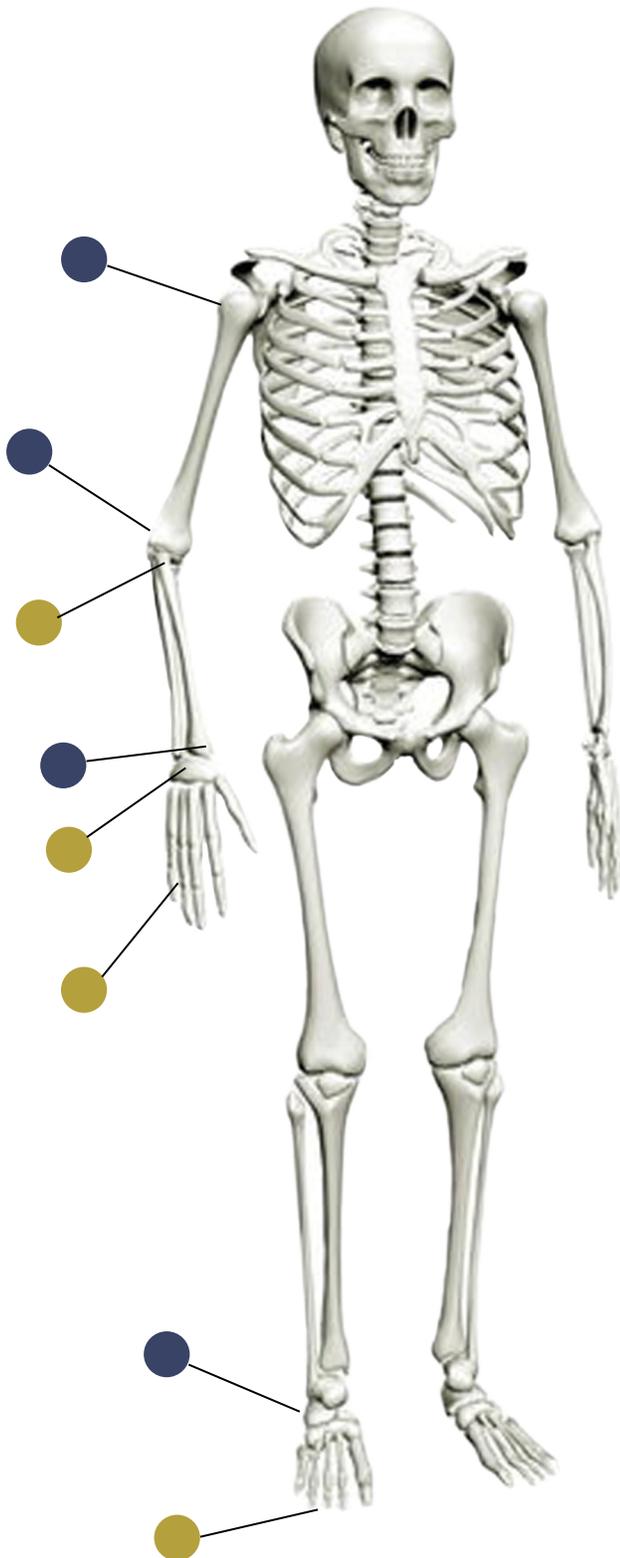
For more information on general directives, function control or disassembly of multi-part instruments, as well as processing instructions for implants, please contact your local representative or see:

[www.traufix.com](http://www.traufix.com)



Traufix's headless compression screws are manufactured with a Ti6Al-4V ELI titanium alloy (ASTM F136). Premium quality biocompatible alloy.

