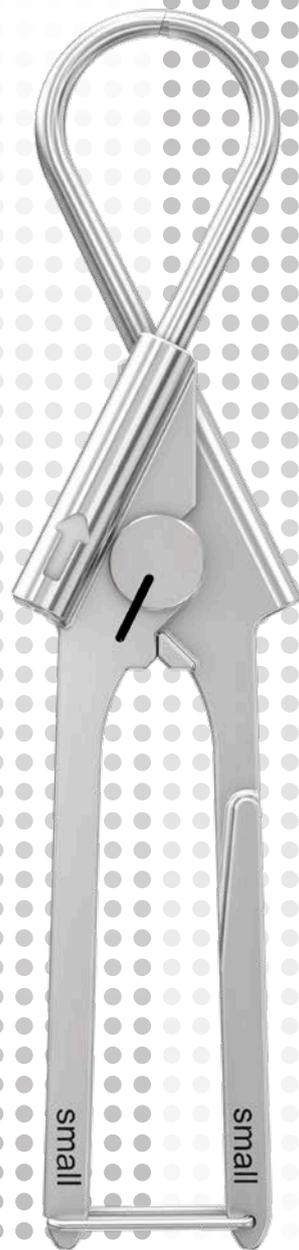


# Cerclage Passer

For Minimally Invasive Application of Cerclage Cables

**Surgical Technique**



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 Image intensifier control

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.depuysynthes.com/hcp/reprocessing-care-maintenance>

For general information about reprocessing, care and maintenance of DePuy Synthes reusable devices, instrument trays and cases, as well as processing of DePuy Synthes non-sterile implants, please consult the Important Information leaflet (SE\_023827) or refer to:

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

# Table of Contents

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<b>Introduction</b>	Cerclage Passer	2
	The AO Principles of Fracture Management	4

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<b>Surgical Technique</b>	Preparation	5
	Surgical Steps	7

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<b>Product Information</b>	Implants	16
	Instruments	17
	Sets	20

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<b>MRI Information</b>		22
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- Notes
- ▲ Precautions
- ▲ WARNINGS

# Cerclage Passer

For Minimally Invasive Application of Cerclage Cables

## Overview

Techniques for the treatment of indicated fractures often includes the application of cerclage cables. The Cerclage Passer Instrument Set contains the additional instruments needed for minimally invasive procedures.

## Modular set configuration

The cerclage passer can be used for the minimal invasive application of cerclage cables. The modular case concept allows storage of the relevant instruments on modular instrument trays.

### ■ Note:

Set does not include implants.

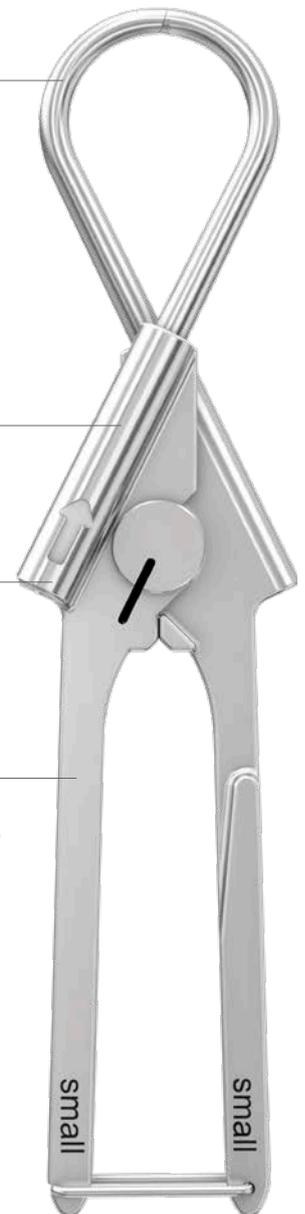
## Cerclage Passer

Available in two sizes (diameter 46 mm and 60 mm) adapted to anatomy.

Allow passage of cable around the bone.

One size trocar is compatible with both cerclage passer sizes.

Two separate halves to facilitate sequential insertion through one incision.



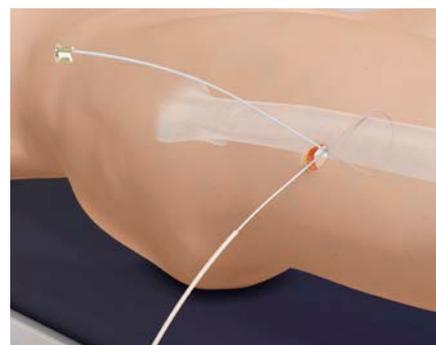
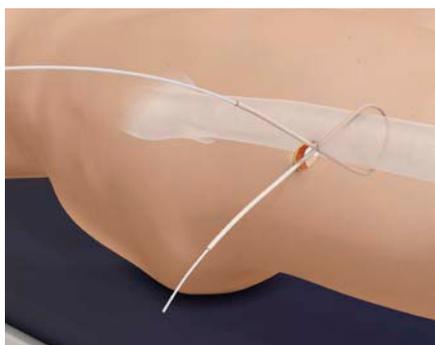
## Quick Step Surgical Technique



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## Cerclage Tunneling Device

Prepares the way in facilitating the passage of the cerclage passer. Available in two sizes that correspond with the bending diameter of the cerclage passer.



