



## HAMMERTOE TRUSS SYSTEM (HTS)

### INSTRUCTIONS FOR USE

#### PLEASE READ CAREFULLY

#### CAUTION: FEDERAL LAW (USA) RESTRICTS THESE DEVICES TO SALES BY OR ON THE ORDER OF A PHYSICIAN.

#### INTENDED USE:

The Hammertoe Truss System (HTS) implants are intended to provide stability and fixation of the toes in the foot.

#### DEVICE DESCRIPTION:

The HTS implants have proximal and distal fixation features to provide structural support for reconstruction of the lesser toes. The implants are offered in multiple sizes to accommodate the patients' anatomy. The implants are manufactured from Ti6Al4V alloy.

#### INDICATIONS FOR USE:

The HTS is indicated for the fixation of osteotomies and reconstruction of the lesser toes following correction procedures for hammertoe, claw toe, and mallet toe. Cannulated implants in the HTS can be used with K-wires for the delivery of implants or the temporary stabilization of outlying joints [e.g. MTP Joint].

#### CONTRAINDICATIONS:

- The HTS devices should not be implanted in patients with:
  - Active infection at the operative site or other active systemic infection
  - Inadequate physiological or psychological condition
  - Inadequate skin, bone, or neurovascular status
  - Irreparable tendon system
  - Growing patient with open epiphyses
  - Known sensitivity to the material

#### WARNINGS AND PRECAUTIONS:

Safety and effectiveness have not been established in the following conditions:

- Gross obesity
- Previous fusion attempts at the osteotomy/fusion site
- Significant loss of bone stock as seen with osteoporosis or osteomalacia
- Conditions requiring chronic corticosteroid use
- Active drug abuse

The HTS implants are for single use only.

Bending or fracture of the implants or instruments can occur if not handled properly.

If HTS instrumentation is provided non-sterile, it must be steam sterilized prior to use. No implant should be reused if it has come in contact with blood or other body fluids.

All implants, sizers and instrumentation should be inspected prior to use for possible damage or defects. Any damaged or defective component should not be used and should be returned to 4WEB.

The HTS devices are intended to provide mechanical support while biologic fusion occurs. In the event of pseudoarthrosis or delayed fusion, the risk of implant migration, loosening or breakage increases. The physician/surgeon should consider patient weight, patient activity level, other patient conditions, etc. which may impact the performance of the system.

Patients requiring abnormal or excessive forces on the implanted area may not be good candidates for this type of surgery.

In patients with a high level of activity, the benefits must be weighed against possible risks. The correct implant size must be selected to provide adequate bone support.

#### OPERATIVE PRECAUTIONS:

The surgeon is to be thoroughly familiar with the HTS devices, method of application, instruments and surgical technique. Correct positioning of the HTS device should be checked intraoperatively with x-ray. The size and plantarflexion of the HTS device must be chosen on the basis of the patient's anatomy and desired correction.

The implants are for single-implant use only. An explanted implant must never be re-implanted. Stresses and fracture, even though not noticeable by visual inspection, may have been created during initial implantation.

Following implantation, the product number and manufacturing lot number of the device that has been implanted must be reported in the patient's surgical file.

#### POTENTIAL ADVERSE EVENTS:

- Potential adverse events may be related to any surgery in general, foot surgery specifically, or to the device. These may include, but are not limited to the following:
  - Adverse events related to any surgery: reactions to anesthesia, the anesthetic or other medications, infection, ileus, atelectasis, pneumonia, urologic problems, anemia, heart attack, stroke or death.
  - Adverse events related specifically to foot surgery: bleeding, blood vessel damage, nerve or soft tissue damage, hematoma, seroma, wound dehiscence or incisional hernia, embolism, or thrombophlebitis.
  - Adverse events related to the device: implant crack or fracture, failure to achieve fusion, implant migration, dislodgement, or metal sensitivity to a foreign body, including possible tumor formation. Additional surgery may be necessary for implant removal, repositioning or replacement.

#### POSTOPERATIVE CARE:

- The physician's postoperative directions and warnings to the patient and the corresponding patient compliance are extremely important.
- Detailed instructions on the use and limitations of the device must be given to the patient. The patient must be warned that loosening, and/or breakage of the device(s) are complications which may occur as result of early or excessive weight-bearing, muscular activity or sudden jolts or shock to the foot.
- The patient must be advised not to smoke or consume alcohol during period of the bone fusion process.
- The patient must be advised of the inability to bend at the point of osteotomy or fusion and taught to compensate for this permanent physical restriction in body motion.
- It is critical that immobilization of union is established and confirmed by roentgenographic examination. If a non-union develops or if the components loosen, migrate, and/or break, the devices must be revised and/or removed immediately before serious injury occurs.
- Any retrieved devices are not to be used in another surgical procedure.

#### MRI SAFETY INFORMATION:

Non-clinical testing has demonstrated the HTS device is MR Conditional. A patient with this device can be safely scanned in an MR system meeting the following conditions:

- Static magnetic field of 3 T or 1.5 T
- Maximum spatial field gradient of 1900 gauss/cm (19 T/m)
- Maximum MR system reported, whole body averaged specific absorption rate (SAR) of  $\leq 2$  W/kg (Normal Operating Mode)

Under the scan conditions defined above, non-clinical testing results indicate the 4WEB HTS device produces a maximum temperature rise of no more than 5.0°C after 15 minutes of continuous scanning.