## Examples of use



Herbert Fix Screw



### Shoulder

Fractures, bone ligament and tendon avulsion:

- Proximal humerus
- Glenohumeral joint

### Elbow

Fractures:

- Distal humerus
- Proximal ulna
- Proximal radius

### Wrist

Fractures, styloid avulsion and fixation of bone fragmentation in:

- Radius
- Ulna

### Hand

Transverse fractures, bone ligament and tendon avulsion, as well as arthrodesis and osteotomies:

- Phalanges
- Metacarpals
- Carpals

### Foot

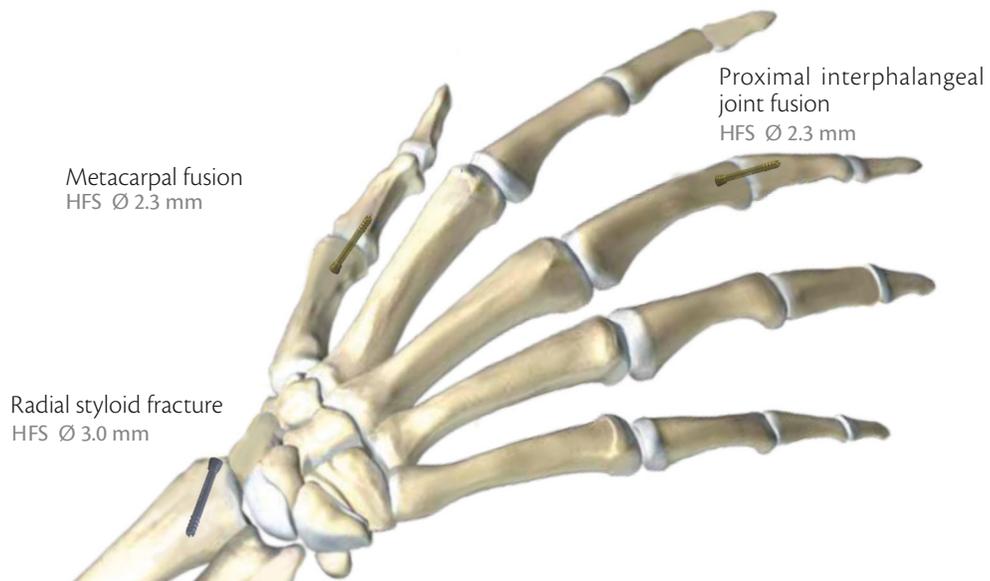
Fractures, arthrodesis and correction of osteotomies:

- Phalanges
- Metacarpals
- Tarsals

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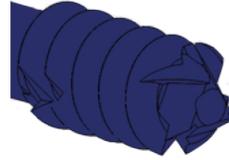
## Hand and wrist

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## FEATURES AND ADVANTAGES

- **Tip with self-drilling Cannulation and self-tapping.**  
For minimally invasive technique and short surgical technique and efficient guided insertion.
- **Head with self-tapping edges.**  
Facilitates the concealment of the screw head by countersinking
- **Synchronized thread pitch on head and stem.**  
For controlled closure and compression of diastasis in the fracture line.



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### Surgical indications

- Fixation of intra-articular and extra-articular fractures, and lack of consolidation of small bones or small bone fragments.
- Arthrodesis of small joints - Bunionectomies and osteotomies.

Among its many indications include the following: scaphoid and other carpal bones, metacarpals, tarsal bones, metatarsals, patella, ulna styloid, humeral condyle, radial head, and radial styloid process.

## DESCRIPTION OF THE HAND SURGICAL TECHNIQUE: SCAPHOIDS

The surgical technique described below, which takes as an example the scaphoid, is also applicable to other indications of **HFS 2.3** and **3.0** systems in the hand

### Instruments

- 0.8mm Kirschner with trocar-tipped, length 120mm.
- Double drill guide.

Under X-ray control with the image intensifier, advance the guide wire through the bit guide, until the threaded tip is anchored in the opposite cortical.

**Caution:** Do not apply pressure to insert the Kirschner as it could have a curvature.



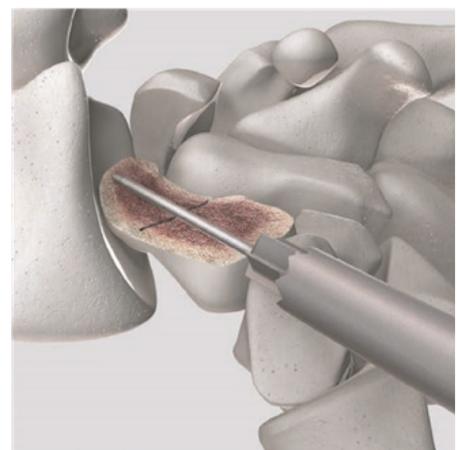
### Optional: Trapeze milling

#### Instruments

- Trapeze bur, cannulated for HFS
- 2.3/3.0 mm headless compression screw
- Handle, quick coupling

Slide the mill with the driller to generate a milling.

