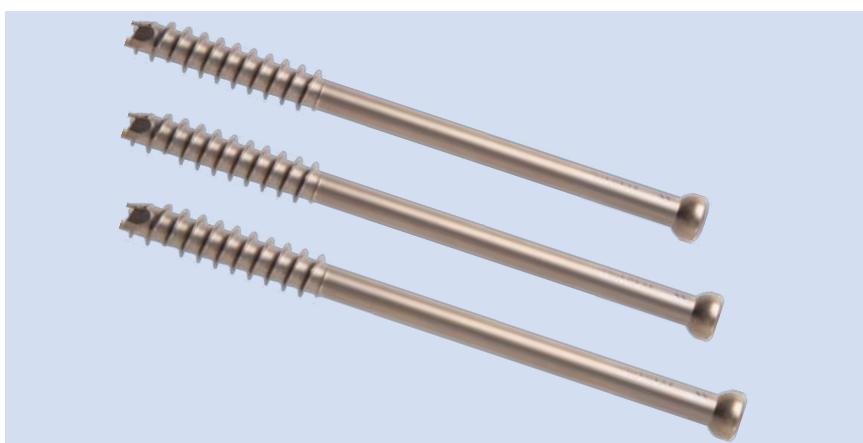


## Surgical Technique



## KCS 4.0/4.5/7.0/7.3 mm Cannulated Screws System



# Content



●Indications	P1
●Surgical Technique	
Percutaneous Technique	
—Insert guide wires	P2
—Drill	P4
—Countersink (optional)	P5
—Measure for screw leng	P6
—Insert screws	P7
Open Technique	
—Set the Drill Guide for Multiple Insertion of Guide Wires	P8
—Insert guide wires and measure	P8
—Insert screws	
Implants removal	P9
Instruments cleaning	P10
●Product Information	
Implants	P11
Instruments	P14



## Indications

### KCS 4.0

Fixation of fractures with medium fragments, e.g.:

- tarsal and metatarsal fractures and fixation in metatarsal and phalangeal osteotomies
- tarsometatarsal and metatarsophalangeal arthrodeses
- ligament fixations
- hallux valgus corrections

### KCS 4.5

Fixation of fractures with medium fragments, e.g.:

- malleolar fractures
- pilon tibial fractures
- fractures of the calcaneus and talus
- tibial plateau fractures
- carpal and tarsal arthrodeses

### KCS 7.0 and 7.3

Fixation of fractures with large fragments, e.g.:

- femoral neck fractures
- intercondylar femoral fractures
- epiphyseolysis of the femoral head
- ankle arthrodeses
- iliosacral dislocations

The following surgical technique is explained using the example of a femoral neck fracture.

Surgical Technique

Percutaneous Technique

1  
Insert guide wire

Insert the percutaneous sleeve assembly through a stab incision and through the soft tissue to the bone. Remove the trocar. Under power, insert the 2.5 mm threaded guide wire through the inner sleeve into the bone. Check for appropriate depth under image intensification.



Required instruments

Cannulated Screw	Guide Wire	Drill Sleeve
4.0	Φ1.2mm (899902/899903)	Percutaneous Drill Sleeve Assembly: - Drill Sleeve 3.0 (899906) - Drill Guide for Wire (899905)
4.5	Φ1.6mm (899392/899393)	Percutaneous Drill Sleeve Assembly: - Protection Sleeve (899396) - Drill Guide 1.6 (899395)
7.0	Φ 2.0mm (899934/899935)	Percutaneous Drill Sleeve Assembly: - Protection Sleeve 10.0 (899923) - Drill Sleeve 10.0/2.0 (899926)
7.3	Φ 2.5mm (899376/899377)	Percutaneous Drill Sleeve Assembly: - Protection Sleeve 10.0 (899365) - Drill Guide 2.5 (899363) - Trocar (899362)



Insert additional parallel guide wire(s) with adjustable parallel wire guide (only for cannulated screws 7.0/7.3)

Use the 2.5 mm adjustable parallel wire guide to place parallel wires at various distances from the first wire. Place the fixed sleeve over the previously inserted wire and adjust the movable sleeve to the desired position and distance. Tighten the knurled nut on the adjustable sleeve to lock it in place. Insert the desired number of additional wires.