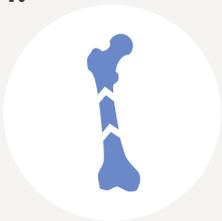
# The AO Principles of Fracture Management

## Mission

The AO's mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

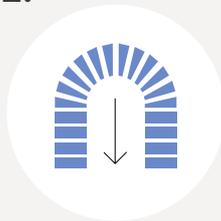
### AO Principles<sup>1,2</sup>

1.



Fracture reduction and fixation to restore anatomical relationships.

2.



Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.

3.



Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.

4.



Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.

<sup>1</sup> Müller ME, Allgöwer M, Schneider R, Willenegger H. Manual of Internal Fixation. 3<sup>rd</sup> ed. Berlin, Heidelberg New York: Springer 1991.

<sup>2</sup> Buckley RE, Moran CG, Apivatthakakul T. AO Principles of Fracture Management: 3<sup>rd</sup> ed. Vol. 1: Principles, Vol. 2: Specific fractures. Thieme; 2017.

# Preparation

## 1. Preparation

### Set

01.221.100 Instrument Set for minimally invasive Cable Cerclage

### Optional set

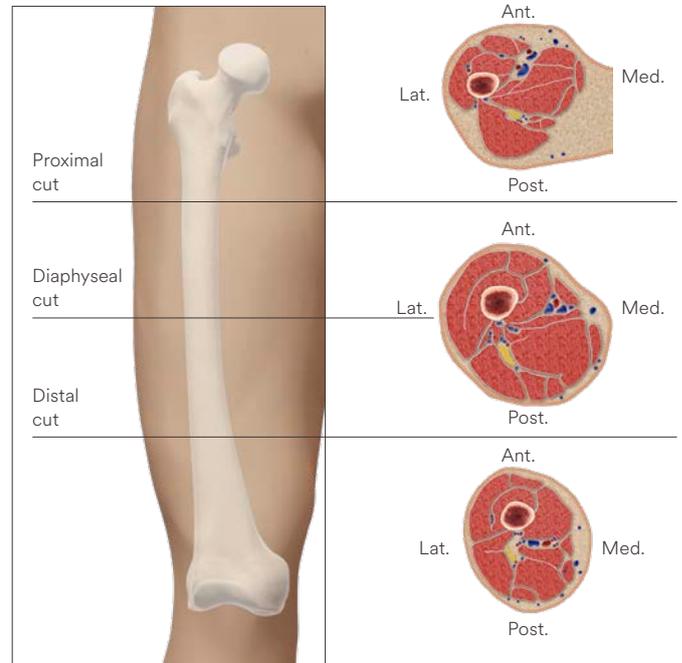
188.215 Cable System in Vario Case

### Implants

X98.800.01 Cerclage Cable with Crimp, Ø 1.0 mm,  
2= X Stainless Steel  
4= X Titanium Alloy (TAN)

298.801.01 Cerclage Cable with Crimp, Ø 1.7 mm,  
Stainless Steel

611.105.01 Cerclage Cable with Crimp, Ø 1.7 mm,  
Cobalt-chrome alloy



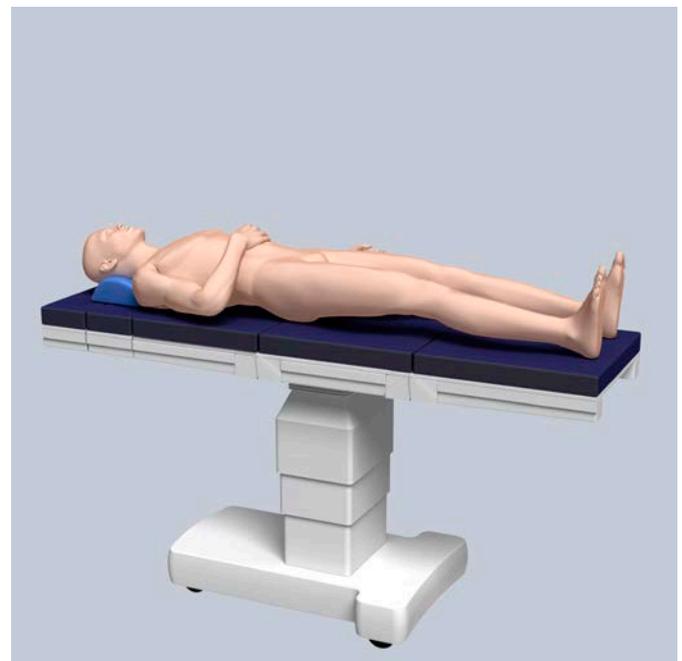
Visualization of the neurovascular femur anatomy

### ▲ Precaution:

Application of cerclage cables using a minimally invasive (MIS) technique requires a keen understanding of the neurovascular anatomy.