**Note:** Do not apply pressure to insert the trapezium mill, as the guide wire may be damaged.



## 2. Determination of screw and thread length

### Instruments

- HFS depth meter
- 2.3/3.0 mm headless compression screw
- 0.8 mm Kirschner with trocar-tipped, length 120 mm

Slide the narrow end of the depth gauge over the guide wire to the bone.

The figure marked by the depth meter indicates the depth of insertion of the guide wire into the bone, in millimeters, and also directly the proper length of the screw.

If you plan to hide the screw below the bony surface, subtract the corresponding length of the screw. If you plan to compress a major diastasis in the fracture line or insert the screw angled with respect to the bone surface, subtract more to the given length.

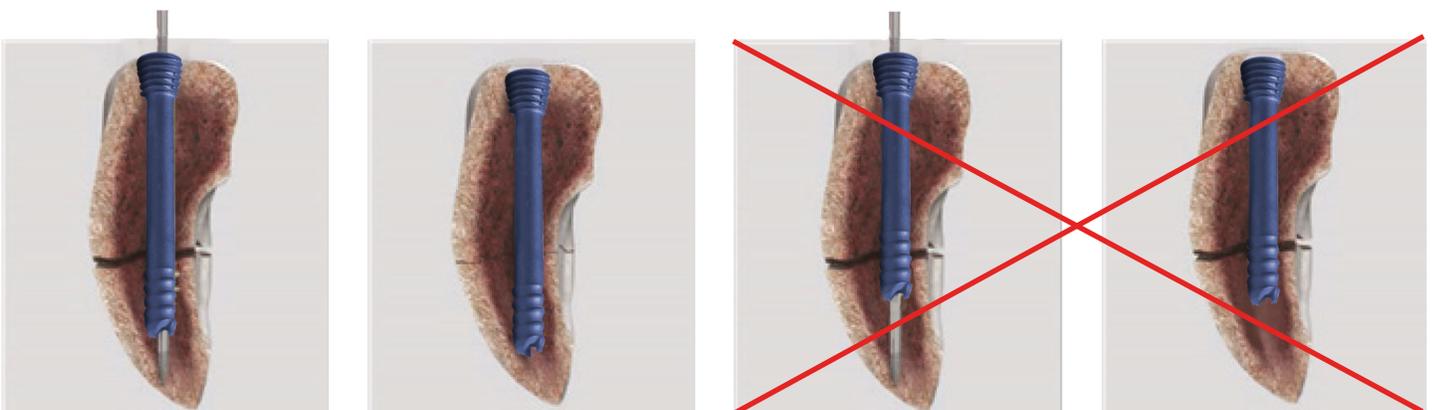
**Note:** To ensure that the measurement is correct, exclusively use guide wire with the original length.

**The position of the fracture line determines the length of the thread**

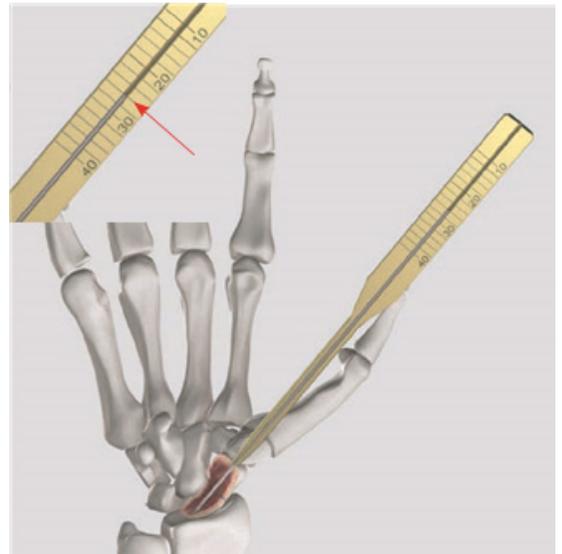
### 3. Correct thread length

The stem thread remains completely lodged in the proximal fragment during compression, it is possible to compress the fracture.

