Surgical Technique

Headless Compression Screws
4.3mm & 7.0mm

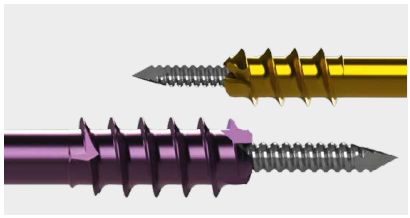
SYNMEDICS™

This surgical technique alone does not provide sufficient background for immediate use of the described system. An instruction by a qualified surgeon who is experienced in handling the system is therefore strongly recommended.

Content

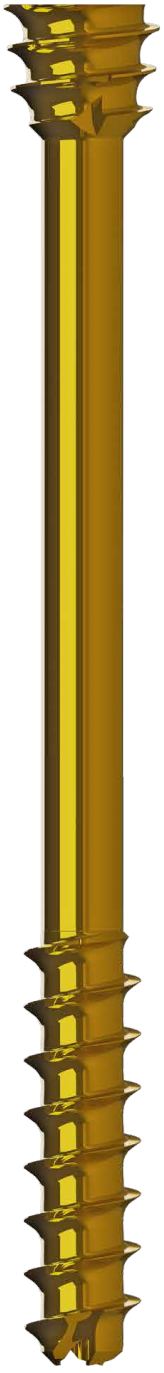
4.3mm Headless Compression Screws

Cutting flutes on the threaded screwhead to facilitate countersinking



Cannulated screws for minimally invasive technique and guided insertion

Self-drilling and self-tapping tip for a simplified insertion into the bone



Ø5.8mm head thread

Self-tapping flutes

Ø3.0mm shaft diameter

Ø4.3mm shaft thread

Self-drilling and self-tapping tip

Ø10.0mm head thread

Self-tapping flutes

Ø4.8mm shaft diameter

2 shaft thread lengths: 16mm and 32mm

Reverse-cutting flutes in the shaft thread

Ø7.0mm shaft thread

Self-drilling and self-tapping tip

Reverse-cutting flutes for safe and simplified removal after fracture healing

Self-drilling and self-tapping tip for a simplified insertion into the bone

Different shaft thread length options for intra-operative flexibility and the treatment of different of indications

Features & Benefits

The cutting flutes on the threaded screwhead of the Headless Compression Screw facilitate the countersinking of the screwhead.

The sleeve system and the cannulation enable a guided insertion of the screw in a minimally invasive technique.

The optimized ratio of core to shaft diameter ensures the best possible anchoring of the screw in cancellous bone.

The self-drilling and self-tapping tip of the Headless Compression Screw ensure a simplified insertion into the bone.

7.0mm Headless Compression Screws with reverse-cutting flutes for safe and simplified removal of the implant after fracture healing.

7.0mm Headless Compression Screws with different shaft thread length options (16mm and 32mm) allow for intraoperative flexibility and the treatment of different of indications.

Clinical Case

(PROVIDED BY THE DEPARTMENT OF ORTHOPEDICS AND TRAUMA SURGERY, UNIVERSITY OF FREIBURG MEDICAL CENTER)

ARTHRODESIS OF THE TALO-NAVICULAR JOINT AND CALCANEO-CUBOID JOINT WITH 4.3MM HEADLESS COMPRESSION SCREWS.

1. PREOPERATIVE X-RAYS: LATERAL, A/P, DORSOPLATAR

2. PREOPERATIVE SPECT-CT

45-year-old female patient
Symptomatic post-traumatic arthritis of the left chopart joint due to previous foot trauma

3. POSTOPERATIVE X-RAYS: LATERAL, A/P, DORSOPLATAR

Indications

4.3mm and 7.0mm Headless Compression Screws are indicated for the fixation of fractures, the reconstruction of small to large bones and arthrodeses in the foot.

This includes the following examples:

4.3mm
Calcaneus
Distal femur
Distal and proximal tibia
Metatarsus
Proximal humerus
Chopart-arthrodesis

7.0mm
Calcaneus
Distal femur
Distal and proximal tibia
Ankle joint arthrodesis
Subtalar arthrodesis
Calcaneocuboid arthrodesis

