

Slipped Capital Femoral Epiphysis (SCFE) Screw System. Cannulated shaft screws \varnothing 7.3 mm.

Surgical Technique



This publication is not intended for distribution in the USA.

Instruments and implants approved by the AO Foundation.

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 Image intensifier control

Warning

This description alone does not provide sufficient background for direct use of DePuy Synthes products. Instruction by a surgeon experienced in handling these products is highly recommended.

Processing, Reprocessing, Care and Maintenance

For general guidelines, function control and dismantling of multi-part instruments, as well as processing guidelines for implants, please contact your local sales representative or refer to:

<http://emea.depuyshsynthes.com/hcp/reprocessing-care-maintenance>

For general information about reprocessing, care and maintenance of Synthes reusable devices, instrument trays and cases, as well as processing of Synthes non-sterile implants, please consult the Important Information leaflet (SE_023827) or refer to:

<http://emea.depuyshsynthes.com/hcp/reprocessing-care-maintenance>

Slipped Capital Femoral Epiphysis (SCFE) Screw System. Cannulated shaft screws \varnothing 7.3 mm.

Features

- Choice of thread lengths offers options of crossing physis or gaining compression
- Shaft screw design facilitates screw removal
- Cannulated shaft accepts 2.8 mm diameter guide wires
- Implant quality 316L stainless steel



10 mm thread length



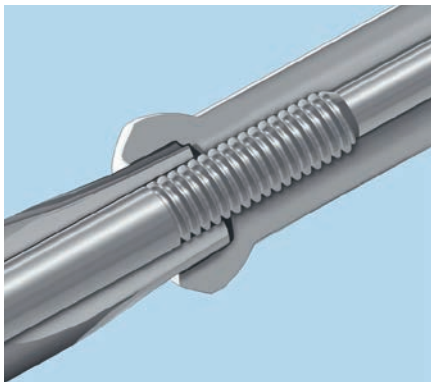
Self-tapping screw tip facilitates screw insertion by eliminating the need for pretapping

Cancellous thread profile uses deep cutting threads with a large pitch to increase resistance to pullout. The large pitch also accelerates screw insertion and removal

9.8 mm diameter screwhead accommodates T40 cannulated screwdriver



20 mm thread length



Coupling screw engages SCFE screw to the screwdriver for implant removal.



Hemispherical head ensures optimal contact with Synthes washers when screws are angled.

Slipped Capital Femoral Epiphysis (SCFE) Screw principles

The treatment of slipped capital femoral epiphysis (SCFE) has recently become more uncertain, and potentially more complicated, as the relationship between SCFE and hip impingement has been demonstrated. For many years the consensus was for stabilizing the slipped epiphysis in situ, and there was general agreement that this was best achieved with a single screw in the center of the femoral head, placed with a percutaneous technique over a guide wire to minimize trauma. Removal of the implant was a lesser priority and many of the screws used were difficult to remove, leading surgeons to leave them in place.

This current SCFE Screw System addresses many of the previous and current surgical concerns and follows AO principles¹:

1. The SCFE Screw System provides stable fixation, with or without compression.
2. The system specific instruments allow percutaneous screw placement and removal, preserving soft tissues and blood supply.
3. The screw is designed as a shaft screw:
 4. – for strength, allowing early, active mobilization
 5. – facilitating implant insertion and removal
6. The system can be used in conjunction with more complex procedures.
7. Easy removal allows secondary hip procedures to be performed when necessary.