Incorrect thread length when stem thread is above fracture line, fracture cannot be compressed.



**Note:** If bone quality is poor in the distal portion of the bone, the distal screw thread may loosen if excessive compression is applied.



## 4.Pre-drilling

### Instruments

- 2.0/0.85 mm cannulated drill bit, length 150/50mm, 3-flute, quick coupling.
- 2.0/0.8 Double drill guide.

Pre-drilling greatly facilitates screw insertion in dense bone.

Slide the drill guide with its drill bit over the guide wire, and drill to the desired depth.

Removed the drill guide and check the effective drilling depth with the image intensifier.

**Caution:** Do not forcibly insert or bend the bit already of the bit straight out with the tool running and in 'advanced mode' to ensure that the guide wire remains in place.



### Screw Socket

#### Instruments

For HFS 2.3

Cannulated or solid Torx 2.3 tip

For HFS 3.0

Cannulated or solid Torx 3.0 tip



To take a screw insert the torx tip into the screw, press the Torx head of the screw and automatically the screwdriver will take the screw.

## 6. Countersink the bone area

### Instruments

- Countersink

For HFS 2.3

Compression Driver for HFS  
2.3mm headless compression screw

For HFS 3.0

Compression Driver for HFS  
3.0mm headless compression screw

Insert the standard countersink into the perforator and drill to the mark on the drill bit over the reconstruction bone area.



## 7. Screw insertion and fracture compression

With the help of the screwdriver handle carefully tighten the screw, if the screw is forced or overtightened, the stem could be over-threaded and compression would be lost.

If the stem is over-threaded, compression will be partially or totally lost. If the screw is then countersunk correctly, the thread will regain grip, thus reducing the risk of postoperative screw loosening.

**Note:** If due to loss of compression, it is necessary to remove the screw, follow the detailed instructions.

## 8. Removal of outgoing bone.

Remove the portion of bone that protrudes from the proximal fragment.



## DESCRIPTION OF THE FOOT SURGICAL TECHNIQUE: V: OSTEOTOMY FOR HALLUX VALGUS

The surgical technique described below, which takes as an example a V-shaped or chevron osteotomy, is also applicable to other indications of the HFS 2.3 and 3.0 systems on the foot.

### 1. Bunionectomy and V-osteotomy

Under image intensifier control, remove the bunion from the medial aspect of the first metatarsal with a saw blade.

Perform a V-osteotomy (internal angle approx. 55°), with the peak located approximately 2 mm distal to the center of the first metatarsal head.

### 2. Lateralization of the distal fragment

Move the distal fragment laterally to correct alignment.

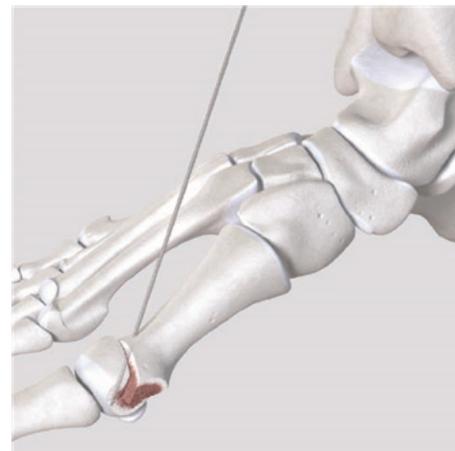
### 3. Guide wire insertion

#### Instruments

- 0.8mm Kirschner with trocar-tipped, length 120mm, double drill guide

Under X-ray control with the image intensifier, advance the guide wire through the double drill guide from proximal dorsal to distal plantar until it crosses the osteotomy line and the threaded tip is anchored in the opposite cortex.

**Caution:** Do not apply pressure to insert the guide wire as it may bend.



## 4. Determination of screw and thread length

### Instruments

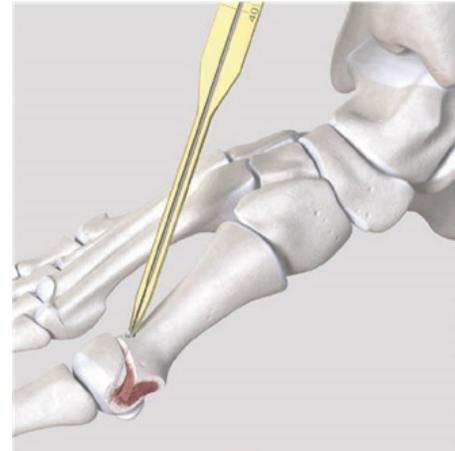
- HFS depth gauge

Slide the narrow end of the depth gauge over the guide wire, up to the bone.

