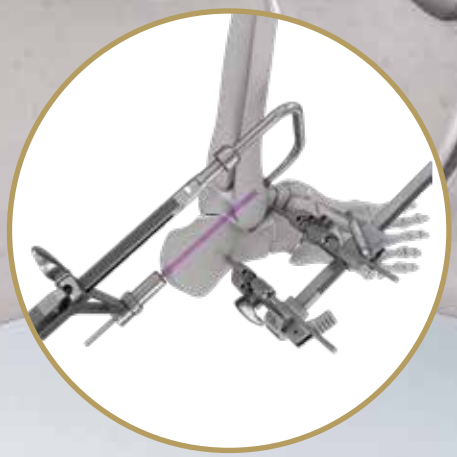
DePuy Synthes

PART OF THE Johnson & Johnson FAMILY OF COMPANIES

# Subtalar Arthrodesis

## Cannulated Compression Headless Screw (CCHS)

### THE CUTTING EDGE IN SCREW TECHNOLOGY

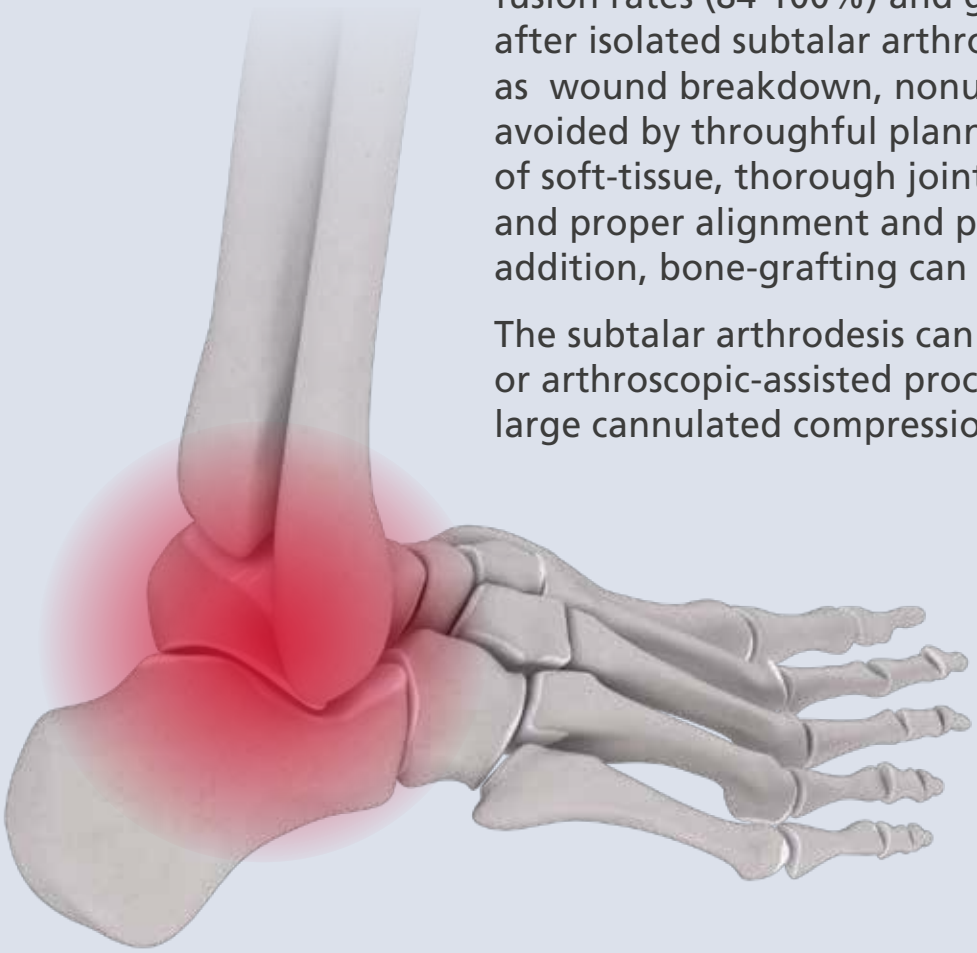


DEPUY SYNTHES IS WITH YOU—AND YOUR PATIENTS

EVERY STEP OF THE WAY

Cannulated Compression Headless Screw (CCHS)

# SUBTALAR ARTHRODESIS FIXATION WITH CCHS



Numerous retrospective articles have reported high fusion rates (84-100%) and good functional outcomes after isolated subtalar arthrodesis[1]. Complications such as wound breakdown, nonunion or malunion can be avoided by throughful planning and careful handling of soft-tissue, thorough joint preparation, rigid fixation and proper alignment and position of arthrodesis[2]. In addition, bone-grafting can improve the fusion rate[1].