- Complete a preoperative radiographic assessment and prepare the preoperative plan. Position the patient according to the respective fracture requirements on a radiolucent operating table.

Complete the closed reduction with traction to reduce anatomic distortion.



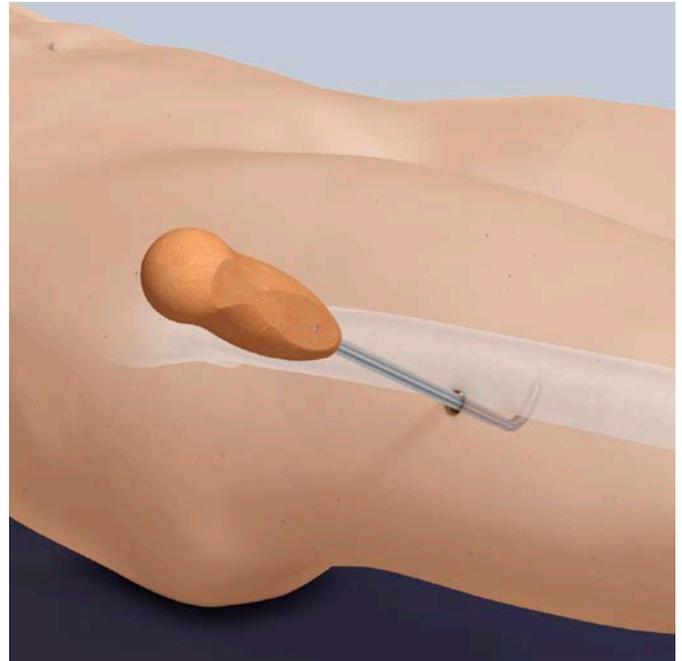
## 2. Incision and preparation of soft tissue tunnel

### Instruments

03.221.002	Cerclage Tunneling Device, Ø 46 mm
03.221.004	Cerclage Tunneling Device, Ø 60 mm

Choose the appropriate size cerclage tunneling device for the field of application and the fracture. Make an incision and carefully insert the tunneling device over the periosteum from ventral and dorsal around the bone. Make an incision in the skin and fascia approximately 4–5 cm wide to avoid tension. Ensure the cerclage tunneling device perforates the fascia directly adjacent to the linea aspera on the dorsal femur.

Preparation of the tunnel is necessary to facilitate the following insertion of the cerclage passer.



# Surgical Steps

## 1. Insertion of cerclage passer

### Instruments

03.221.010	Cerclage Passer, Ø 46 mm, minimally invasive
03.221.011	Cerclage Passer, Ø 60 mm, minimally invasive
03.221.003	Trocar, for Cerclage Passer Nos. 03.221.010 and 03.221.011

Put one trocar in each tube of the cerclage passer. This may reduce the risk of soft tissue from entering the cannulated tubes of the cerclage passer. The posterior and anterior cerclage passer handles should be passed through the soft-tissue tunnel created by the cerclage tunneling device. Keep contact with the bone all the time.

### ▲ Precaution:

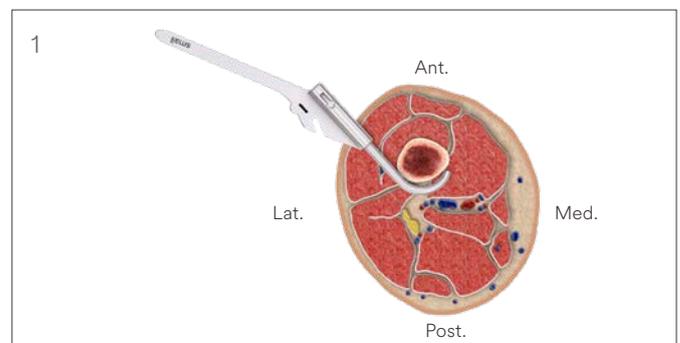
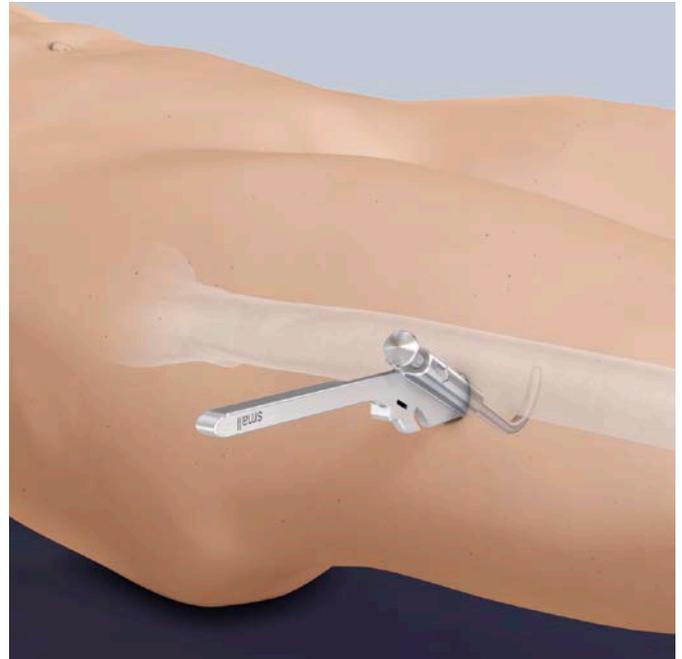
To prevent damage do not apply too much force while inserting the cerclage passer. Deformation of the tubes can result in non-closure of the instrument when connecting the halves.