The figure marked by the depth gauge indicates the depth of intersection of the guide wire in the bone, in millimeters.

If the screw is to be concealed below the bone surface, subtract the corresponding screw length. If you plan to compress a significant diastasis at the fracture line or insert the screw at an angle to the bone surface, subtract more from the specified length.

**Note:** The position of the osteotomy line determines the length of the thread.



## 5. Pre-drilling

### Instruments

- 2.0/1.15mm cannulated drill, length 150/50mm, 3-flute, quick coupling
- Double drill guide

Pre-drilling greatly facilitates screw insertion in dense bone.

Slide the double drill guide with its drill bit over the guide wire, and drill to the desired depth.

Check the effective drilling depth with the image intensifier.

**Caution:** Do not forcibly insert or bend the bit as doing so could break it. Do not insert the drill further than the needle. When finished, slowly pull the bit straight out with the tool running and in 'advance mode' to confirm that the guide wire remains in place.



## 6. Countersink the bone area

### Instruments

- Countersink

For HFS 2.3

Compression Driver for HFS  
2.3mm headless compression screw

For HFS 3.0

Compression Driver for HFS  
3.0mm headless compression screw

Insert the standard countersink into the perforator and drill to the mark on the drill bit over the reconstruction bone area.

## 7.Screw insertion and osteotomy compression

### Instruments

- 2.3 o 3.2 Torx solid or cannulated compression screwdriver.

To take a screw insert the tip of the screwdriver into the head of the HFS screw and apply pressure, the screw will be held by interference in the screwdriver.

Insert the screw into the previously drilled bone area of the fragment and tighten.

**Note:** Check with image intensifier that the stem thread is correctly positioned in the distal fragment.

### Precautions:

If the screw is forced or overtightened, the stem could be over-threaded and compression would be lost.

The stem is over-threaded, compression will be partially or totally lost. If the screw is then countersunk correctly, the thread will regain grip, thus reducing the risk of postoperative screw loosening.

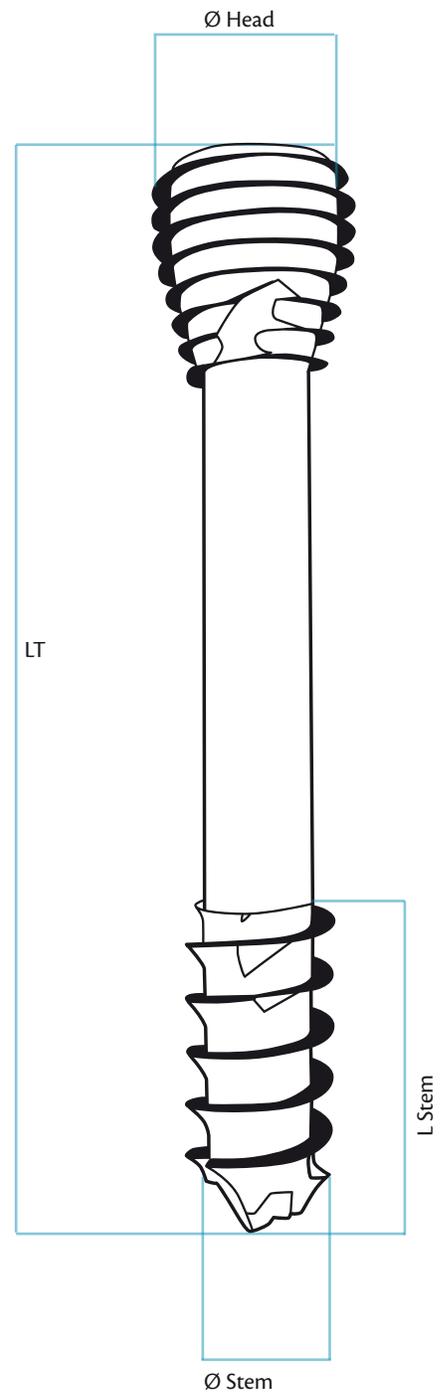
## 8. Removal of outgoing bone

Remove the portion of bone that protrudes from the proximal fragment.