The subtalar arthrodesis can be performed as an open or arthroscopic-assisted procedure using two divergent large cannulated compression screws for stable fixation[1].

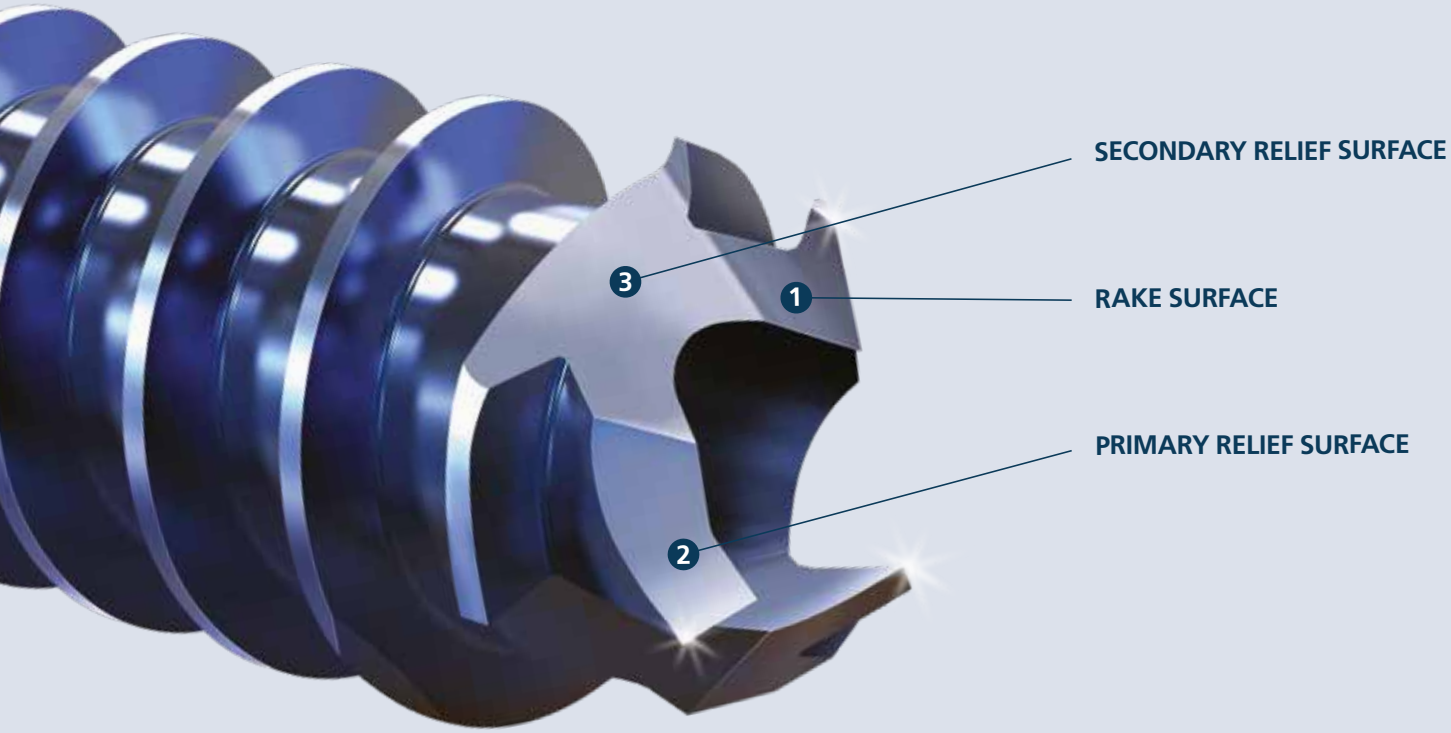
**The CCHS system is designed to provide precise placement and improved cutting performance to maintain intended alignment.**

## CCHS OFFERS SURGEONS
## UNCOMPROMISED PRECISION THROUGH

- **Innovative cutting edge** for improved cutting efficiency[3-5]
- **Cobalt Chrome Guide Wire** for less deflection[6]
- **Most comprehensive portfolio** on the market to address a wide range of surgical needs[7]

# **INNOVATIVE** COMPOUND CUTTING EDGE

Three uniquely angled surfaces form an innovative compound cutting edge designed to reduce insertion force and minimize the need for pre-drilling[1-3].