¹ Müller ME, Allgöwer M, Schneider R, Willenegger H (1995) Manual of Internal Fixation. 3rd, expanded and completely revised ed. 1991. Berlin, Heidelberg, New York: Springer

Indications

The Slipped Capital Femoral Epiphysis (SCFE) Screws are indicated for:

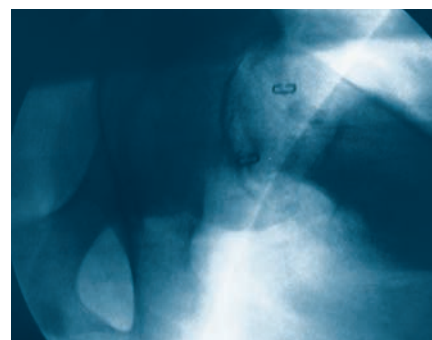
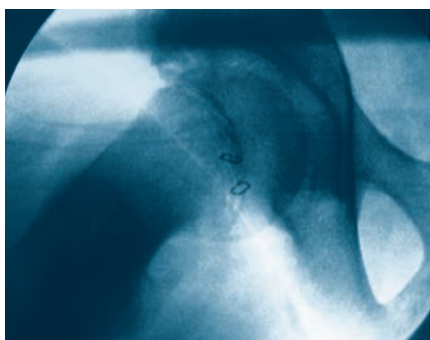
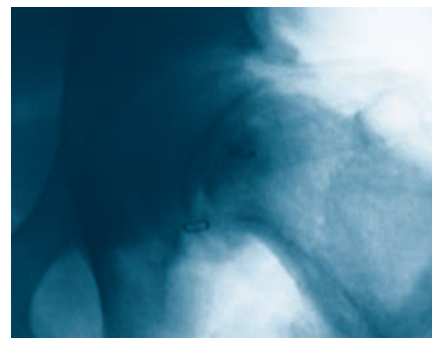
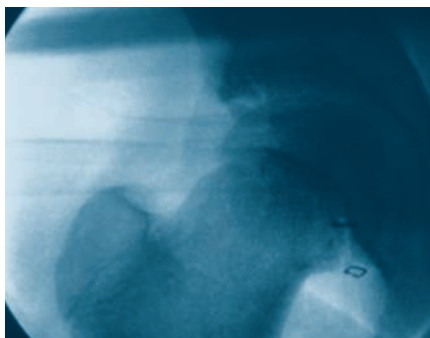
- Femoral neck fractures in children, adolescents and adults
- Slipped capital femoral epiphysis
- Tibial plateau fractures
- Ankle arthrodesis
- Intercondylar fractures
- Sacroiliac joint disruptions
- Subtalar arthrodesis

This device is not approved for screw attachment or fixation to the posterior elements (pedicles) of the cervical, thoracic, or lumbar spine.

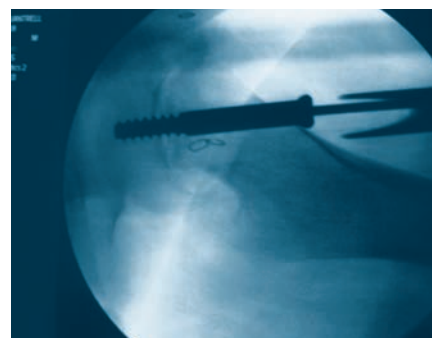
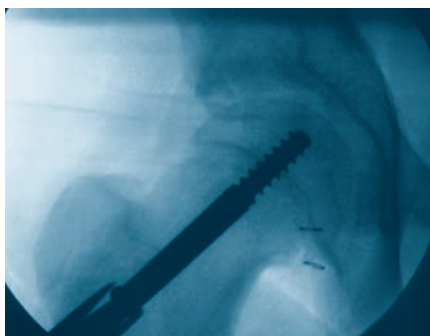
Clinical Case

- 13 year old male, 73 kg, with Preoperative moderate bilateral Slipped Capital Femoral Epiphysis (SCFE)
- One 7.3 mm Cannulated SCFE screw placed in each femoral head, with 10 mm of thread on each side of the physis

Preoperative



Postoperative



Technical Information:

Cleaning cannulations

Instrument

319.460	Cleaning Stylet Ø 2.8 mm for Cannulated Instruments
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Precaution: Cleaning the cannulation in each instrument is imperative for proper function.