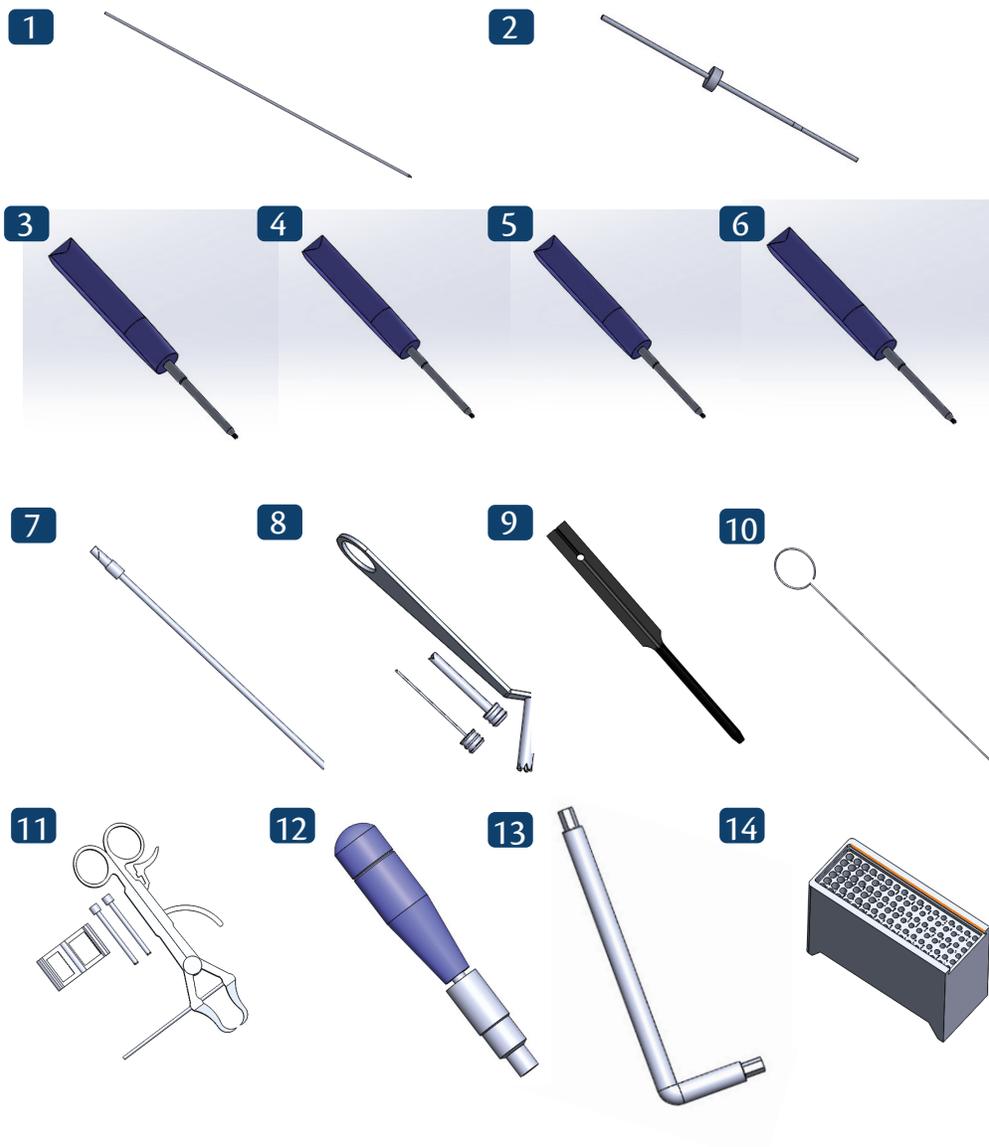
## Measurements HFS screw

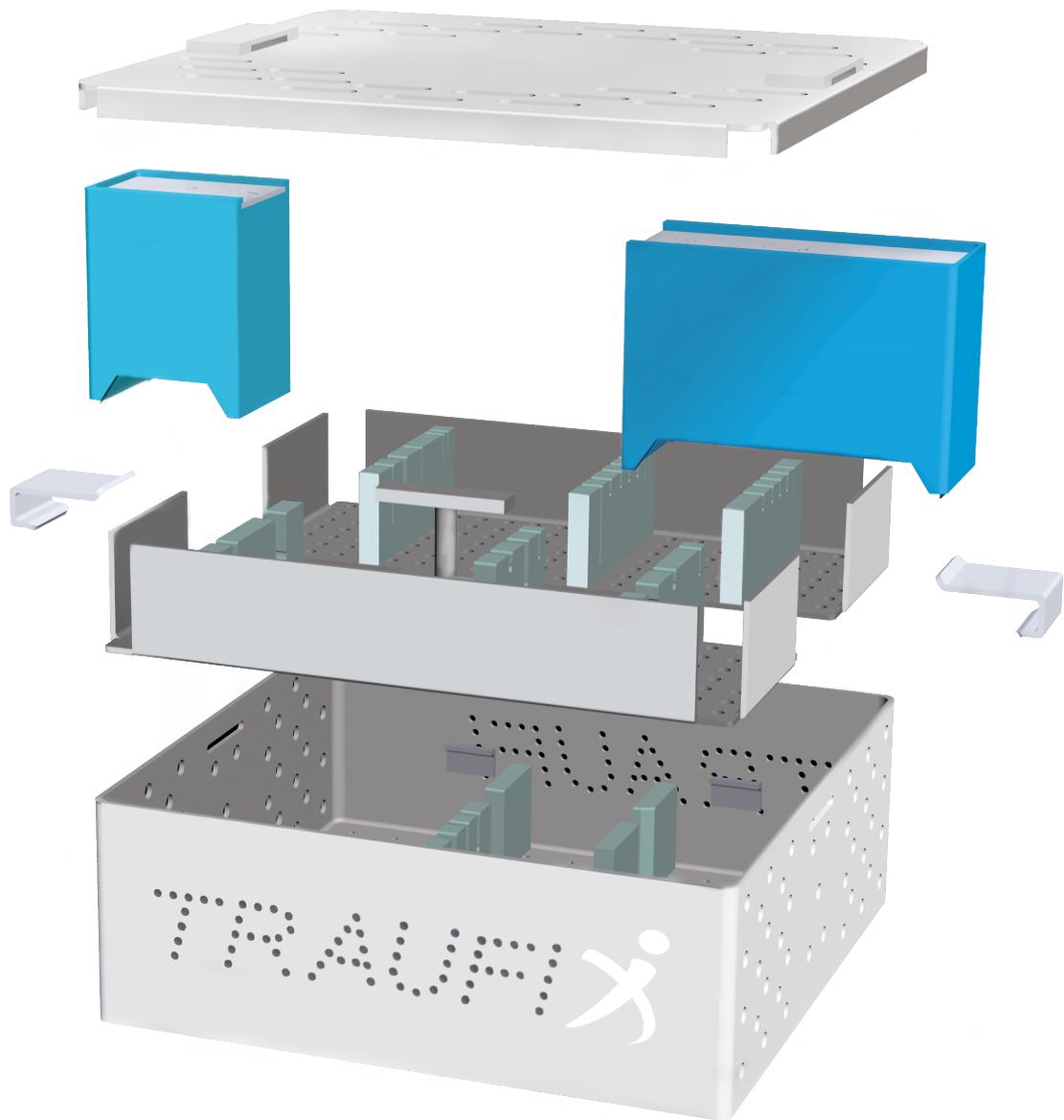
Screw length mm (Lt)	Stem thread length mm L (Stem)	Ø thread	
		2.3 mm	3.0 mm
10	5	X	X
12	5	X	X
14	5	X	X
16	5	X	X
18	5	X	X
20	5	X	X
22	5	X	X
24	6	X	X
26	6	X	X
28	6	X	X
30	6	X	X
32	6		X
34	7		X
36	7		X
38	8		X
40	8		X