Surgical Technique

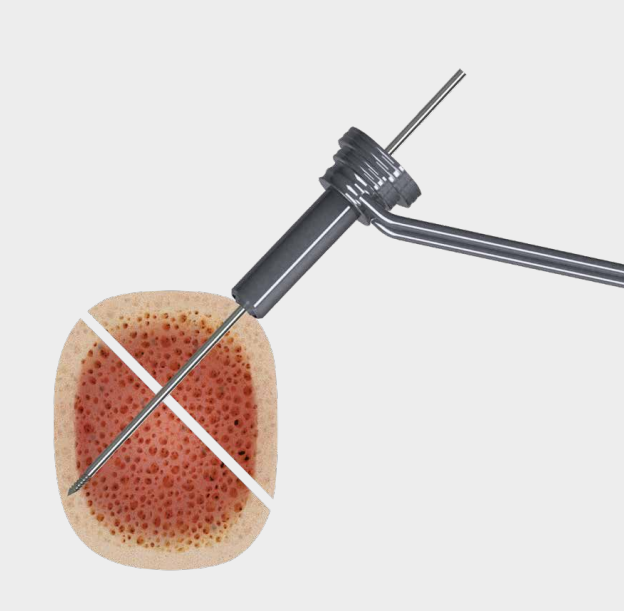
1. Insertion of the guide wire

Make a stab incision, assemble the sleeves and trocar and place the assembly through the incision to the planned entry point on the bone. Center-punch the cortical bone by applying pressure to the trocar.

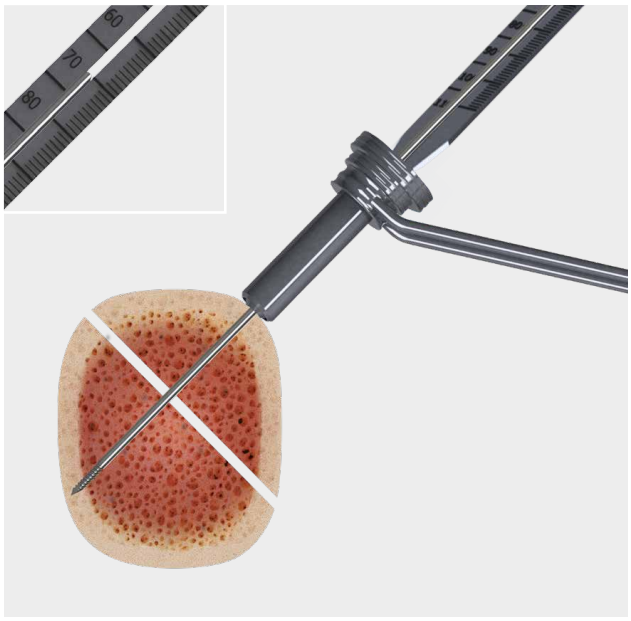
Remove trocar.

Using image intensifier control, advance the guide wire through the sleeve f. guide wire into the bone.

The threaded tip of the guide wire should be anchored in the contra-lateral cortex.



2. Determine screw length



The length of the required screw is determined through the guide wire.

Place the tip of the measuring gauge on the sleeve f. guide wire and ensure that the guide wire is centered in the recess of the measuring gauge.

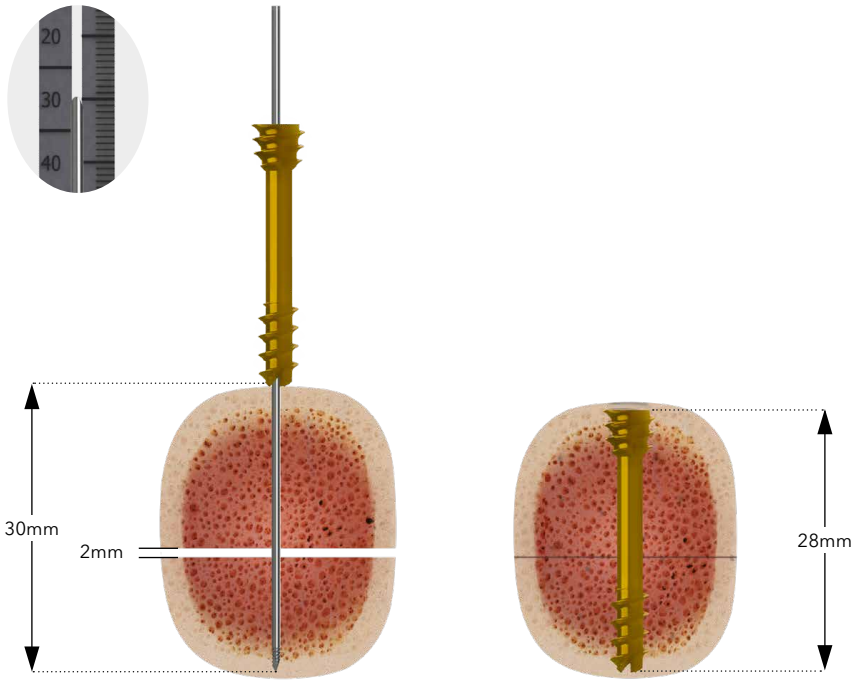
Determine the length, using the round end of the guide wire and the scale on the measuring gauge.