Cannulated instruments should be cleared intraoperatively with the 2.8 mm cleaning stylet to prevent accumulation of debris in the cannulation and potential binding of the instruments about the guide wire.

Drilling and tapping

The self-tapping flutes of the SCFE screws make tapping unnecessary.

Implantation

1

Insert guide wire

Instruments

02.207.001	Guide Wire Ø 2.8 mm, with flutes, length 450 mm
03.207.002	Trocar for SCFE Screw
03.207.003	Protection Sleeve for SCFE Screw

- Under image intensification use power to insert the 2.8 mm guide wire through a stab incision. The wire should stop 5 mm short of the subchondral bone.

Place the percutaneous sleeve assembly over the wire and through the soft tissue to the bone.

Alternative technique

Insert the percutaneous sleeve assembly through a stab incision to the bone.

Using power, insert the 2.8 mm guide wire through the trocar into the bone. The wire should stop 5 mm short of the subchondral bone.



2

Measure screw length

Instrument

03.207.004 Direct Measuring Device for SCFE

Remove the wire sleeve and slide the tapered end of the measuring device over the guide wire and through the protection sleeve to the bone.

Ensure that the sharp points of the protection sleeve have not penetrated the cortex.

Read the scale at the end of the wire to determine screw length.

This measurement will be set on the drill bit, using the fixation sleeve (drill stop).



3

Determine screw length

Option A

SCFE screw without washer

The wire measurement is the measurement used to set the fixation sleeve (drill stop) on the drill.

For example, if the measurement is 75 mm, set the fixation sleeve (drill stop) to 75 mm. Choose a 75 mm screw.

The tip of the wire corresponds to the tip of the screw.

If direct measurement is between the 5 mm increments, the fixation sleeve (drill stop) should be set to stop one slot short of the actual measurement to prevent over-drilling and loss of screw purchase.

For example, if the measurement is 78 mm, set the drill stop to 75 mm. Select a 75 mm screw.

The tip of the screw will stop a few millimeters short of the tip of the guide wire. If more precise screw placement is desired, a washer can be used (see Option B).



Option B

SCFE screw with washer

If direct measurement is between the 5 mm increments and a washer will be used to adjust screw depth, the fixation sleeve (drill stop) should be set to stop one slot short of the actual measurement.

For example, if the measurement is 93 mm, set fixation sleeve (drill stop) on the drill to 90 mm.

93 mm wire measurement
+ 2 mm washer

95 mm length screw inserted

When using a screw with a length of 95 mm with a 2 mm washer, the screw will be inserted to the wire measurement of 93 mm.

The drill stop set to 90 mm will stop short of the measurement in this case, to prevent over-drilling and loss of screw purchase.

Note: Washers may be used in patients with poor bone quality, to prevent countersinking of the screwhead.



4 Drill

Instruments

03.207.001	Drill Bit Ø 5.0 / 7.3 mm, for SCFE Screw, thread length 10 mm
or	
03.207.008	Drill Bit Ø 5.0 / 7.3 mm, for SCFE Screw, thread length 20 mm
357.046	Fixation Sleeve, for No. 357.045