## INSTRUMENTAL

1. 0.8mm Kirchner wire 120mm
2. Cannulated drill bit with Stop
3. 2.3 Solid screwdriver
4. 2.3 Cannulated screwdriver
5. 3.2 Solid screwdriver
6. 3.2 Cannulated screwdriver
7. Conical drill bit
  - 2.5-3.5 screws
  - 4.0 screws
  - 4.5 screws
  - 5.0 screws
8. Kirschner drill guide set, drill bit, screwdriver
9. Depth gauge
10. Hook tip wire
11. Forceps with tips and adjustable guide (Guides for 1.8, 2.0 and 2.5)
12. Straight handle AO
13. Allen wrench
14. Box screw





Instrumental Box HFS Herbert Fix Screw

## HFS HERBERT CANNULATED COMPRESSION SCREW

### 1.7mm HFS

- 259.06 1.7 mm HFS Herbert cannulated compression screw 6 mm
- 259.07 1.7 mm HFS Herbert cannulated compression screw 7 mm
- 259.08 1.7 mm HFS Herbert cannulated compression screw 8 mm
- 259.09 1.7 mm HFS Herbert cannulated compression screw 9 mm
- 259.10 1.7 mm HFS Herbert cannulated compression screw 10 mm
- 259.11 1.7 mm HFS Herbert cannulated compression screw 11 mm
- 259.12 1.7 mm HFS Herbert cannulated compression screw 12 mm
- 259.13 1.7 mm HFS Herbert cannulated compression screw 13 mm
- 259.14 1.7 mm HFS Herbert cannulated compression screw 14 mm
- 259.15 1.7 mm HFS Herbert cannulated compression screw 15 mm
- 259.16 1.7 mm HFS Herbert cannulated compression screw 16 mm
- 259.18 1.7 mm HFS Herbert cannulated compression screw 18 mm
- 259.20 1.7 mm HFS Herbert cannulated compression screw 20 mm

### 2.3mm HFS

- 238.10 2.3 mm HFS Herbert cannulated compression screw 10 mm
- 238.12 2.3 mm HFS Herbert cannulated compression screw 12 mm
- 238.14 2.3 mm HFS Herbert cannulated compression screw 14 mm
- 238.16 2.3 mm HFS Herbert cannulated compression screw 16 mm
- 238.18 2.3 mm HFS Herbert cannulated compression screw 18 mm
- 238.20 2.3 mm HFS Herbert cannulated compression screw 20 mm
- 238.22 2.3 mm HFS Herbert cannulated compression screw 22 mm
- 238.24 2.3 mm HFS Herbert cannulated compression screw 24 mm
- 238.26 2.3 mm HFS Herbert cannulated compression screw 26 mm
- 238.28 2.3 mm HFS Herbert cannulated compression screw 28 mm
- 238.30 2.3 mm HFS Herbert cannulated compression screw 30 mm

### HFS 3.0mm

- 239.10 3.0 mm HFS Herbert cannulated compression screw 10 mm
- 239.12 3.0 mm HFS Herbert cannulated compression screw 12 mm
- 239.14 3.0 mm HFS Herbert cannulated compression screw 14 mm
- 239.16 3.0 mm HFS Herbert cannulated compression screw 16 mm
- 239.18 3.0 mm HFS Herbert cannulated compression screw 18 mm
- 239.20 3.0 mm HFS Herbert cannulated compression screw 20 mm
- 239.22 3.0 mm HFS Herbert cannulated compression screw 22 mm
- 239.24 3.0 mm HFS Herbert cannulated compression screw 24 mm
- 239.26 3.0 mm HFS Herbert cannulated compression screw 26 mm
- 239.28 3.0 mm HFS Herbert cannulated compression screw 28 mm
- 239.30 3.0 mm HFS Herbert cannulated compression screw 30 mm
- 239.32 3.0 mm HFS Herbert cannulated compression screw 32 mm
- 239.34 3.0 mm HFS Herbert cannulated compression screw 34 mm
- 239.36 3.0 mm HFS Herbert cannulated compression screw 36 mm
- 239.38 3.0 mm HFS Herbert cannulated compression screw 38 mm
- 239.40 3.0 mm HFS Herbert cannulated compression screw 40 mm





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