In non-clinical testing, the image artifact caused by the device extends approximately 28 mm from the HTS device when imaged with a gradient echo pulse sequence and a 3 T MR system.

#### PACKAGING:

**Implants:**  
HTS implants are provided sterile and are clearly labeled as such in an unopened sterile package provided by 4WEB. The contents are considered sterile unless the package is damaged, opened, or the expiration date on the device label has passed. The integrity of the packaging should be checked to ensure that the sterility of the contents is not compromised.

**Instruments:**  
HTS instrumentation is either provided sterile or non-sterile. The product's labeling will indicate whether or not it is packaged sterile. HTS instrumentation provided sterile is clearly labeled as such in an unopened sterile package provided by 4WEB. The contents are considered sterile unless the package is damaged, opened, or the expiration date on the device label has passed. The integrity of the packaging should be checked to ensure that the sterility of the contents is not compromised. HTS instrumentation, if provided non-sterile, is supplied in a tray that is used for steam sterilization prior to use in the operating room. In the case of instrument restock, individual items will be sent in a plastic bag, labeled for that device.

Storage conditions must maintain the integrity of the implants, associated ancillary instrumentation and their respective packaging. The condition of all implants and instruments must be checked before use. Damaged products must not be used and should be returned to 4WEB.

**Implants and instruments supplied sterilized from 4WEB must not be re-sterilized.**

#### INFORMATION FOR CLEANING AND STERILIZATION OF SURGICAL INSTRUMENTS:

CAUTION: THESE INSTRUCTIONS DO NOT APPLY TO SINGLE-USE DEVICES.

The non-sterile instruments used to implant the HTS device do not have an indefinite functional life. All reusable instruments are subjected to repeated stresses related to bone contact, impaction, routing, cleaning, and sterilization processes. Instruments should be carefully inspected before use to ensure that they are fully functional.

Select ancillary instruments of the HTS device are delivered non-sterile and therefore, must be decontaminated, cleaned and sterilized prior to surgical use. Decontamination reduces the population of microorganisms and facilitates the subsequent cleaning stage. Strict compliance with the instructions for use pertaining to decontamination and cleaning is mandatory, particularly the concentration and exposure time requirements. Thorough rinsing with water must be conducted following decontamination and cleaning.

- Decontamination: Each hospital must use their own validated decontamination procedures.
- Cleaning: Wash instruments in a LANCER type (or equivalent) washing machine with the appropriate cleaning products, rinse, and dry. Any product which may alter the material is prohibited, i.e. bleach, formalin, hypochlorite solutions, saline solution, etc.

The reprocessing instructions provided have been validated as being capable of preparing reusable 4WEB instruments. It is the responsibility of the reprocessor to ensure that the reprocessing is actually performed using appropriate equipment, materials, and personnel to achieve the desired result. This normally requires validation and routine monitoring of the process. Any deviation by the reprocessor from these instructions should be evaluated for effectiveness and potential adverse consequences.

#### WARNINGS:

- Follow the instructions and warnings issued by the suppliers of any cleaning and disinfection agents and equipment used.
- Do not exceed 140° C (284° F) during reprocessing steps.
- Highly alkaline conditions can damage products with aluminum parts.
- Avoid exposure to hypochlorite solutions, as these will promote corrosion.
- Scratches or dents can result in breakage.
- For instruments produced by another manufacturer, reference the manufacturer's instructions for use.
- Care should be taken to remove any debris, tissue or bone fragments that may collect on the instrument.

#### LIMITATIONS ON REPROCESSING:

- End of useful life is generally determined by wear or damage in surgical use.
- Carefully inspect instruments between uses to verify proper functioning and configuration.
- Damaged instruments must be replaced to prevent potential patient injury such as loss of metal fragments into the surgical site.

#### DECONTAMINATION CONSIDERATIONS — CREUTZFELDT-JAKOB DISEASE (CJD):

Under certain classifications of risk, the World Health Organization (WHO) or local regulatory authorities recommend special CJD [Creutzfeldt-Jakob Disease] inactivation processing procedures. For use of this product outside the United States, consult WHO and local regulations for further information.

#### REPROCESSING INSTRUCTIONS

##### CARE AT THE POINT OF USE:

- Use purified water obtained via ultra-filtration, RO, DI and/or distilled.
- Thoroughly clean instruments as soon as possible after use. If cleaning must be delayed, immerse instruments in a compatible pH neutral detergent solution and purified water to prevent drying and encrustation of surgical soil.
- Avoid prolonged exposure to saline to minimize the chance of corrosion.
- Remove excessive soil with a disposable low lint wipe.