# **SUPERIOR** CUTTING PERFORMANCE

DePuy Synthes Cannulated Compression Headless Screws offer an unique cutting tip designed to reduce the axial force when inserting the screw. CCHS requires **less insertion force** for screw insertion compared to Stryker® Fixos®/Fixos 2® (Figs. 1 and 2) and Acumed® Acutrak 2® Micro (Fig. 1) Headless Screws[4].

# **SCREW INSERTION** FORCE COMPARISON[2]

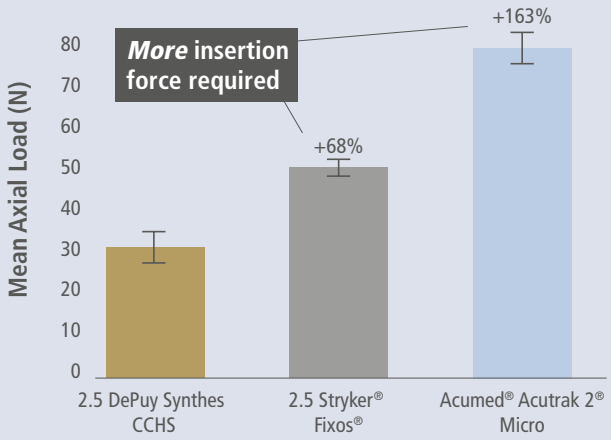



**Figure 1: Small Headless Compression Screws (40 pcf)**

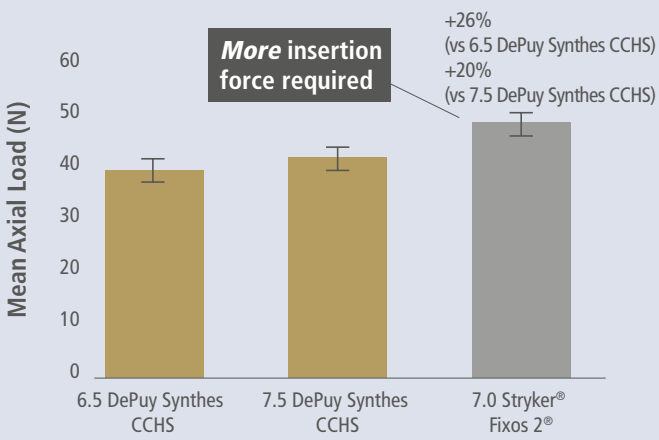
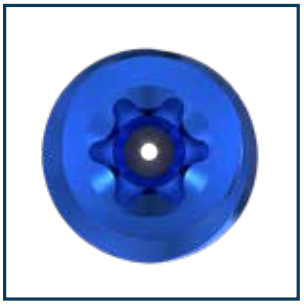



**Figure 2: Large Headless Compression Screws (20 pcf)**

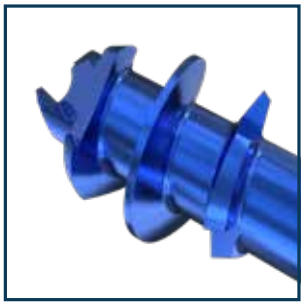
# **MOST COMPREHENSIVE CCHS PORTFOLIO**
# FOR SUBTALAR ARTHRODESIS

CCHS **provides a broad range** of procedurally relevant screw diameters, lengths and thread options to help address varying patient anatomy and provide intra-operative flexibility to subtalar arthrodesis procedures.