Important: To determine the correct screw length, the assembly of protection sleeve, drill sleeve and sleeve f. guide wire must firmly rest on the bone.

Remove sleeve f. guide wire.

To ensure the complete countersinking of the screwhead, a shorter screw length should be generally selected.

Example
Subtract 2mm to anticipate screw compression.

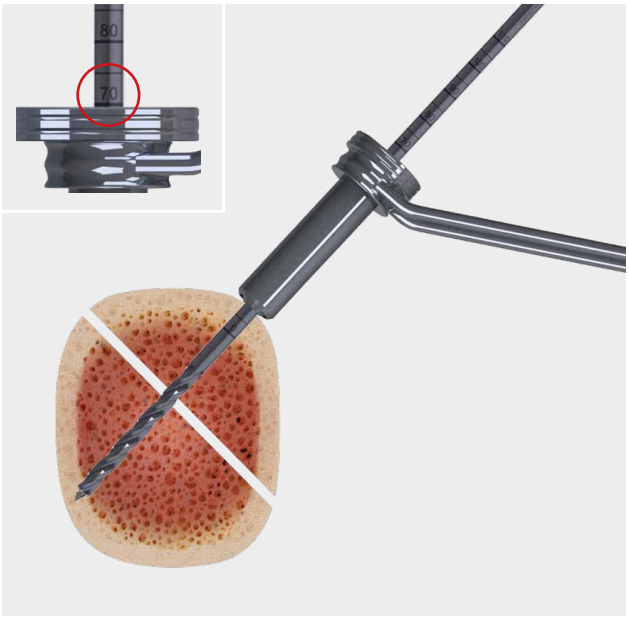


3. Preparation of the screw hole

Prepare the screw hole for the Headless Compression Screw. To do so, slide the cannulated drill over the guidewire into the drill sleeve until it rests on the bone. Then carefully advance the drill to the depth determined in the previous step. The drilling depth can be controlled via the scale on the drill.

Confirm the correct drilling depth with the image intensifier.

Remove drill sleeve.



To facilitate the insertion of the threaded head of the Headless Compression Screw, the proximal cortex can be prepared with the countersink. To do so, slide the countersink over the guide wire into the protection sleeve until it rests on the bone and carefully predrill the cortex.

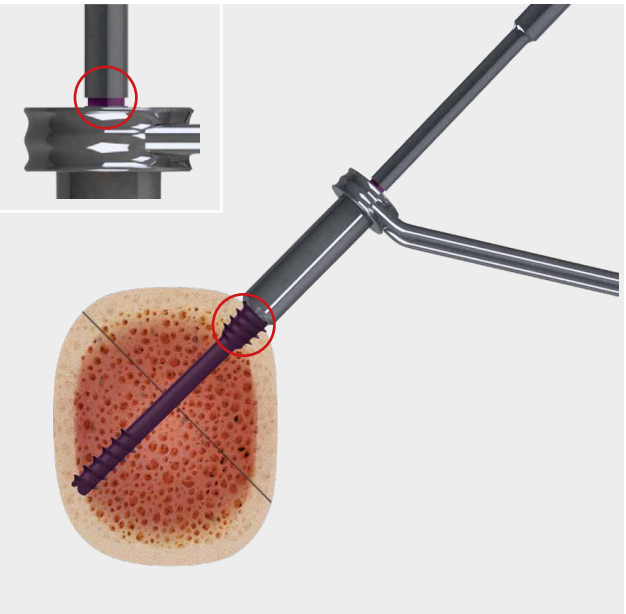
4. Insertion of the Headless Compression Screw

Pick up the appropriate Headless Compression Screw with the cannulated screwdriver, insert it over the guide wire into the protection sleeve and advance it into the bone.

Important: The shaft threat of the screw must be below the fracture gap or osteotomy in order to achieve a compression.

When the mark on the screwdriver reaches the top of the protection sleeve, the top of the threaded head of the screw sits flush with the bone surface.

Important: Depending on the angle at which the Headless Compression Screw is inserted, it may be necessary to insert the screw beyond the mark on the screwdriver to ensure that it has been completely countersunk in the bone.



5. Control of the fracture treatment

Use the image intensifier to check the correct positioning of the Headless Compression Screw. Ensure that the screw has been fully inserted into the bone. It should neither on the head nor on the tip protrude from the bone.

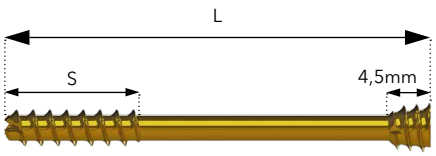
Remove guide wire.