Required instruments

Cannulated Screw	Parallel Guide for Guide Wires
7.0	Parallel Guide for Guide Wires Φ 2.0mm, adjustable (899927) – for open insertion (899932); see the section on “Open insertion for cannulated screw 7.0/7.3”
7.3	Parallel Guide for Guide Wires Φ 2.5mm,adjustable(899366) – for open insertion (899373); see the section on “Open insertion for cannulated screw 7.0/7.3”



2

Drill

For self-tapping screws, the desired length must be predrilled with the cannulated drill bit.



Required instruments

Cannulated Screw	Cannulated Drill Bits
4.0	Φ 3.0mm (899909)
4.5	Φ 3.2mm (899399)
7.0	Φ 4.5mm (899922)
7.3	Φ 5.0mm (899367)

3

Countersink (optional)

When a lower screw profile is necessary, use the cannulated countersink to create a recess for the screw head.



Required instruments

Cannulated Screw	Countersink, cannulated	Drill Bit, cannulated
4.0	899913	Φ 3.0mm (899909)
4.5	899401	Φ 3.2mm (899399)
7.0	899921	Φ 4.5mm (899922)
7.3	899371	Φ 5.0mm (899367)

4

Measure for screw length

Insert the protection sleeve and slide the direct measuring device over the guide wire. Read off the appropriate screw length directly on the scale.



Notes:

The reading indicates the screw length that will place the screw at the tip of the guide wire. Subtract appropriately for any anticipated interfragmentary compression resulting from screw insertion. If planning to countersink, this should be done prior to inserting the cannulated screw measuring device.

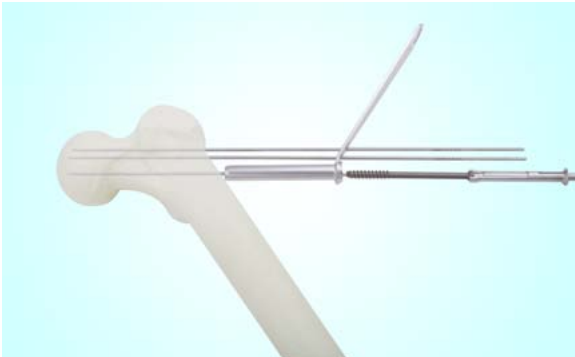
Required instruments

Cannulated Screw	Direct Measuring Device	Protection Sleeve
4.0	899904	899906
4.5	899394	899396
7.0	899938	899923
7.3	899378	899365

5

Insert screw

Using the cannulated hexagonal screwdriver, place the appropriate length screw over the guide wire through the protection sleeve, and insert into the bone. Remove and discard the guide wire. For power insertion of screws, use the cannulated hexagonal screwdriver shaft and holding sleeve. Always use the cannulated hexagonal screwdriver for final, manual seating of the screw. Use of a washer should be considered when using the 7.3 mm drill bit to make a gliding hole, or inserting the screw into osteoporotic bone.



Notes:

In very dense bone, it may be helpful to predrill the cortex with the 5.0 mm drill bit.

Required instruments

Cannulated Screw	Cannulated Screwdriver	Screw Holding Sleeve	Protection Sleeve
4.0	899911	—	899906
4.5	899403	899404	899396
7.0	899933	899936	899923
7.3	899374	899379	899365



Open Technique for Cannulated Screw 7.0/7.3

1  
Set the drill guide for multiple insertion of guide wires

Prior to inserting guide wires, place the Drill Guide for Multiple Insertion of Guide Wires (899932/899373) directly on the bone and select the insertion angle.



2  
Insert guide wires and measure

Insert the desired number of guide wires 5–10 mm below articular cartilage and remove the wire guide.

Determine the screw lengths and insert screws. See steps 2–5, pages 4–7, for a precise description.

Implant removal

Expose the screw head and remove the screws using the special screwdriver for the removal of cannulated screws.

**Warning**  
Do not use the cannulated screwdriver for implant removal.

Required instruments

Cannulated Screw	Hex Screwdriver
4.0	899912
4.5	899405
7.0	899937
7.3	899375



Instrument cleaning

Clean the cannulated instruments thoroughly after each use. This helps maintain the correct operation of the instruments.

The instrument cannulations can be cleaned during operations using the cleaning stylet.