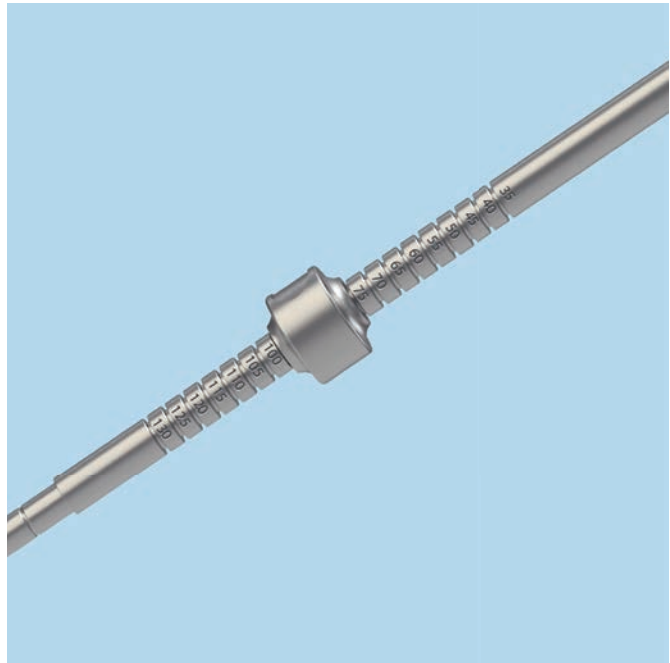
Attach the fixation sleeve (drill stop) to the stepped drill bit and set it to the measured length. The desired length should be the last visible number before the fixation sleeve.

Guide the stepped drill bit through the protection sleeve to the bone. Drill to the stop.

- Monitor under image intensification to ensure that the guide wire does not advance when drilling.

Remove the drill bit from the protection sleeve. If the wire is removed with the drill bit, reinsert the wire.

Note: When using the cannulated instrument shafts over the extra long 450 mm guide wire, a cannulated coupling device or cannulated Jacobs chuck is required.



5

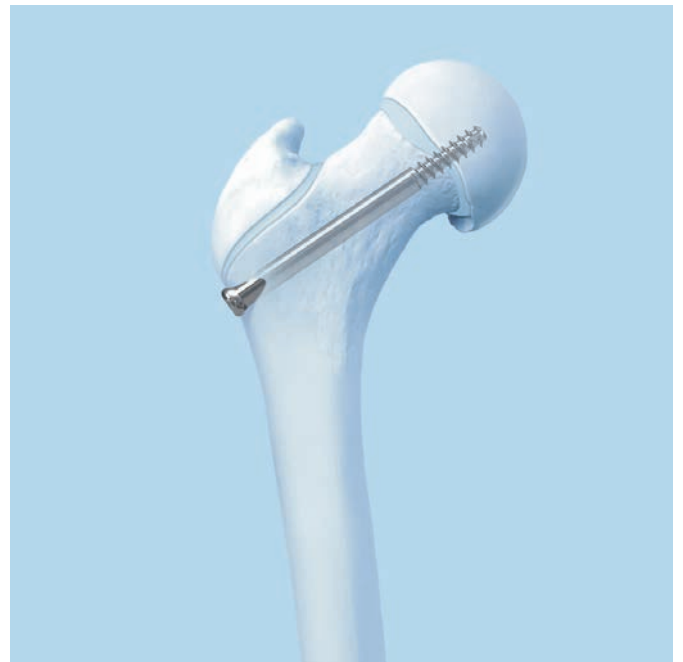
Insert screw

Instrument

03.207.005	Screwdriver Stardrive, T40, length 350.5 mm
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Using the cannulated Stardrive screwdriver, place the selected screw over the guide wire, through the protection sleeve, and into the bone. Remove and discard the guide wire.

Note: If using a washer, the screw cannot be inserted through the protection sleeve. Remove the protection sleeve and insert the screw and washer over the wire.