Remove protection sleeve.

Implants

4.3mm Headless Compression Screw*

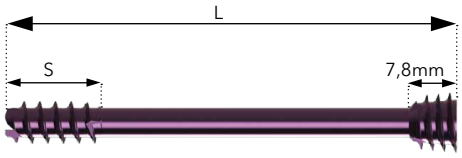
Article No.	Screw Length (L) in mm	Shaft Thread (S) in mm
HBS-3000-20-S	20	7
HBS-3000-22-S	22	7
HBS-3000-24-S	24	8
HBS-3000-26-S	26	9
HBS-3000-28-S	28	9
HBS-3000-30-S	30	10
HBS-3000-32-S	32	11
HBS-3000-34-S	34	11
HBS-3000-36-S	36	12
HBS-3000-38-S	38	13
HBS-3000-40-S	40	13
HBS-3000-42-S	42	14
HBS-3000-44-S	44	15
HBS-3000-46-S	46	15
HBS-3000-48-S	48	16
HBS-3000-50-S	50	17
HBS-3000-55-S	55	18
HBS-3000-60-S	60	20
HBS-3000-65-S	65	22



* Titanium - 6% Aluminium - 4% Vanadium Alloy (Ti6Al4V)
4.3mm Headless Compression Screws are only available sterile packed.

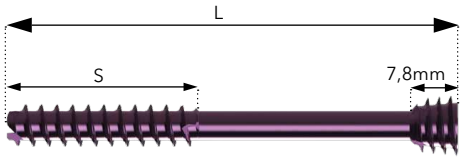
7.0mm Headless Compression Screw*
16mm thread

Article No.	Screw Length (L) in mm	Shaft Thread (S) in mm
HBS-4000-40-S	40	16
HBS-4000-45-S	45	16
HBS-4000-50-S	50	16
HBS-4000-55-S	55	16
HBS-4000-60-S	60	16
HBS-4000-65-S	65	16
HBS-4000-70-S	70	16
HBS-4000-75-S	75	16
HBS-4000-80-S	80	16
HBS-4000-85-S	85	16
HBS-4000-90-S	90	16
HBS-4000-95-S	95	16
HBS-4000-100-S	100	16
HBS-4000-105-S	105	16
HBS-4000-110-S	110	16



32mm thread

Article No.	Screw Length (L) in mm	Shaft Thread (S) in mm
HBS-4001-75-S	75	32
HBS-4001-80-S	80	32
HBS-4001-85-S	85	32
HBS-4001-90-S	90	32
HBS-4001-95-S	95	32
HBS-4001-100-S	100	32
HBS-4001-105-S	105	32
HBS-4001-110-S	110	32



* Titanium - 6% Aluminium - 4% Vanadium Alloy (Ti6Al4V)
7.0mm Headless Compression Screws are only available sterile packed.

Instruments

HCS 4.3mm

Cannulated drill bit Ø3.0mm
007-0013-028

Screwdriver shaft w. AO-conn., cann.
007-0010-105

Guide wire w. thread, 1.6x200mm
004-0735-016-200

Screwdriver handle w. AO-coupl., cann.
013-0011-055C

Measuring gauge f. HCS 4.3/7.0
007-0026-00

Countersink w. AO-conn., cann.
007-0012-080

Protection sleeve f. HCS 4.3
005-0213-043

Drill sleeve f. Ø3.0mm
005-0213-043/1

Sleeve f. guide wire Ø1.6mm
005-0213-043/2

Trocar Ø1.6mm
005-0213-043/3

HCS 7.0mm

Cannulated drill bit Ø4.8mm
007-0013-065

Screwdriver shaft w. 1/4inch conn., cann.
007-0010-110

Guide wire w. thread, 2.6x200mm
004-0735-020-200

T-handle w. ratchet, 1/4inch conn., cann.
013-0010-910C

Measuring gauge f. HCS 4.3/7.0
007-0026-001

Countersink w. 1/4inch conn., cann.
007-0012-085

Protection sleeve f. HCS 7.0
005-0213-070

Drill sleeve f. Ø4.8mm
005-0213-070/1

Sleeve f. guide wire Ø2.6mm
005-0213-070/2

Trocar Ø2.6mm
005-0213-070/3

mahe medical gmbh
Friedrich-Wöhler-Str. 10
78576 Emmingen
Germany

Distribution:
Synmedics GmbH
Huschbergerstr. 6
40212 Düsseldorf
Germany

Phone: +49 211 868 1550 0
Fax: +49 211 868 1550 1
Email: info@synmedics.com
www.synmedics.com

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HCS E - Version AA