ST/29D

ChM®

CERVICAL LOCKING PLATE

- *IMPLANTS*
- *INSTRUMENT SET 40.4820.600*
- *SURGICAL TECHNIQUE*

www.chm.eu

SYMBOLS DESCRIPTIONS

Ti	Titanium or titanium alloy		Self-tapping
Len	Length		Self-drilling
	Torx drive	Ster Non Ster	Available in sterile/ non- sterile condition
	Diameter		See surgery technique
	Recommended length range for a particular nail		

	Caution - pay attention to the particular proceeding.
	Perform the activity with X-Ray control.
	Information about the next stages of the proceeding.
	Proceed to the next stage.
	Return to the specified stage and repeat the activity.
	Before using the product, carefully read the Instructions for Use supplied with the product. It contains, among others, indications, contraindications, side effects, recommendations and warnings related to the use of the product.
	The above description is not a detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

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The manufacturer reserves the right to introduce design changes.

1. INTRODUCTION

Cervical locking plate system has been created to carry out one-, two-, three- or four-level cervical spine stabilization with anterior surgical approach.

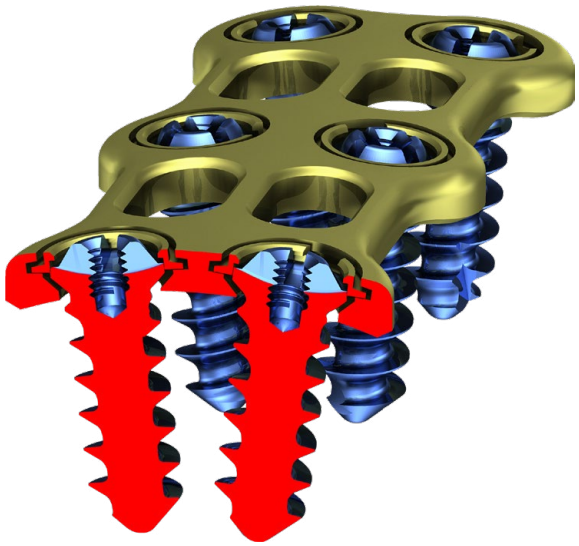
Indications:

- degenerative disc disease,
- fractures and instabilities,
- deformities,
- tumors.

The presented range of implants is made of materials in accordance with ISO 5832 standard. Compliance with the requirements of quality management systems and the requirements of Directive 93/42/EEC concerning medical devices guarantee high quality of the offered implants.

System consists of:

- implants: cervical locking plates, screws,
- instrument set used in the surgery,
- Instructions for use.

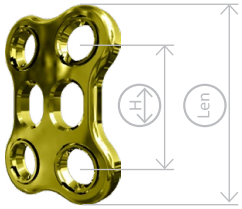


Features and benefits of cervical locking plate system:

- low-profile plates with open structure, pre-bent to fit cervical lordosis,
- hole plate design allows both rigid and angular positioning of locking screws,
- locking mechanism of elastic rings integrated with the plate holes prevents screw migration in the case of their loosening,
- set of self-tapping screws available in two diameters allows for one- or bi-cortical fixation of the plate in the vertebral body,
- set of plates gives possibility of one, two, three or four -level stabilization.

2. IMPLANTS

2.1. CERVICAL LOCKING PLATE



Len	H	Ti
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25	16	3.3133.025
28	18	3.3133.028