The instrument cannulations can be cleaned postoperatively using the cleaning stylet and cleaning brush.

Required instruments

Cannulated Screw	Cleaning Stylet
4.0	899901
4.5	899391
7.0	899930
7.3	899361

Product Information

Implants



Code	Products Description	Size	Material
31421025	Cannulated screws	4.0×25mm	TA
31421030	Cannulated screws	4.0×30mm	TA
31421035	Cannulated screws	4.0×35mm	TA
31421040	Cannulated screws	4.0×40mm	TA
31421045	Cannulated screws	4.0×45mm	TA
31421050	Cannulated screws	4.0×50mm	TA
31421055	Cannulated screws	4.0×55mm	TA
31421060	Cannulated screws	4.0×60mm	TA
31421065	Cannulated screws	4.0×65mm	TA
31421070	Cannulated screws	4.0×70mm	TA
31405020	Cannulated screws	4.5×20mm	TA
31405025	Cannulated screws	4.5×25mm	TA
31405030	Cannulated screws	4.5×30mm	TA
31405035	Cannulated screws	4.5×35mm	TA
31405040	Cannulated screws	4.5×40mm	TA
31405045	Cannulated screws	4.5×45mm	TA
31405050	Cannulated screws	4.5×50mm	TA
31405055	Cannulated screws	4.5×55mm	TA
31405060	Cannulated screws	4.5×60mm	TA
31405065	Cannulated screws	4.5×65mm	TA
31405070	Cannulated screws	4.5×70mm	TA