Screw Removal

1

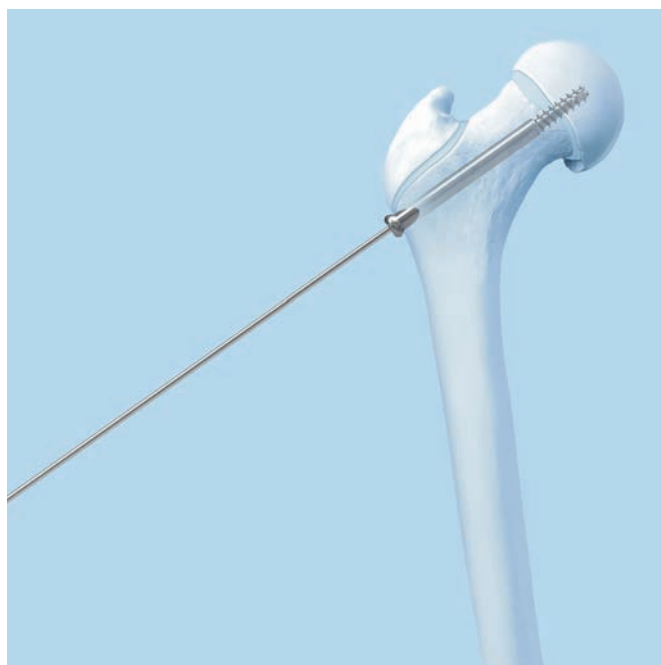
Insert guide wire

Instrument

02.207.001	Guide Wire Ø 2.8 mm, with flutes, length 450 mm
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Insert the guide wire through the original incision and into the screw cannulation.

Note: Screw removal technique can be performed through the percutaneous sleeve assembly that was used for insertion.



2

Ream bony overgrowth (if necessary)

Instrument

03.207.007	Reamer for SCFE Screw
	Power Tool

Place the reamer over the guide wire and down to the bone. Switch the drill to oscillating mode and hold the reamer in place over the screw until bony overgrowth is removed and the Stardrive recess of the screw head is cleared. Remove the reamer, ensuring the guide wire remains inserted in screw cannulation. If the guide wire is removed with the reamer, re-insert the guide wire into the screw cannulation prior to inserting the screwdriver.



3

Insert screwdriver

Instrument

03.207.005	Screwdriver Stardrive, T40, length 350.5 mm
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Insert the screwdriver over the guide wire and into the screwhead.



4

Insert coupling screw

Instrument

03.207.006	Coupling Screw for Screwdriver Stardrive, T40
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Holding the screwdriver in the screwhead, remove the guide wire.

Insert the coupling screw through the screwdriver and thread it into the cannulated screw.



When the coupling screw is fully engaged in the SCFE screw, turn the screwdriver handle and remove SCFE screw.

Note: If washers were used, retrieve them after screw removal.



Implants

Slipped Capital Femoral Epiphysis (SCFE) Screws

- Ø 7.3 mm
- Cannulated
- 10 mm and 20 mm thread length
- 4.5 mm core diameter
- Self-tapping
- T40 Stardrive recess
- 45 –130 mm lengths in 5 mm increments
- 316L stainless steel



Washers

- Oval
- 316L stainless steel
- 1 mm and 2 mm thick



Instruments

02.207.001 Guide Wire \varnothing 2.8 mm, with flutes, length 450 mm



03.207.001 Drill Bit \varnothing 5.0 mm/7.3 mm, for SCFE Screw, thread length 10 mm



03.207.002 Trocar for SCFE Screw



03.207.003 Protection Sleeve for SCFE Screw



03.207.004 Direct Measuring Device for SCFE Device for Screw



03.207.005 Screwdriver Stardrive, T40,
length 350.5 mm



03.207.006 Coupling Screw for Screwdriver Stardrive,
T40



03.207.007 Reamer for SCFE Screw



03.207.008 Drill Bit \varnothing 5.0 mm/7.3 mm, for SCFE
Screw, thread length 20 mm



319.460 Cleaning Stylet \varnothing 2.8 mm,
for Cannulated Instruments



357.046 Fixation Sleeve, for No. 357.045



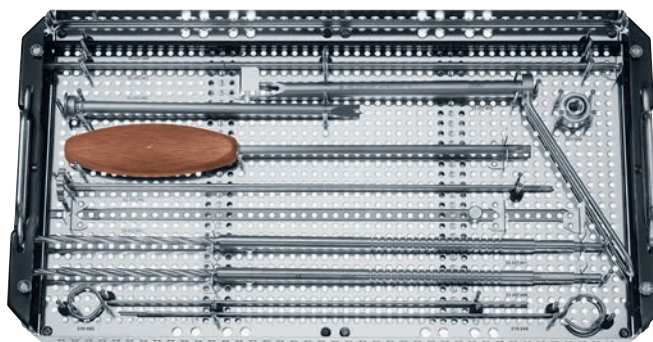
Slipped Capital Femoral Epiphysis (SCFE) Instruments for SCFE Screws, in Vario Case (01.207.005)