	Ti	Len			VA	
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	3.3995.012 3.3995.014 3.3995.016 3.3995.018	12 14 16 18		✓	✓	4.0
	3.3202.012 3.3202.014 3.3202.016 3.3202.018	12 14 16 18	✓		✓	4.5
	3.3997.012 3.3997.014 3.3997.016 3.3997.018	12 14 16 18		✓	✓	4.5
	3.3998.012 3.3998.014 3.3998.016 3.3998.018	12 14 16 18	✓			4.0
	3.3994.012 3.3994.014 3.3994.016 3.3994.018	12 14 16 18		✓		4.0
	3.3999.012 3.3999.014 3.3999.016 3.3999.018	12 14 16 18	✓			4.5
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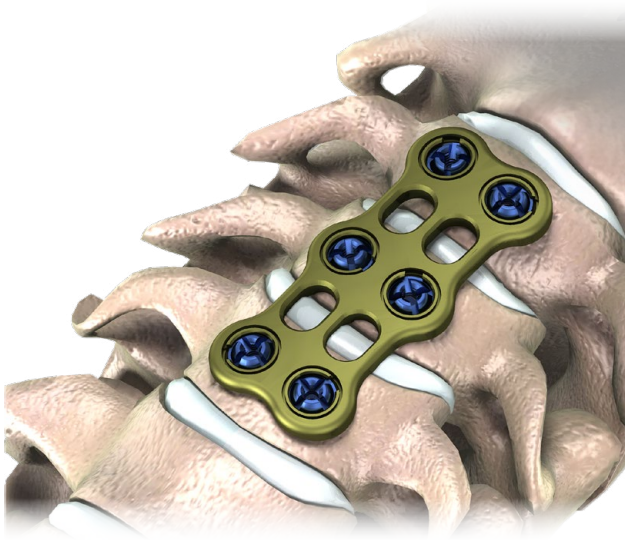

Stand for cervical plates - set

40.4865.000

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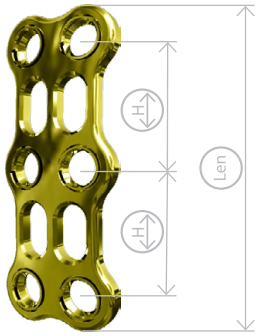
CHARSPINE system



Len	H	Ti
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41	16	3.3133.041
43	17	3.3133.043
46	18	3.3133.046

	Ti	Len			VA	
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	3.3202.012 3.3202.014 3.3202.016 3.3202.018	12 14 16 18	✓		✓	4.5
	3.3997.012 3.3997.014 3.3997.016 3.3997.018	12 14 16 18		✓	✓	4.5
	3.3998.012 3.3998.014 3.3998.016 3.3998.018	12 14 16 18	✓			4.0
	3.3994.012 3.3994.014 3.3994.016 3.3994.018	12 14 16 18		✓		4.0
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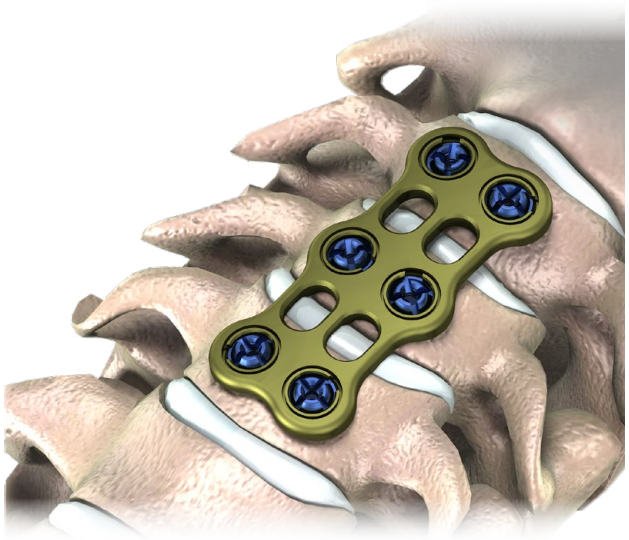

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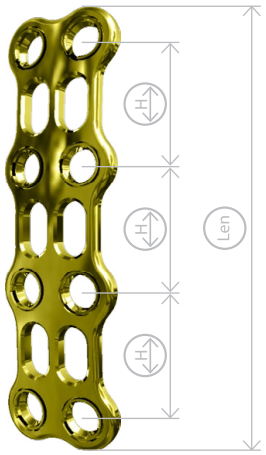
CHARSPINE system



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59	17	3.3133.059
62	18	3.3133.062
65	19	3.3133.065