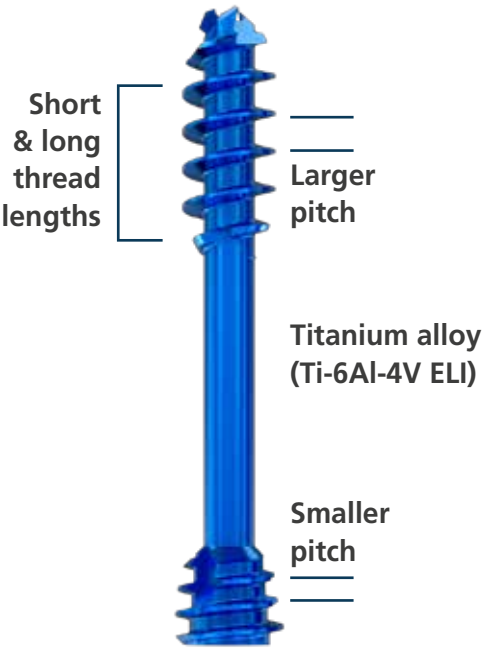
**StarDrive Recess**

**Head with cutting flutes**
Facilitates countersinking of screwhead

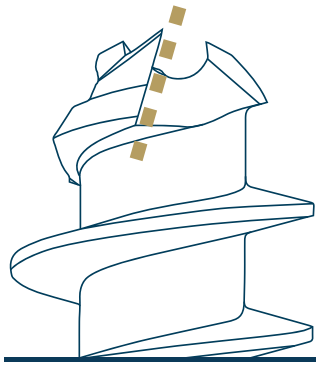


**Reverse-cutting flutes**
Facilitates screw removal

**Self-drilling and self-tapping flutes**




**Compression gained through different thread pitch of the head and the distal shaft**

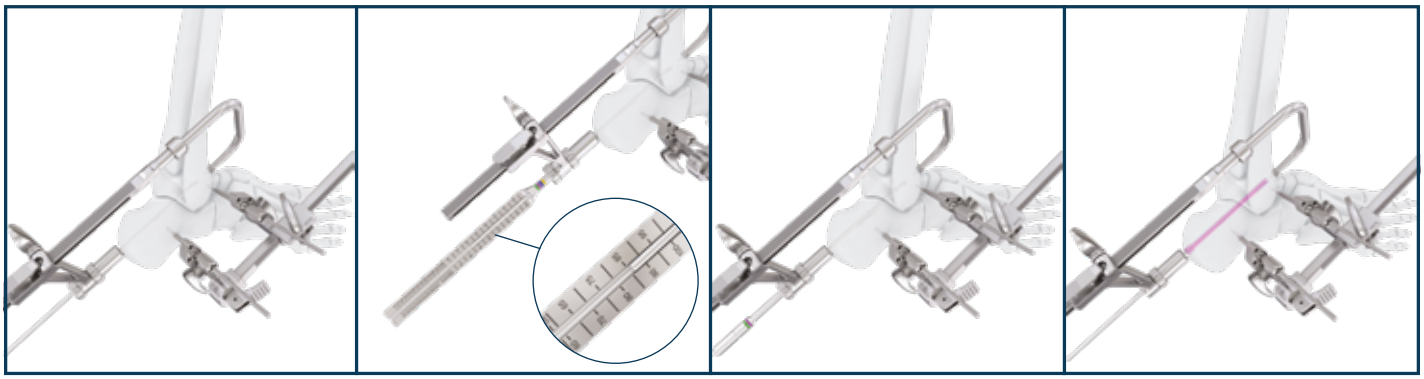


**Positive rake angle** cutting tip design offers a sharp cutting edge, which may require less force to insert[3,4]

# **ENHANCED** GUIDE WIRES

The Cobalt Chrome Guide Wires of the CCHS have a **29% higher bending stiffness** compared to stainless steel guide wires[6] and result in less deflection during screw insertion to maintain intended trajectory.

# TECHNIQUE OVERVIEW



1. Insert applicable guide wire(s) in desired screw placement for fusion.

   *Note: Guide wires can also provide temporary provisional fixation as necessary.*

2. Measure screw length with applicable direct measuring device.

3. *(Optional)* Use corresponding cannulated drill bit to predrill as necessary.

4. Insert CCHS over guide wire.

## *Surgical Tips & Tricks*

### GENERAL

- Leverage X-ray imaging to verify proper alignment of the guide wire(s) prior to screw insertion
- Usage of bone graft may help increase the likelihood of a successful fusion

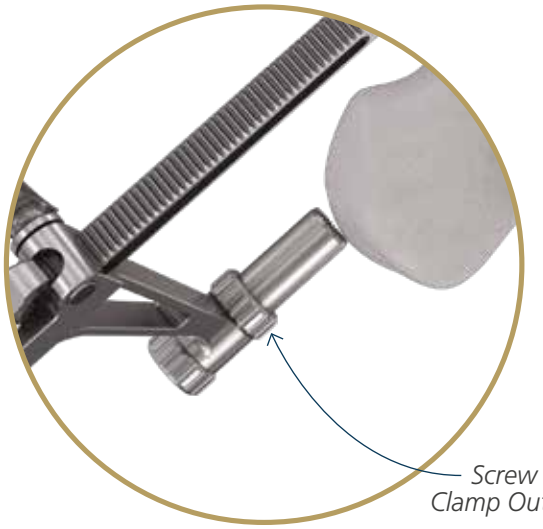
### SCREW TARGETING CLAMP

1. Use the appropriate outer sleeve for the type of screw that will be inserted:

   **Small Outer Sleeve (03.211.465)**
   - Works with 2.0 mm–5.5 mm CCHS

   **Large Outer Sleeve (03.211.466)**
   - Works with 6.5 mm/7.5 mm CCHS

2. Do not overcompress the clamp once it has been placed at the screw insertion site. Overcompression may cause a change in wire/screw trajectory.