Place the cerclage passer handles directly adjacent to the bone surface to connect the two handle halves. Where possible, use the smaller cerclage passer (03.221.010 Cerclage Passer, Ø 46 mm). Make sure the instrument is close to the bone.

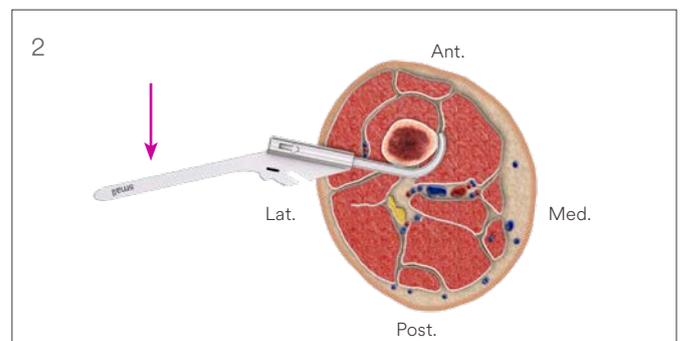
### ▲ Precaution:

When the cerclage passer is in use, pay attention to the sterile field.

Use the techniques in figures 1 and 2 to apply the cerclage passer to the distal femur. In the proximal femur the anterior handle is inserted first.



Insert posterior handle first.



Push the handle down to move the tip away from the vessels.

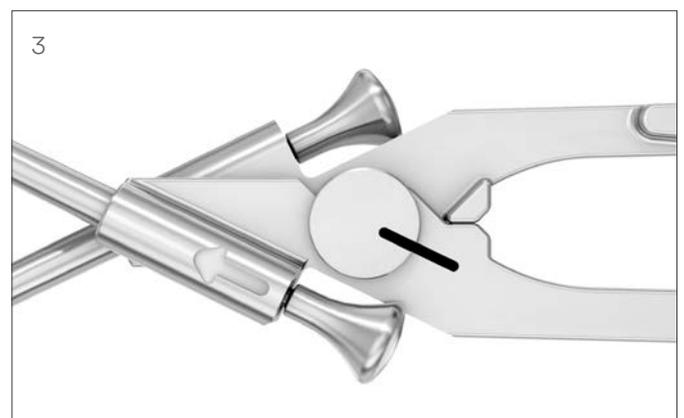
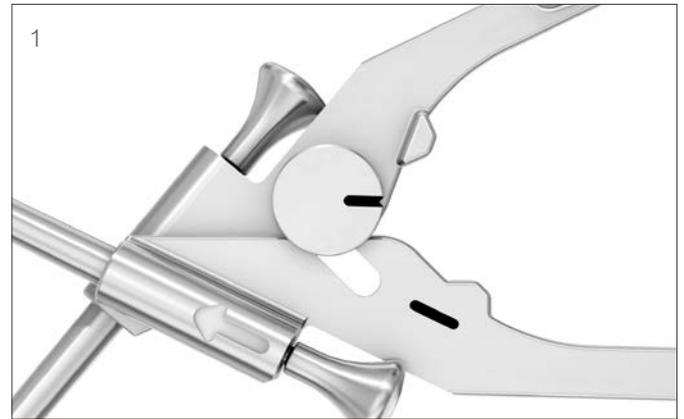
## 2. Connection and closure of cerclage passer

To connect the two parts of the cerclage passer, slide the notch of one half into the corresponding part of the other half (1, 2).

### ▲ Precaution:

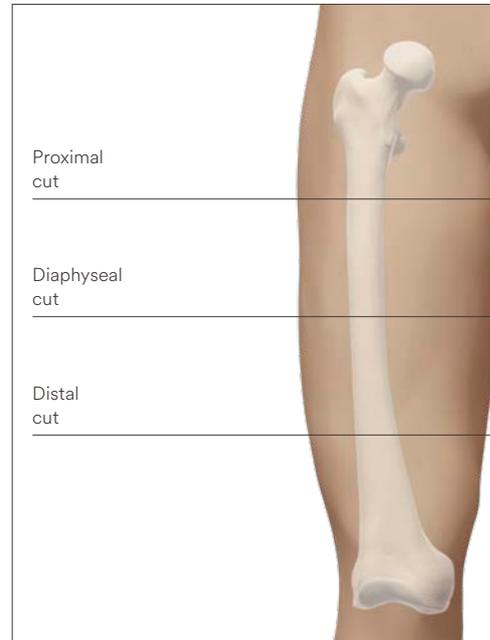
While connecting the two parts, the tips must not meet. Do not attempt to close the forceps as long as the middle of the forceps is not connected properly.