#### CLEANING:

##### ALL INSTRUMENTS

- No instruments provided with the HTS sets require disassembly prior to cleaning.
- Prepare an enzymatic cleaning solution in accordance with the manufacturer's instructions (1oz Enzol, or equivalent, per gallon of purified water). **Note:** the enzyme solution must be changed on a regular basis.
- Soak soiled instruments for 5 minutes in the enzymatic solution.
- Use a soft bristle brush to remove all traces of blood and debris; pay close attention to any hard-to-reach areas, textured surfaces, or crevices.
- Rinse the instrument thoroughly with purified water.
- Dry the instrument immediately after final rinse.
- Clean using the "INSTRUMENTS" cycle in a validated washer disinfectant and a pH neutral cleaning agent intended for use in automated cleaning. The cleaning cycle should incorporate enzymatic pre-wash, wash, rinse, thermal rinse, and drying steps.
- Place heavier instruments on the bottom of containers. Do not place heavy instruments on top of delicate instruments.
- For instruments with concave surfaces, such as currettes, place instrument with the concave surface facing downward to facilitate draining.

##### CLEANING INSPECTION:

- Inspect all instruments to verify that all visible debris is removed during cleaning and prior to sterilization. If debris is still visible after cleaning, repeat the cleaning process.

##### MAINTENANCE INSPECTION AND FUNCTIONAL TESTING:

- Visually inspect all instruments to ensure no damage and wear.
- Ensure there are no cracked handles and shafts are secure in handles.
- Ensure long instruments are free of any bending and distortion.
- Ensure instrument tips are free of defects or burrs.
- Ensure complex instruments with moving parts function appropriately.

#### WRAPPING:

##### WRAPPING TECHNIQUE

- Use instrument trays to contain instruments that are provided in sets.
- Biological or Chemical Indicators (BIs or CIs) used for monitoring the performance of sterilization processes should be placed in the middle racks within wrapped trays. They should be tested according to the BI or CI manufacturer's directions.
- Double wrap instruments in accordance with local procedures, using standard wrapping techniques such as those described in ANSI/AAMI ST 1.
- Use only FDA-cleared wraps.
- Label the contents of the wrapped tray using an indelible marker or other sterilization compatible label system.
- Allow 1 inch of free space between the instrument tray and the inside of the container lid for effective processing.

#### STERILIZATION:

- Use a validated, properly maintained and calibrated steam sterilizer.
- Effective steam sterilization can be achieved using the following cycle to achieve an SAL of 10<sup>-4</sup>.

Cycle	Temperature	Duration	Dry Time
Gravity	121° C (250° F)	30 min	45 min
Prevacuum	132° C (270° F)	4 min	45 min

**NOTE:** STERILIZATION DOES NOT REPLACE DECONTAMINATION OR CLEANING. ONLY A CLEAN PRODUCT CAN BE CORRECTLY STERILIZED. ONLY STERILE IMPLANTS AND INSTRUMENTS MAY BE USED FOR SURGERY.

#### PRODUCT COMPLAINTS:

Any healthcare professional (e.g. a surgeon using the product) who has a complaint or who has experienced any dissatisfaction in the quality, identity, reliability, safety, efficacy, and/or performance of any HTS products should notify 4WEB, or, where applicable, their distributor.

#### SURGICAL TECHNIQUE MANUAL:

To receive additional copies of the Surgical Technique Manual [ST-HTS-01], contact your local sales representative or the company at the address below.

**USA:**  
4WEB Medical  
2801 Network Blvd, Suite 620  
Frisco, TX USA 75034  
T +1(800) 285-7090  
F +1(972) 488-1814

**OUTSIDE USA:**  
4WEB EU B.V.  
Industrieweg 13b  
1566JN Assendelft, The Netherlands  
T +31 20 708 45 45  
F +31 20 708 45 65

Standard: ISO 15223-1, Medical Devices - Symbols to be used with medical device labels, labelling and information to be supplied.			
Symbol	Ref. Number	Title	Description of Symbol
	5.4.4	Caution	Indicates the need for the user to consult the instructions for use for important cautionary information such as warnings and precautions that cannot, for a variety of reasons, be presented on the medical device itself.
	5.4.2	Do not re-use	Indicates a medical device that is intended for one use, or for use on a single patient during a single procedure.
	5.4.3	Consult instructions for use	Indicates the need for the user to consult the instructions for use.
	5.1.5	Lot number	Indicates the manufacturer's lot number so that a specific medical device can be identified.
	5.1.6	Catalog number	Indicates the manufacturer's catalog number so that the medical device can be identified.
	5.1.1	Manufacturer	Indicates the medical device manufacturer, as defined in EU Directives 90/385/EEC, 93/42 EEC, and 98/79 EC.
	5.1.3	Date of manufacture	Indicates the date when the medical device was manufactured.
	5.1.4	Use-by date	Indicates the date after which the medical device is not to be used.
	5.2.4	Sterile	Sterilized using irradiation. Indicates a medical device that has been sterilized using irradiation.
	5.2.6	Do not resterilize	Indicates a medical device that is not to be resterilized.
	5.2.8	Do not use if package is damaged	Indicates a medical device that should not be used if the package has been damaged or opened.

	ASTM F2503-13	MR Conditional	Medical device that has been demonstrated to pose no known hazards in a specified MR environment with specified conditions of use.
	21 CFR 801.109	Prescription only	Requires prescription in the United States.