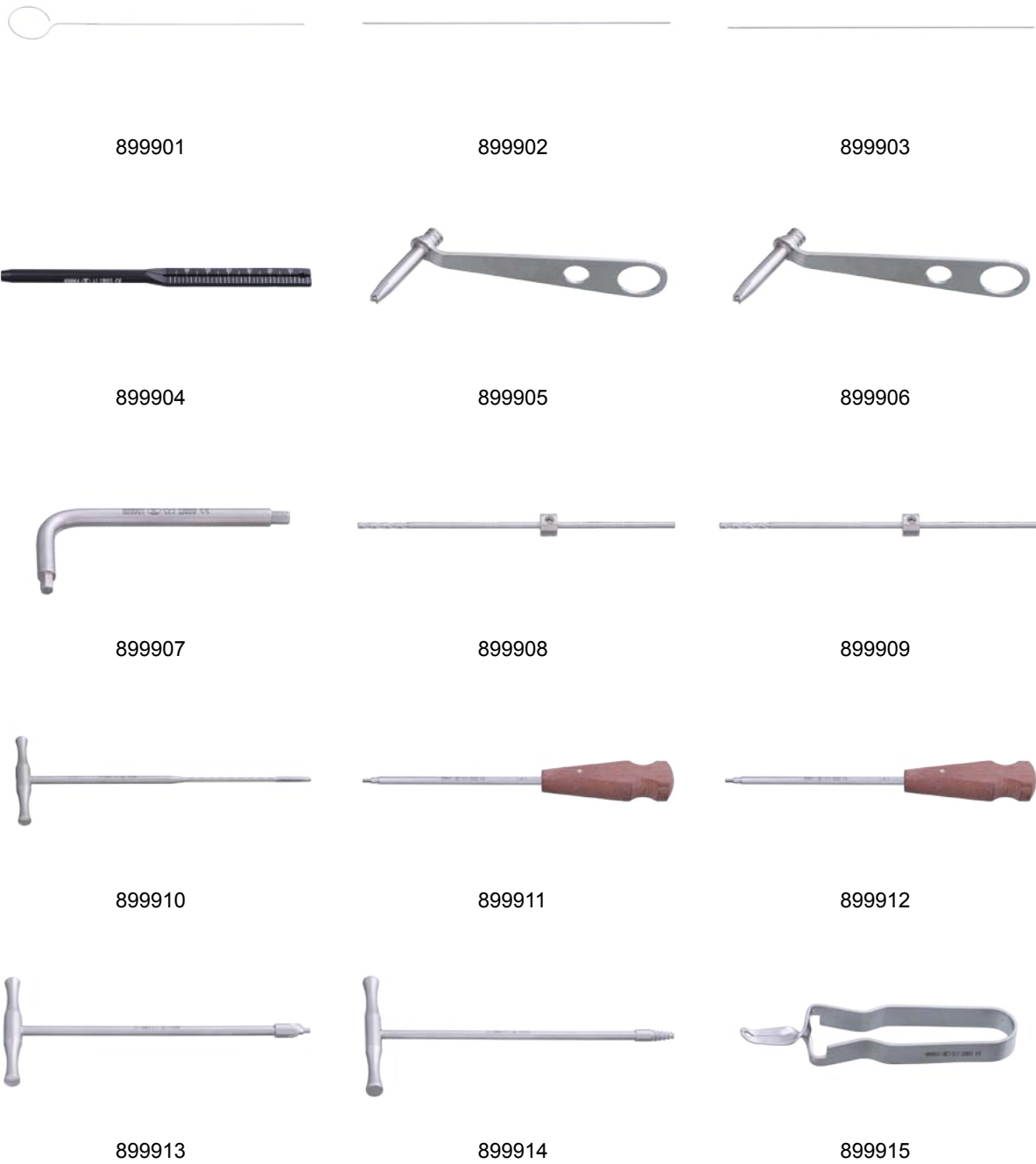


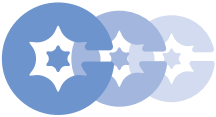
31405075	Cannulated screws	4.5×75mm	TA
31411040	Cannulated screws	7.0×40mm	TA
31411045	Cannulated screws	7.0×45mm	TA
31411050	Cannulated screws	7.0×50mm	TA
31411055	Cannulated screws	7.0×55mm	TA
31411060	Cannulated screws	7.0×60mm	TA
31411065	Cannulated screws	7.0×65mm	TA
31411070	Cannulated screws	7.0×70mm	TA
31411075	Cannulated screws	7.0×75mm	TA
31411080	Cannulated screws	7.0×80mm	TA
31411085	Cannulated screws	7.0×85mm	TA
31411090	Cannulated screws	7.0×90mm	TA
31411091	Cannulated screws	7.0×95mm	TA
31411092	Cannulated screws	7.0×100mm	TA
31401065	Cannulated screws, 16mm thread	7.3×65mm	TA
31401070	Cannulated screws, 16mm thread	7.3×70mm	TA
31401075	Cannulated screws, 16mm thread	7.3×75mm	TA
31401080	Cannulated screws, 16mm thread	7.3×80mm	TA
31401085	Cannulated screws, 16mm thread	7.3×85mm	TA
31401090	Cannulated screws, 16mm thread	7.3×90mm	TA
31401091	Cannulated screws, 16mm thread	7.3×95mm	TA
31401092	Cannulated screws, 16mm thread	7.3×100mm	TA
31401093	Cannulated screws, 16mm thread	7.3×105mm	TA
31401094	Cannulated screws, 16mm thread	7.3×110mm	TA
31401095	Cannulated screws, 16mm thread	7.3×115mm	TA
31401096	Cannulated screws, 16mm thread	7.3×120mm	TA
31404065	Cannulated screws, 32mm thread	7.3×65mm	TA
31404070	Cannulated screws, 32mm thread	7.3×70mm	TA
31404075	Cannulated screws, 32mm thread	7.3×75mm	TA
31404080	Cannulated screws, 32mm thread	7.3×80mm	TA

31404085	Cannulated screws, 32mm thread	7.3×85mm	TA
31404090	Cannulated screws, 32mm thread	7.3×90mm	TA
31404091	Cannulated screws, 32mm thread	7.3×95mm	TA
31404092	Cannulated screws, 32mm thread	7.3×100mm	TA
31404093	Cannulated screws, 32mm thread	7.3×105mm	TA
31404094	Cannulated screws, 32mm thread	7.3×110mm	TA

Instruments

4.0mm KCS Cannulated Screws Instrument Set		
899900	4.0mm KCS Cannulated Screws Instrument Set	
899901	Cleaning Stylet, Φ 1.2mm	1
899902	Guide Wire, Φ 1.2mm	1
899903	Threaded Pin, Φ 1.2mm	1
899904	Direct Measuring Device for Guide Wires Φ 1.2mm	1
899905	Drill Guide for Wire	1
899906	Drill Sleeve 3.0	1
899907	Allen Key, for Protector	1
899908	Protector	1
899909	Cannulated drill, Φ 3.0mm	1
899910	Tap for Cannulated Screws Φ 4.0mm	1
899911	Cannulated Screwdriver	1
899912	Hex Screwdriver	1
899913	Cannulated Countersink	1
899914	Easyout	1
899915	Screw Forceps, self -retaining	1