Vario Case

68.207.001 Vario Case for Standard Instrument Set for SCFE Screws, size 1/1, without Lid, without Contents

Instruments

03.207.001	Drill Bit \varnothing 5.0/7.3 mm, for SCFE Screw, thread length 10 mm
03.207.002	Trocar for SCFE Screw
03.207.003	Protection Sleeve for SCFE Screw
03.207.004	Direct Measuring Device for SCFE
03.207.005	Screwdriver Stardrive, T40, length 350.5 mm
03.207.006	Coupling Screw for Screwdriver Stardrive, T40
03.207.008	Drill Bit \varnothing 5.0/7.3 mm, for SCFE Screw, thread length 20 mm
319.240	Cleaning Brush \varnothing 2.9 mm, for Cannulated Instruments
319.460	Cleaning Stylet \varnothing 2.8 mm, for Cannulated Instruments
357.046	Fixation Sleeve, for No. 357.045
02.207.001	Guide Wire \varnothing 2.8 mm, with flutes, length 450 mm



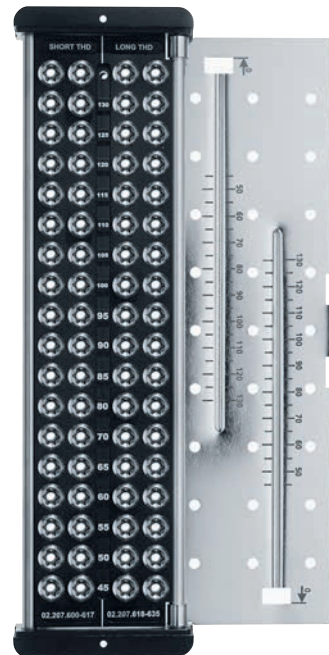
Slipped Capital Femoral Epiphysis (SCFE) Instruments and Implants in Vario Case (01.207.006)

Vario Case

68.207.003	Screw Rack for SCFE Screws, size 1/2, without Contents
68.207.004	Vario Case for SCFE Instruments and Implants, size 1/1, without Lid, without Contents

Instruments

03.207.001	Drill Bit \varnothing 5.0/7.3 mm, for SCFE Screw, thread length 10mm
03.207.002	Trocar for SCFE Screw
03.207.003	Protection Sleeve for SCFE Screw
03.207.004	Direct Measuring Device for SCFE
03.207.005	Screwdriver Stardrive, T40, length 350.5 mm
03.207.006	Coupling Screw for Screwdriver Stardrive, T40
03.207.008	Drill Bit \varnothing 5.0/7.3 mm, for SCFE Screw, thread length 20 mm
319.460	Cleaning Stylet \varnothing 2.8 mm, for Cannulated Instruments
357.046	Fixation Sleeve, for No. 357.045
02.207.001	Guide Wire \varnothing 2.8 mm, with flutes, length 450 mm



Implants**Ø 7.3 mm Cannulated SCFE Screws,
10 mm thread**

Art. No.	Length (mm)	Art. Nr.	Length (mm)
02.207.600	45	02.207.609	90
02.207.601	50	02.207.610	95
02.207.602	55	02.207.611	100
02.207.603	60	02.207.612	105
02.207.604	65	02.207.613	110
02.207.605	70	02.207.614	115
02.207.606	75	02.207.615	120
02.207.607	80	02.207.616	125
02.207.608	85	02.207.617	130