# THE CCHS LARGE SCREW SYSTEM -
## THE OPTIONS, PRECISION, AND EDGE YOU NEED

| Diameter | Lengths | Short Thread | Long Thread | Guide Wire |
|---|---|---|---|---|
| **4.5 mm** | 20 mm – 50 mm *(2 mm increments)* | 04.333.5XX | 04.334.5XX | 1.6 mm guide wire/220 mm |
| **5.5 mm** | 55 mm – 110 mm *(5 mm increments)* | 04.333.6XX | 04.334.6XX | |
| **6.5 mm** | 30 mm – 130 mm *(5 mm increments)* | 04.333.7XX | 04.334.7XX | 2.8 mm guide wire/220 mm |
| **7.5 mm** | 30 mm – 140 mm *(5 mm increments)* | 04.333.8XX | 04.334.8XX | |

For sterile implants, add suffix "TS" to Part Number. Sterile part availability might be different depending on the country or region.

## PROCEDURAL ENHANCEMENTS

### *Screw Targeting Clamp*

The screw targeting clamp provides the ability to maintain compression while inserting screws through targeted areas. Its adjustable rail also helps ensure the precise placement of CCHS (2.0 mm–7.5 mm). Additionally, arm attachments allow the clamp to securely attach to various anatomic regions.

### *Orthopaedic Foot Instruments*

The orthopaedic foot instruments contain 3 modular sets designed for reconstructive orthopaedic surgery. It includes the Compression/Distraction Device Set, the Joint Preparation Set, and the Bone Harvesting Set.

### *ViviGen® Cellular Bone Matrix*

ViviGen Cellular Bone Matrix contains viable, lineage-committed bone cells within a corticocancellous bone matrix and demineralized bone[8].

Nonunion rates in higher-risk patients have been reported to be as high as 27% for isolated subtalar fusions[9]. ViviGen has demonstrated fusion rates in Hindfoot procedures of 85.1%[9]. This supports its use as an alternative to autograft and MSC-based cellular allografts in arthrodesis and ORIF procedures, particularly for high-risk patients[9].

*ViviGen is a registered trademark of LifeNet Health.*

**References: 1.** Ferrao P. et al. Isolated Subtalar Arthrodesis. BJS Essential Surgical Techniques. 6(1):e12, January-March 2016. **2.** Roster B. Subtalar joint arthrodesis: open and arthroscopic indications and surgical techniques. Foot and ankle clinics. 20 (2) (pp 319-334), 2015. Date of Publication: 01 Jun 2015. Review. **3.** DePuy Synthes Report: Memo CCHS Engineering Rationale. 7th Aug 2019 (0000286734). **4.** DePuy Synthes Memo on CCHS Screw Cutting Performance Tests. 29th Jan 2020 (0000288513). Bench testing may not be indicative of clinical performance. Axial load of 5 samples of each screw type were measured. Test groups were DePuy Synthes CCHS 2.5, 3.0, 4.0, 4.5, 6.5 and 7.5 mm, DePuy Synthes HCS 2.4, 4.5 and 6.5mm and Stryker Fixos 2.5 and 4.0mm, Stryker Fixos2 7.0 mm screws, Acumed Acutrak2 Micro. **5.** DePuy Synthes Patent Application: Angled Flutes in Cannulated Bone Screws. 2018/0303529 A1. **6.** DePuy Synthes Report: Memo Guide Wire Material. 28th Aug 2020 (0000287828). Bench testing may not be indicative of clinical performance. CoCr Guide Wire compared to SS Guide Wire of comparable system. **7.** DePuy Synthes Report: Market Analysis. 8th Aug 2019 (0000286547). Research was performed (June 2019) comparing cannulated headless screw offerings among all main competitors who offer this product line. Main competitors were defined based on market report Medtech 360 Trauma Devices Market Analysis US (2018). Most comprehensive is defined as the widest range of portfolio of available cannulated headless screw diameters currently marketed. **8.** LifeNet Health Data on file 65-0347. **9.** Moran TE at al. A Retrospective Analysis of Outcomes From Foot and Ankle Arthrodesis and Open Reduction and Internal Fixation Using Cellulalar Bone Allograft Augmentation. Foot & ankle specialist (2020): 1938640020952301.



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