	Ti	Len			VA	
	3.3201.012 3.3201.014 3.3201.016 3.3201.018	12 14 16 18	✓		✓	4.0
	3.3995.012 3.3995.014 3.3995.016 3.3995.018	12 14 16 18		✓	✓	4.0
	3.3202.012 3.3202.014 3.3202.016 3.3202.018	12 14 16 18	✓		✓	4.5
	3.3997.012 3.3997.014 3.3997.016 3.3997.018	12 14 16 18		✓	✓	4.5
	3.3998.012 3.3998.014 3.3998.016 3.3998.018	12 14 16 18	✓			4.0
	3.3994.012 3.3994.014 3.3994.016 3.3994.018	12 14 16 18		✓		4.0
	3.3999.012 3.3999.014 3.3999.016 3.3999.018	12 14 16 18	✓			4.5
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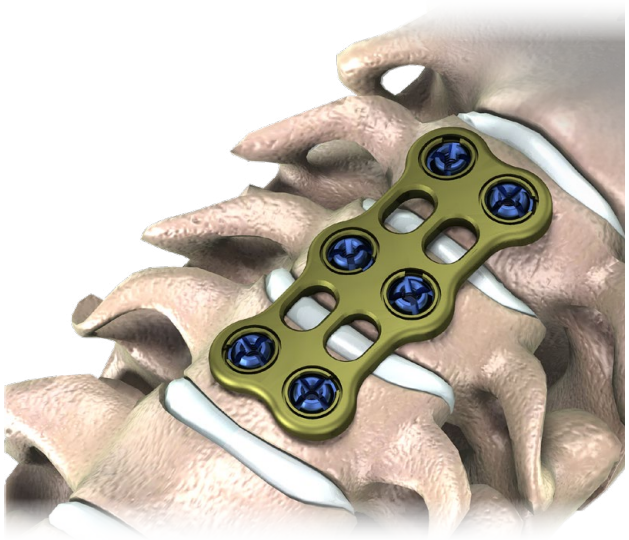

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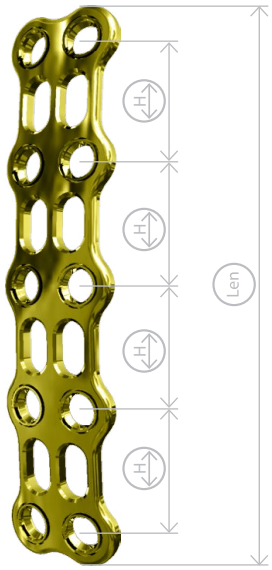
CHARSPINE system



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77	17	3.3133.077
81	18	3.3133.081
85	19	3.3133.085
89	20	3.3133.089