**Ø 7.3 mm Cannulated SCFE Screws,
20 mm thread**

Art. No.	Length (mm)	Art. Nr.	Length (mm)
02.207.618	45	02.207.627	90
02.207.619	50	02.207.628	95
02.207.620	55	02.207.629	100
02.207.621	60	02.207.630	105
02.207.622	65	02.207.631	110
02.207.623	70	02.207.632	115
02.207.624	75	02.207.633	120
02.207.625	80	02.207.634	125
02.207.626	85	02.207.635	130

Oval Washers for SCFE Screws, Ø 18 mm

Art. No.	Thickness (mm)
02.207.636	1 mm
02.207.637	2 mm

Slipped Capital Femoral Epiphysis (SCFE) Implants in Vario Case (01.207.004)

Vario Case

68.207.002	Vario Case for SCFE Screws, size 1/1, without Contents
68.207.003	Screw Rack for SCFE Screws, size 1/2, without Contents

Implants

Ø 7.3 mm Cannulated SCFE Screws, 10 mm thread, 2 ea.

Art. No.	Length (mm)	Art. Nr.	Length (mm)
02.207.600	45	02.207.609	90
02.207.601	50	02.207.610	95
02.207.602	55	02.207.611	100
02.207.603	60	02.207.612	105
02.207.604	65	02.207.613	110
02.207.605	70	02.207.614	115
02.207.606	75	02.207.615	120
02.207.607	80	02.207.616	125
02.207.608	85	02.207.617	130

Ø 7.3 mm Cannulated SCFE Screws, 20 mm thread, 2 ea.

Art. No.	Length (mm)	Art. Nr.	Length (mm)
02.207.618	45	02.207.627	90
02.207.619	50	02.207.628	95
02.207.620	55	02.207.629	100
02.207.621	60	02.207.630	105
02.207.622	65	02.207.631	110
02.207.623	70	02.207.632	115
02.207.624	75	02.207.633	120
02.207.625	80	02.207.634	125
02.207.626	85	02.207.635	130

Oval Washers for SCFE Screws, Ø 18 mm

Art. No.	Thickness (mm)
02.207.636	1 mm
02.207.637	2 mm

All implants are also available sterile packed. Add suffix "S" to article number to order sterile product.

Torque, Displacement and Image Artifacts according to ASTM F 2213-06, ASTM F 2052-06e1 and ASTM F2119-07

Non-clinical testing of worst case scenario in a 3 T MRI system did not reveal any relevant torque or displacement of the construct for an experimentally measured local spatial gradient of the magnetic field of 3.69 T/m. The largest image artifact extended approximately 169 mm from the construct when scanned using the Gradient Echo (GE). Testing was conducted on a 3 T MRI system.

Radio-Frequency-(RF-)induced heating according to ASTM F2182-11a

Non-clinical electromagnetic and thermal testing of worst case scenario lead to peak temperature rise of 9.5 °C with an average temperature rise of 6.6 °C (1.5 T) and a peak temperature rise of 5.9 °C (3 T) under MRI Conditions using RF Coils [whole body averaged specific absorption rate (SAR) of 2 W/kg for 6 minutes (1.5 T) and for 15 minutes (3 T)].

Precautions: The above mentioned test relies on non-clinical testing. The actual temperature rise in the patient will depend on a variety of factors beyond the SAR and time of RF application. Thus, it is recommended to pay particular attention to the following points:

- It is recommended to thoroughly monitor patients undergoing MR scanning for perceived temperature and/or pain sensations.
 - Patients with impaired thermo regulation or temperature sensation should be excluded from MR scanning procedures.
 - Generally it is recommended to use a MR system with low field strength in the presence of conductive implants. The employed specific absorption rate (SAR) should be reduced as far as possible.
 - Using the ventilation system may further contribute to reduce temperature increase in the body.
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