The markings on each half (“small”, “large”) can be used for orientation. When the forceps are connected together, the markings will appear in the same direction.

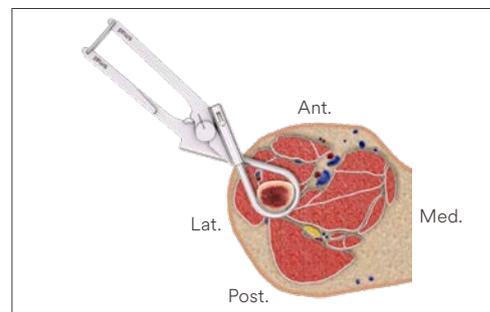


Once the two connecting parts have been brought together, close the forceps until the markings on the two halves are aligned and form a line (3). The tips of the cannulated tubes will then meet and form a passageway for the cable.

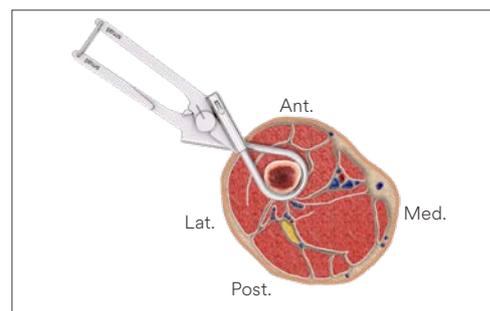
To position the cerclage passer for closure, use the corresponding technique per femur segment. Maintain contact with the bone throughout the procedure.



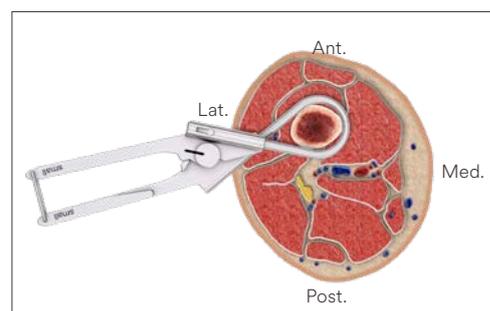
**Proximal cut:** Lift the handle to close instrument posteriorly.



**Diaphyseal cut:** Lift the handle to close instrument posteriorly.



**Distal cut:** Push the handle down to move the tip away from the vessels.



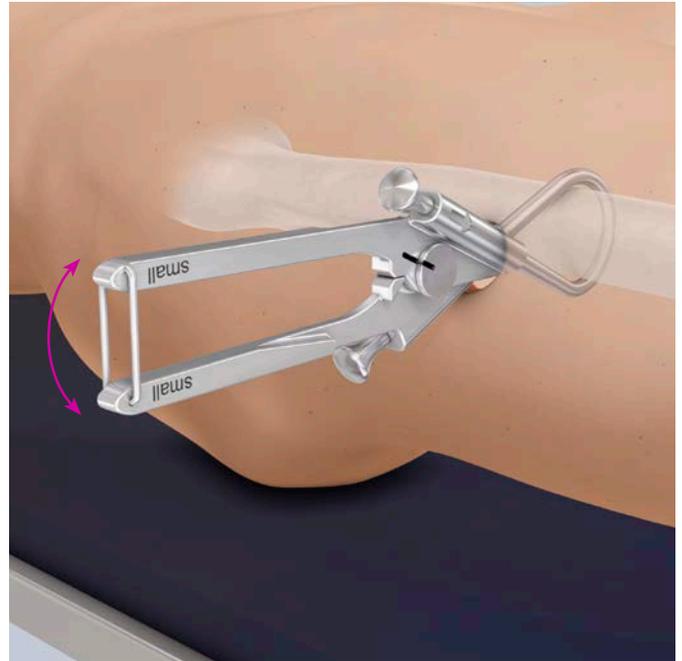
Secure the closed cerclage passer by locking the bracket. Remove the trocars.

■ **Note:**

Open and close the bracket by pressing the ends of the handles slightly together. Closed correctly, the bars of the cerclage passer forceps are parallel. The correctly closed position of the cerclage passer can be controlled by moving it up and down or using image intensifier control.

▲ **Precaution:**

When closing the cerclage passer, be careful not to damage any soft-tissue structures. Where necessary, enlarge the approach to verify that no soft-tissue structures (mainly the neurovascular structures) are being damaged. Never push the handles medial to bring the halves together; instead, pull them towards the medial cortex. Close the forceps without using force.



### 3. Insertion of cable passing tube

#### Instruments

03.221.012S	Cable Passing Tube, length 400 mm, sterile
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Push the cable passing tube through the tube of the closed cerclage passer. The only correct direction for insertion is marked by an arrow.

#### ■ Note:

It is not possible to pass a pre-assembled cerclage cable without cable passing tube. The crimp at the beaded end of the cable allows no direct passage through the cerclage passer.

The cable passing tube is for single use only and must not be reprocessed or resterilized.

