

# CHARLOTTE<sup>®</sup>

## 7.0 Multi-Use Compression Screw System

SURGICAL TECHNIQUE



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## **CHARLOTTE®**

7.0 Multi-Use Compression Screw System

## **DARCO®**

7.0 Ti Headless Compression Screw System

### **SURGICAL TECHNIQUE**

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#### **Surgical Technique as described by:**

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Proper surgical procedures and techniques are the responsibility of the medical professional. The following guidelines are furnished for information purposes only as techniques used by the design surgeons. Each surgeon must evaluate the appropriateness of the procedures based on his or her personal medical training and experience. Prior to use of the system, the surgeon should refer to the product package insert for complete warnings, precautions, indications, contraindications and adverse effects. Package inserts are also available by contacting Wright Medical Technology, Inc. Contact information can be found on the back of this surgical technique and the package insert is available on the website.

Please contact your local Wright representative for product availability.

# Product Information



## Designed in conjunction with:

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Large, headed screws have presented a challenge to the Foot and Ankle Specialist when performing hindfoot and ankle fusion procedures. Screw head prominence creates discomfort for the patient and often results in hardware removal.<sup>1</sup> Designed in conjunction with leading foot and ankle specialists, the CHARLOTTE® 7.0 Multi-Use Compression Screw and the DARCO® 7.0mm Headless Compression Screw offer a headless screw with excellent compression characteristics for use in hindfoot and ankle fusion procedures.

## Surgical Goals

- To minimize screw prominence issues with a headless design.
- To obtain stable fixation using a screw design with excellent strength and compression characteristics.
- To streamline surgical technique with few steps and a power screw driver option.

## System Basics

### CHARLOTTE® 7.0 MULTI-USE COMPRESSION SCREW SYSTEM

- 7.0mm distal thread diameter, cannulated, stainless steel headless screws ranging in lengths from 40-110mm with short (16mm) and long (32mm) distal thread length options.
- 2.5 x 230mm K-wire

### DARCO® 7.0 Headless Compression Screw System

- 7.0mm distal thread diameter, cannulated, titanium headless screws ranging in lengths from 40-110mm with short (16mm) distal thread length and 75 110mm with long (32mm) distal thread length options.
- 2.5 x 230mm K-wire

### The instrument set includes:

- 5.0mm Cannulated Drill and Countersink
- K-wire Tissue Protector and Drill Tissue Protector to be used with Tissue Protector Handle
- Depth Gauge
- Hex Driver that may be used with power and Quick Connect and a standard
- Jacobs chuck if a Hudson-style adaptor is not available.
- Parallel Drill Guide
- 2.5mm Distractor maximum distraction of 12mm

1. Easley, ME, Trnka, HJ, Schon LC, Myerson, MS. Isolated subtalar arthrodesis. *J Bone Joint Surg Am.* 2000 May;82(5):613-24.

# Intended Use

## DESCRIPTION

The CHARLOTTE® 7.0mm Multi-Use Compression Screw and DARCO® 7.0mm Headless Screw are self drilling screws offered in various lengths and distal thread lengths. Washers are offered for oblique and straight screw placement. CHARLOTTE® 7.0mm Multi-Use Compression Screws and washers are manufactured from stainless steel whereas the DARCO® 7.0mm Headless Screws and washers are manufactured from titanium.

## INDICATIONS

The CHARLOTTE® 7.0mm Multi-Use Compression Screw and DARCO® 7.0mm Headless Screw are indicated for fixation of bone fractures or for bone reconstruction. Examples include:

- Fixation of bone fragments, in long bones or small bones fractures
- Fracture management in the foot or hand
- Arthrodesis in hand, foot or ankle surgery
- Mono-or Bi-cortical osteotomies in the foot or hand or in long bones
- Hindfoot arthrodesis

## CONTRAINDICATIONS

- Infection
- Physiologically or psychologically inadequate patient
- Inadequate skin, bone, or neurovascular status
- Irreparable tendon system
- Possibility for conservative treatment
- Growing patients with open epiphyses
- Patients with high levels of activity

## POTENTIAL COMPLICATIONS AND ADVERSE REACTIONS

In any surgical procedure, the potential for complications exists. The risks and complications with these implants include:

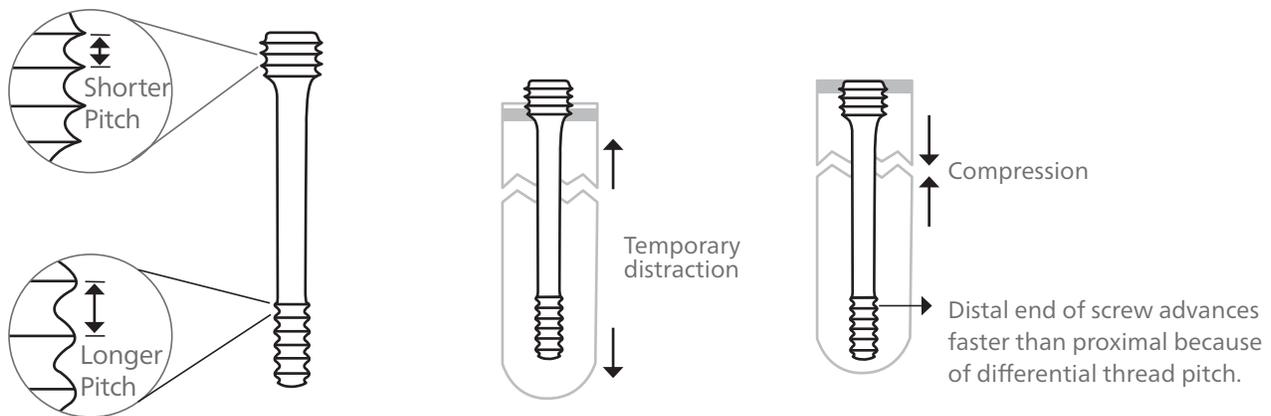
- Infection or painful, swollen or inflamed implant site
- Fracture of the implant
- Loosening or dislocation of the implant requiring revision surgery
- Bone resorption or over-production
- Allergic reaction(s) to implant material(s)
- Untoward histological responses possibly involving macrophages and/or fibroblasts
- Migration of particle wear debris possibly resulting in a bodily response
- Embolism

# Screw Characteristics

Headless screws generate compression as a result of different thread pitch in the distal and proximal portion of the screw.

## Installation

Distraction is common when proximal threads begin to engage. This is not a problem as the fusion site will compress once head is completely installed. If preferred, use a clamp to hold fusion site together to prevent distraction.



Pitch is the distance from the peak of one thread to the peak of the next thread, or the distance the screw travels in one full revolution.

*Shorter pitch = less distance traveled*  
*Longer pitch = more distance traveled*

## Troubleshooting

Lack of compression results when screw is not well-engaged in bone either distally or proximally.

Symptom A	Solution	Symptom B	Solution
<p>Soft cancellous bone allows proximal threads to be "dragged" forward because of force generated by distal threads.</p>	<p><b>Washer</b>            A flat or oblique style washer is installed as a rescue option; proximal threads are engaged. (see pg. 8)</p>	<p><b>Distal ends strip</b>            Screw is turned past the point where distal threads can resist proximal threads. Distal threads pull out and no longer bite cancellous bone.</p>	<p>Use a longer screw or redirect screw so distal threads engage.</p>

## Preoperative Planning

*Preoperative planning is left to the discretion of the surgeon.*

The CHARLOTTE® Distractor is available in the CHARLOTTE® 7.0 MUC System to aid in joint preparation (P/N 44180040). | FIGURES 1-4



| FIGURE 1



| FIGURE 2



| FIGURE 3



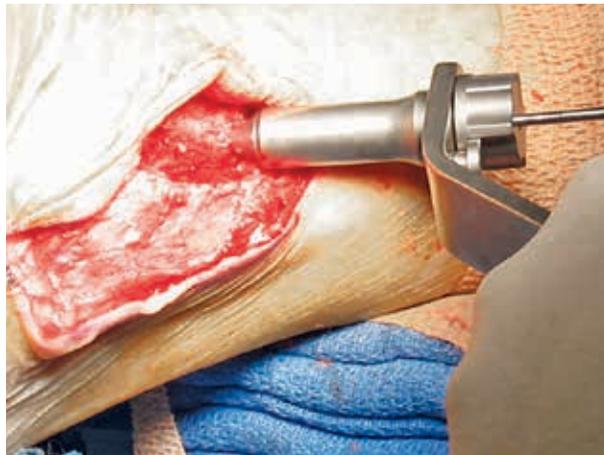
| FIGURE 4

The joint to be fused is sharply debrided down to bleeding subchondral bone in the normal fashion. If necessary, the bone should be perforated with a K-wire to create bleeding surfaces prior to hardware fixation.

Using a powered drill, K-wire tissue protector (P/N 4418060) with handle (P/N 44180055) and small Jacobs chuck, drive the 2.5mm x 230mm K-wire (P/N 44182523) into the bone across the fusion or osteotomy site.  
| FIGURES 5-6



| FIGURE 5



| FIGURE 6

Create a 1-2cm incision around the K-wire. Measure screw length using the depth gauge (P/N 44180050) and drill tissue protector (P/N 44180065) with handle (44180055). | **FIGURE 7**



| **FIGURE 7**

If necessary, drill with power using the drill tissue protector (P/N 44180065), handle (P/N 44180055) and 5mm cannulated drill (P/N 44180010). **FIGURE 8**



| **FIGURE 8**

If necessary, break the proximal cortex using the cannulated countersink (P/N 44180015) and quick connect handle (P/N 44180025). This should be done by hand requiring only a couple turns of the countersink. | FIGURES 9-10



| FIGURE 9



| FIGURE 10

Install the appropriate screw under power using the hex driver (P/N 44180030) | FIGURES 11-12 until the head comes in contact with the cortex. Final tightening should be done manually using the hex driver and the ratcheting handle (P/N 44180025).