Instruments

4.5mm KCS Cannulated Screws Instrument Set		
899390	4.5mm KCS Cannulated Screws Instrument Set	
899391	Clean Brush	1
899392	Guide Wire, Φ 1.6mm	3
899393	Threaded Pin, Φ 1.6mm	3
899394	Direct Measuring Device for Guide Wires Φ 1.6mm	1
899395	Drill Guide 1.6	1
899396	Protection Sleeve	1
899397	Protector, Φ 3.2mm	1
899398	Allen Key, for Protector	1
899399	Cannulated Drill, Φ3.2mm	1
899400	Tap for Cannulated Screws Φ 4.5mm	1
899401	Cannulated Countersink	1
899402	Easyout	1
899403	Cannulated Screwdriver	1
899404	Screw Holding Sleeve	1
899405	Hex Screwdriver	1
899406	Screw Forceps, self -retaining	1
899407	Double Drill Guide 4.5/3.2	1



899391



899392



899393



899394



899395



899396



899397



899398



899399



899400



899401



899402



899403



899404



899405



899406

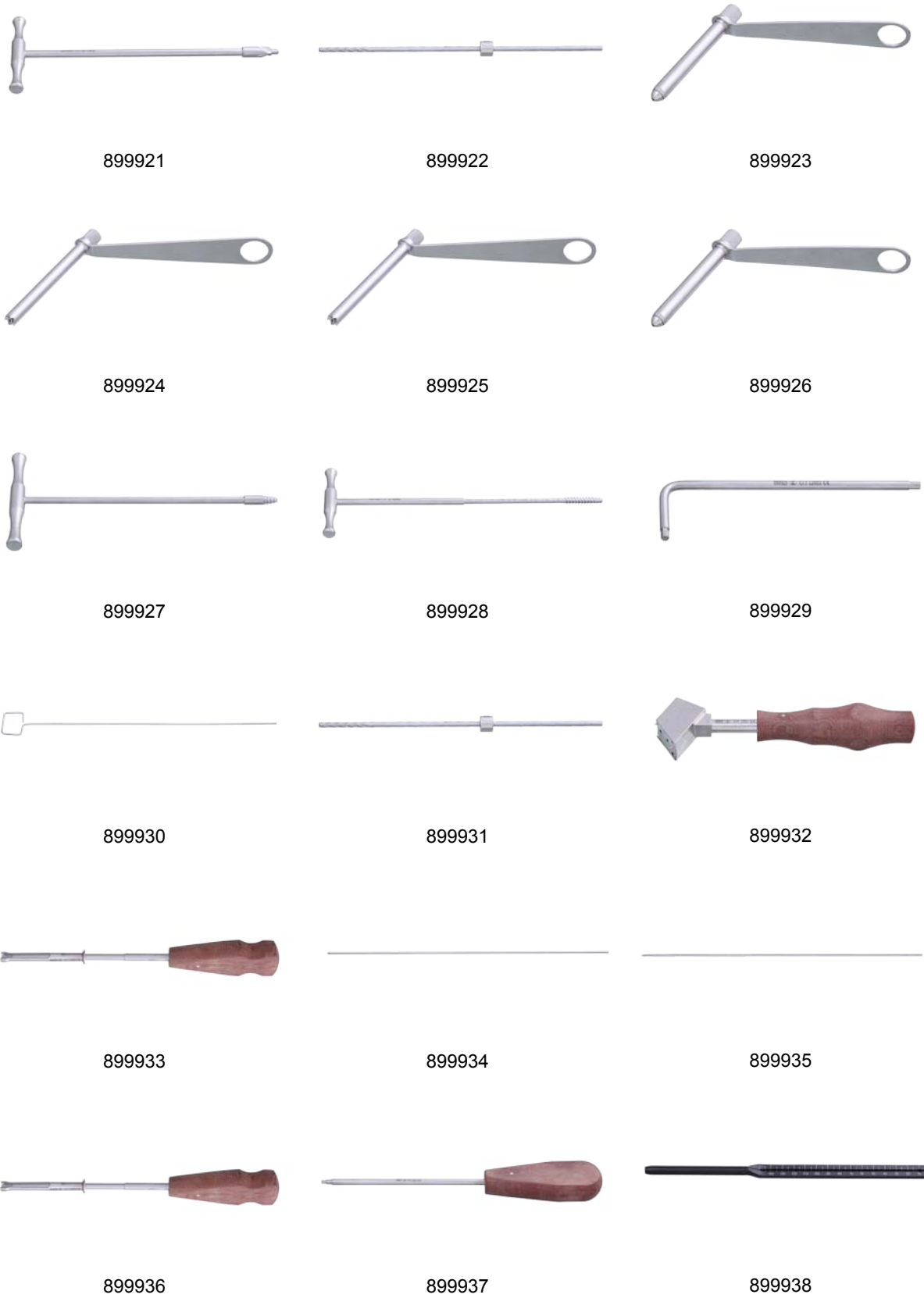


899407



Instruments

7.0mm KCS Cannulated Screws Instrument Set		
899920	7.0mm KCS Cannulated Screws Instrument Set	
899921	Cannulated Countersink	1
899922	Cannulated drill, Φ 4.5mm	3
899923	Protection Sleeve 10.0	3
899924	Drill sleeve 4.5/2.0	1
899925	Drill sleeve 10.0/4.5	1
899926	Drill Sleeve 10.0/2.0	1
899927	Parallel Guide for Guide Wires Φ 2.0mm, adjustable	1
899928	Tap for Cannulated Screws Φ 7.0mm	1
899929	Allen Key, for Protector	1
899930	Cleaning Stylet, Φ 2.0mm, length 250mm	1
899931	Protector, Φ 4.5/SW3	1
899932	Drill Guide for Multiple Insertion of Guide Wires Φ 2.0mm	1
899933	Cannulated Screwdriver, SW3.5/Φ 2.0	1
899934	Guide Wire, Φ 2.0mm, length 250mm	3
899935	Threaded Pin, Φ 2.0mm, length 250mm	3