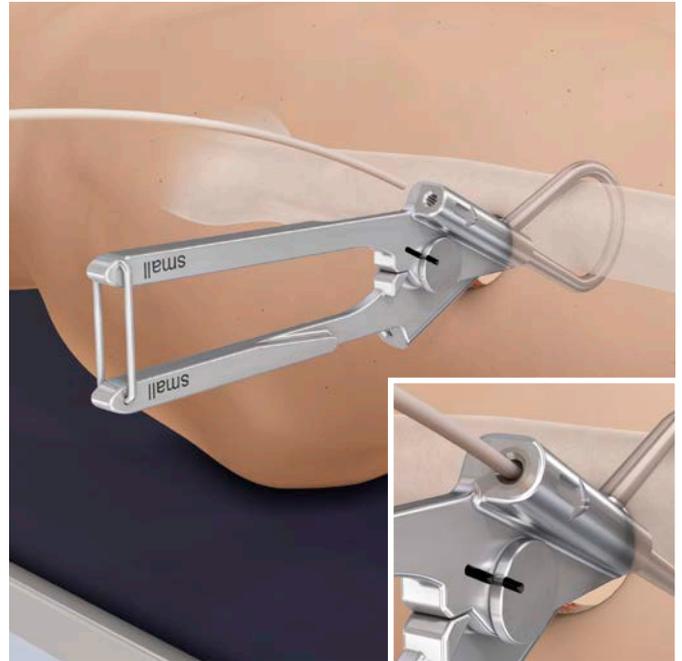
#### ▲ Precaution:

Do not use pliers for cable passing tube insertion due to tube damages. The cable passing tube must exit the opposite part of the cerclage passer.

Do not open the cerclage passer when the cable passing tube is in use. The ends of the cerclage passer might cut the cable passing tube.

#### ■ Notes:

- For better insertion bevel the cable passing tube.
- The cable passing tube can only be used with the four pre-assembled cables mentioned in the section 5, Insert cable through cable passing tube.



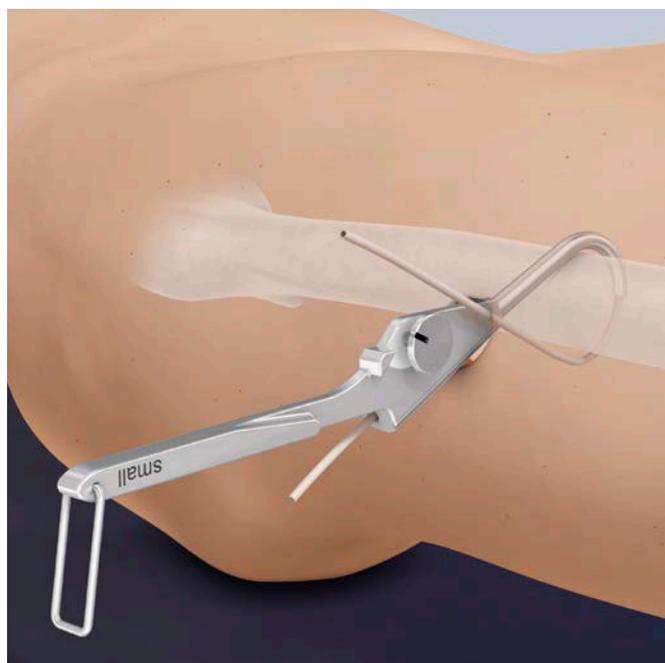
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#### 4. Remove cerclage passer forceps

Unlock the forceps by opening the bracket.

Disconnect the two halves of the cerclage passer forceps and remove the half with arrow.

Be sure that the inserted cable passing tube stays around the bone. Hold the opposite end of the cable passing tube by hand.



## 5. Insert cable through cable passing tube

### Instruments

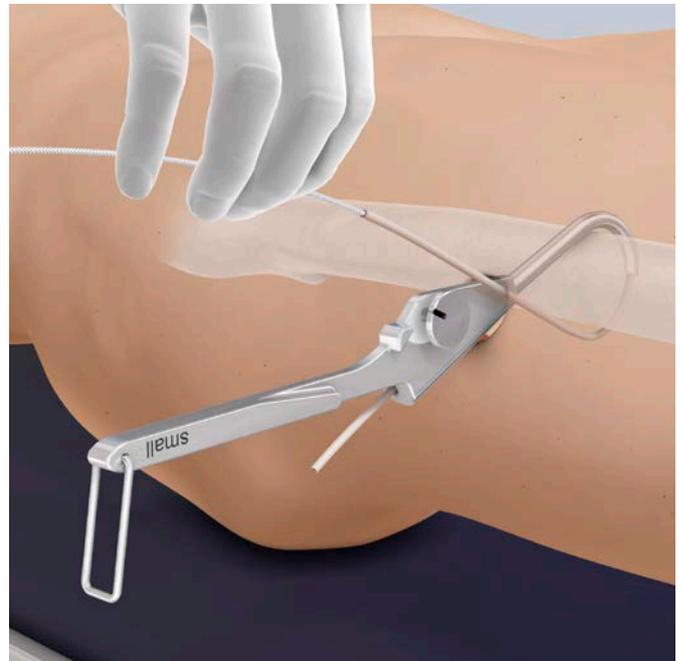
298.800.01	Cerclage Cable with Crimp Ø 1.0 mm, Stainless Steel
298.801.01	Cerclage Cable with Crimp Ø 1.7 mm, Stainless Steel
498.800.01	Cerclage Cable with Crimp Ø 1.0 mm, Titanium Alloy (TAN)
611.105.01	Cable with Crimp Ø 1.7 mm, Cobalt-chrome alloy

Select the cable according to the application and fracture.