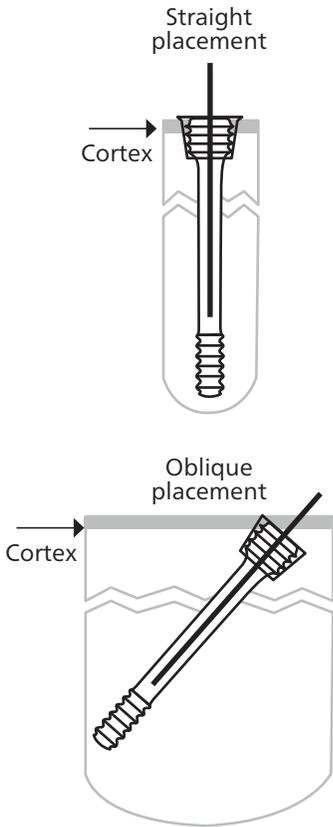


| FIGURE 11



| FIGURE 12

“Head Plunge” can usually be attributed to improper drilling or countersinking technique; see Procedure-Specific Recommendations for further info. In the event of a “Head Plunge”, the washers can be used to salvage screw fixation. Choose the perpendicular or oblique washer based on screw position relative to cortical bone. | **FIGURE 13** Remove the screw, leaving the K-wire in place. Slide the washer over the screw, and re-install. | **FIGURES 14-16**



| **FIGURE 13**



| **FIGURE 14**



| **FIGURE 15**



| **FIGURE 16**

The parallel wire guide (P/N 44180030) is available if two screws will be used. Set the width of the guide no less than indicated by the line on the side of the guide handle. This will allow the use of a washer if necessary. | FIGURES 17-18



| FIGURE 17



| FIGURE 18

## Explant Information

Explant planning is left to the discretion of the surgeon.

# Ordering Information

*Sterile part numbers are available upon request for specific markets.*



## CHARLOTTE®

7.0mm Multi-Use Compression Screws

### 4418KITA

Part Number	Description
44170032	100mm x 32mm
44170532	105mm x 32mm
44171016	110mm x 16mm
44171032	110mm x 32mm
44174016	40mm x 16mm
44174516	45mm x 16mm
44177532	75mm x 32mm
44177532	75mm x 32mm
44178532	85mm x 32mm
44179032	90mm x 32mm
44179532	95mm x 32mm
44170016	100mm x 16mm
44170516	105mm x 16mm
44175016	50mm x 16mm
44175516	55mm x 16mm
44176016	60mm x 16mm
44176516	65mm x 16mm
44177016	70mm x 16mm
44177516	75mm x 16mm
44178016	80mm x 16mm
44178516	85mm x 16mm
44179016	90mm x 16mm
44179516	95mm x 16mm
44187000	Straight Washer
44187001	Oblique Washer
44182523	K-wire 2.5mm x 230mm Threaded
44180010	5mm Cannulated Drill

### 4418KIT1

Part Number	Description
44180015	Cannulated Countersink
44180020	Cannulated Tap 7.0
44180025	Ratcheting Handle
44180030	Parallel Wire Guide
44180035	Hex Driver
44180040	2.5mm Distractor
44180045	Quick Connect
44180050	Depth Gauge
44180055	Handle for Tissue Protector
44180060	Tissue Protector for K-wire
44180065	Tissue Protector for Drill

# Ordering Information

*Sterile part numbers are available upon request for specific markets.*



## DARCO®

7.0mm Headless Compression Screws

4419KITA

Part Number	Description
DCS01640	40mm X 16mm
DCS01645	45mm X 16mm
DCS01650	50mm X 16mm
DCS01655	55mm X 16mm
DCS01660	60mm X 16mm
DCS01665	65mm X 16mm
DCS01670	70mm X 16mm
DCS01675	75mm X 16mm
DCS01680	80mm X 16mm
DCS01685	85mm X 16mm
DCS01690	90mm X 16mm
DCS01695	95mm X 16mm
DCS16100	100mm X 16mm
DCS16105	105mm X 16mm
DCS16110	110mm X 16mm
DCS03275	75mm X 32mm
DCS03280	80mm X 32mm
DCS03285	85mm X 32mm
DCS03290	90mm X 32mm
DCS03295	95mm X 32mm
DCS32100	100mm X 32mm
DCS32105	105mm X 32mm
DCS32110	110mm X 32mm
DCS07011	Straight Washer
DCS07012	Oblique Washer
44182523	K-wire 2.5mm x 230mm
44180010	5mm Cannulated Drill
44180010	5mm Cannulated Drill

Part Number	Description
DC007000	Cannulated Tap 7.0
44180015	Cannulated Countersink
44180025	Ratcheting Handle
44180030	Parallel Wire Guide
44180035	Hex Driver
44180040	2.5mm Distractor
44180045	Quick Connect
44180050	Depth Gauge
44180055	Handle for Tissue Protector
44180060	Tissue Protector for K-wire
44180065	Tissue Protector for Drill



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