899936	Screw Holding Sleeve, R4	1
899937	Hex Screwdriver, SW3.5	1
899938	Direct Measuring Device for Guide Wires Φ 2.0mm	1





Instruments

7.3mm KCS Cannulated Screws Instrument Set		
899360	7.3mm KCS Cannulated Screws Instrument Set	
899361	Cleaning Brush	1
899362	Trocar	3
899363	Drill Guide 2.5	3
899364	Protection Sleeve	1
899365	Protection Sleeve 10.0	1
899366	Parallel Guide for Guide Wires Φ 2.5mm, adjustable	1
899367	Cannulated Drill, Φ 5.0mm	1
899368	Protector	1
899369	Allen Key, for Protector	1
899370	Tap for Cannulated Screws Φ 7.3mm	1
899371	Cannulated Countersink	1
899372	Easyout	1
899373	Drill Guide for Multiple Insertion of Guide Wires Φ 2.5mm	1
899374	Cannulated Screwdriver, SW4.0	3
899375	Hex Screwdriver, SW4.0	3
899376	Guide Wire, Φ 2.5mm	1
899377	Threaded Pin, Φ 2.5mm	1
899378	Direct Measuring Device for Guide Wires Φ 2.5mm	1
899379	Screws Holding Sleeve	1
899380	Pin Wrench	1



899361



899362



899363



899364



899365



899366



899367



899368



899369



899370



899371



899372



899373



899374



899375



899376



899377



899378



899379



899380

**CHINA KANGHUI HOLDINGS**  
**CHANGZHOU KANGHUI MEDICAL INNOVATION CO., LTD**

Add: No.1-8, Tianshan Road, Xinbei District, Changzhou, Jiangsu, China 213022  
Tel: 0086 519 85195556 Fax: 0086 519 85195551  
[Http://www.kanghui.com](http://www.kanghui.com)

**Shanghai Office**

Add: F25, Shanghai International Pharmaceutical Trad & Exhibition Tower,  
No.1399, Jinqiao Road, Pudong District, Shanghai, China 200129  
Tel: 0086 21 50319916 Fax: 0086 21 50312913