Push the end without bead through the cable passing tube without the cerclage passer until the cable exits. Remove the other half of the cerclage passer.

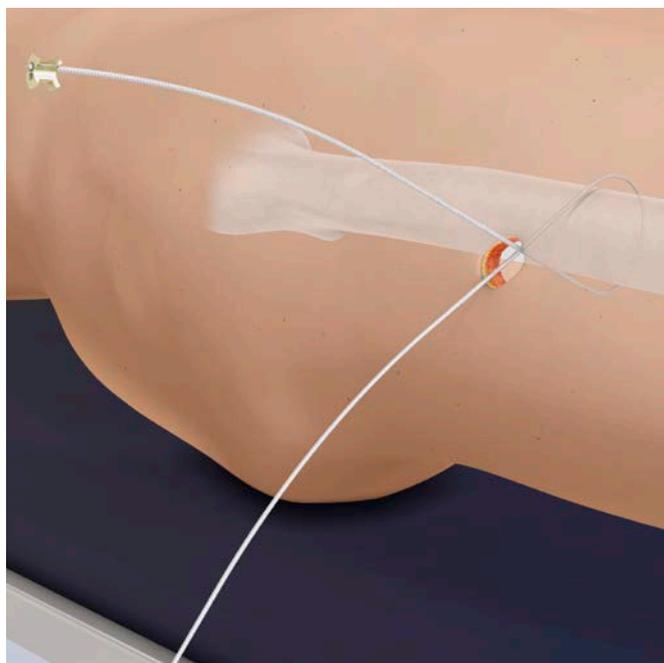
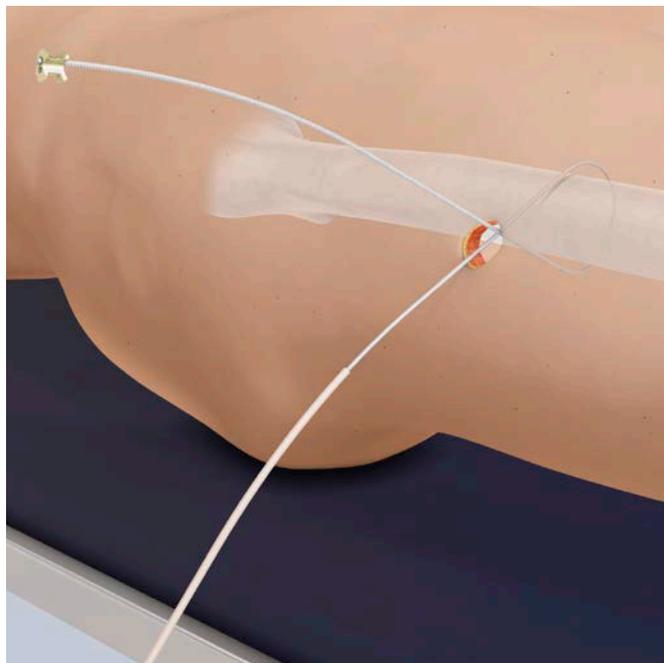
### ▲ Precaution:

The correct material composition is important. Use a Stainless Steel cable only with Stainless Steel implants, and the CoCr and Titanium cable only with Titanium implants.



## 6. Remove cable passing tube

Remove the cable passing tube by pulling it over the end without bead. Take care that the inserted cable stays around the bone.



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## 7. Tightening and fixation of cable

For further procedure, please refer to the Cable System surgical technique.

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## 8. Cut cable

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### Instrument

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03.607.513      Front Cutter

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Cut the loose end of the cable using the front cutter. Position the cutting jaws very close to the crimp, and make the cut in one action to produce a clean cut. Ensure that the adjacent cerclage cables do not get damaged.

### ▲ Precaution:

Make sure to cut the cable close to the crimp and in one action to avoid sharp edges.



# Implants

X98.800.01 Cerclage Cable with Crimp Ø 1.0 mm  
 X98.800.01S Cerclage Cable with Crimp Ø 1.0 mm, sterile



298.801.01 Cerclage Cable with Crimp Ø 1.7 mm, Stainless Steel

298.801.01S Cerclage Cable with Crimp Ø 1.7 mm, Stainless Steel, sterile



611.105.01 Cerclage Cable with Crimp, Ø 1.7 mm, Cobalt-chrome alloy

611.105.01S Cerclage Cable with Crimp Ø 1.7 mm, Cobalt-chrome alloy, sterile

498.806 TRD – Trochanter Reattachment Device, small, for Cable System, Titanium Alloy (TAN)

498.806S TRD – Trochanter Reattachment Device, small, for Cable System, Titanium Alloy (TAN), sterile



498.807 TRD – Trochanter Reattachment Device, large, for Cable System, Titanium Alloy (TAN)

498.807S TRD – Trochanter Reattachment Device, large, for Cable System, Titanium Alloy (TAN), sterile



X=2: Stainless Steel  
 X=4: Titanium Alloy (TAN)

# Instruments

03.221.010 Cerclage Passer  $\varnothing$  46 mm,  
minimally invasive



03.221.011 Cerclage Passer  $\varnothing$  60 mm,  
minimally invasive



03.221.003 Trocar, for Cerclage Passer  
Nos. 03.221.010 and 03.221.011



03.221.002 Cerclage Tunneling Device  $\varnothing$  46 mm



03.221.004 Cerclage Tunneling Device  $\varnothing$  60 mm



03.607.513 Front Cutter



391.201 Cable Tensioner



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03.221.015 Cable Tensioner, one-hand operable



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03.221.016 Cable Lock Ø 1.0 mm

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03.221.017 Cable Lock Ø 1.7 mm,  
for Cable Tensioner, one-hand operable



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03.221.012S Cable Passing Tube, length 400 mm,  
sterile



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391.882

Cable Crimper



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391.883

Attachment Bit for Tension Holder



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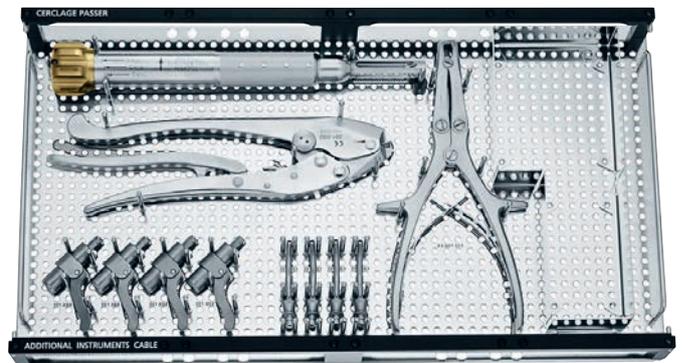
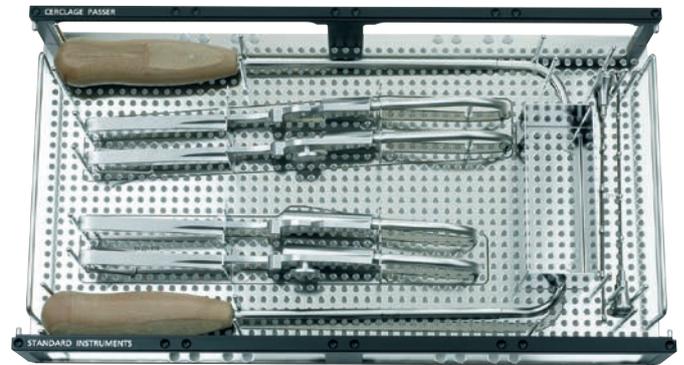
391.884

Tension Holder, for temporary use



# Sets

01.221.100	Instrument Set for minimally invasive Cable Cerclage
68.221.100	Tray for Standard Instruments for minimally invasive Wire and Cable Cerclage
03.221.002	Cerclage Tunneling Device Ø 46 mm
03.221.010	Cerclage Passer Ø 46 mm, minimally invasive
03.221.004	Cerclage Tunneling Device Ø 60 mm
03.221.011	Cerclage Passer Ø 60 mm, minimally invasive
03.221.003	Trocar, for Cerclage Passer Nos. 03.221.010 and 03.221.011
68.221.130	Tray for Additional Instruments for minimally invasive Cable Cerclage
391.201	Cable Tensioner
391.882	Cable Crimper
391.883	Attachment Bit for Tension Holder
391.884	Tension Holder, for temporary use
03.607.513	Front Cutter
03.221.012S	Cable Passing Tube, length 400 mm, sterile



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## Additionally available in sterile

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03.221.012S	Cable Passing Tube, length 400 mm, sterile
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## Additionally available

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68.221.120	Labelling Plate for Instrument Set for minimally invasive Cerclage, for Vario Case
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68.000.101	Lid for Modular Tray, size 1/1
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519.400	Cleaning Brush, for Compact Air Drive, Power Drive and Colibri
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## Vario Case components

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689.507	Lid (Stainless Steel), size 1/1, for Vario Case
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689.510	Vario Case, Framing, size 1/1, height 126 mm
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# MRI Information

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## **Torque, Displacement and Image Artifacts according to ASTM F 2213, ASTM F 2052 and ASTM F 2119**

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 F 2182**

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 thermoregulation 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.







Not all products are currently available in all markets.  
This publication is not intended for distribution in the USA.  
Intended use, Indications and Contraindications can be found in the corresponding system Instructions for Use.  
All Surgical Techniques are available as PDF files at [www.depuysynthes.com/ifu](http://www.depuysynthes.com/ifu)



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