	Ti	Len			VA	
	3.3201.012 3.3201.014 3.3201.016 3.3201.018	12 14 16 18	✓		✓	4.0
	3.3995.012 3.3995.014 3.3995.016 3.3995.018	12 14 16 18		✓	✓	4.0
	3.3202.012 3.3202.014 3.3202.016 3.3202.018	12 14 16 18	✓		✓	4.5
	3.3997.012 3.3997.014 3.3997.016 3.3997.018	12 14 16 18		✓	✓	4.5
	3.3998.012 3.3998.014 3.3998.016 3.3998.018	12 14 16 18	✓			4.0
	3.3994.012 3.3994.014 3.3994.016 3.3994.018	12 14 16 18		✓		4.0
	3.3999.012 3.3999.014 3.3999.016 3.3999.018	12 14 16 18	✓			4.5
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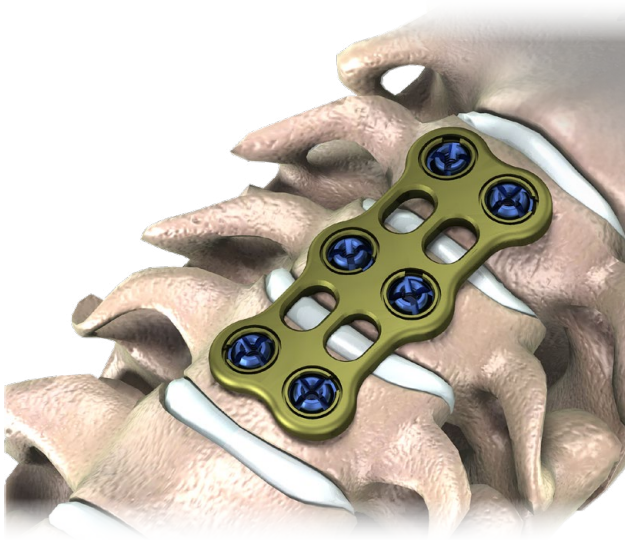
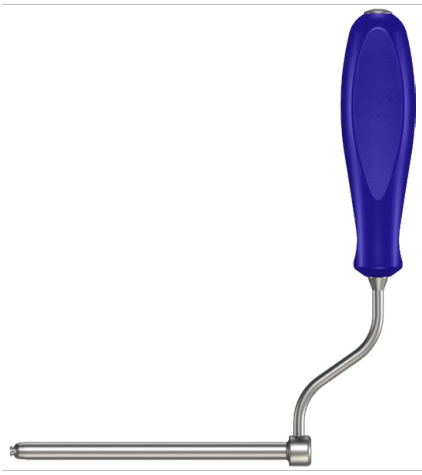
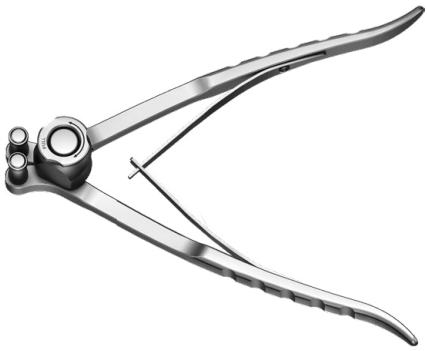
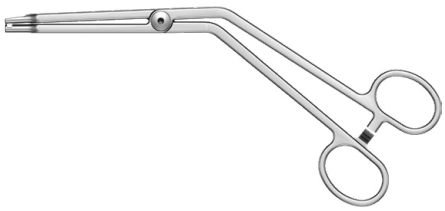


Stand for cervical plates - set

40.4865.000

3. INSTRUMENT SET

40.4820.600	Name	Catalogue no.	Pcs
	Trocar C	40.4821.100	1
	Drill guide C - multiangular	40.4825.100	1
	Positioning screw C	40.4826.225	2
	Screwdriver for locking cervical screws	40.4828.100	1
	Plates bender	40.4830.000	1
	Drill with limiter C 2.2/12	40.4831.012	1
	Drill with limiter C 2.2/14	40.4831.014	1
	Drill with limiter C 2.2/16	40.4831.016	1
	Drill with limiter C 2.2/18	40.4831.018	1
	Screwdriver for cervical screws	40.5286.100	1
	Plate holder	40.4832.100	1
	Hole depth measure C	40.4833.100	1

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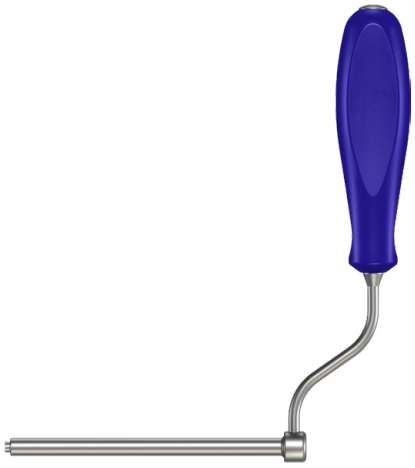
CHARSPINE system

40.4820.600	Name	Catalogue no.	Pcs
	Plate size measure	40.4834.100	1
	Drill guide C - rigid	40.4836.100	1
	Stand for instrument set for cervical locking plates	40.4838.600	1

4. SURGICAL APPROACH

Anterior approach to the cervical spine

For plate osteosynthesis of cervical spine, the anterior approach allowing visibility of the vertebral bodies from C3 to Th1 is used.

Patient positioning

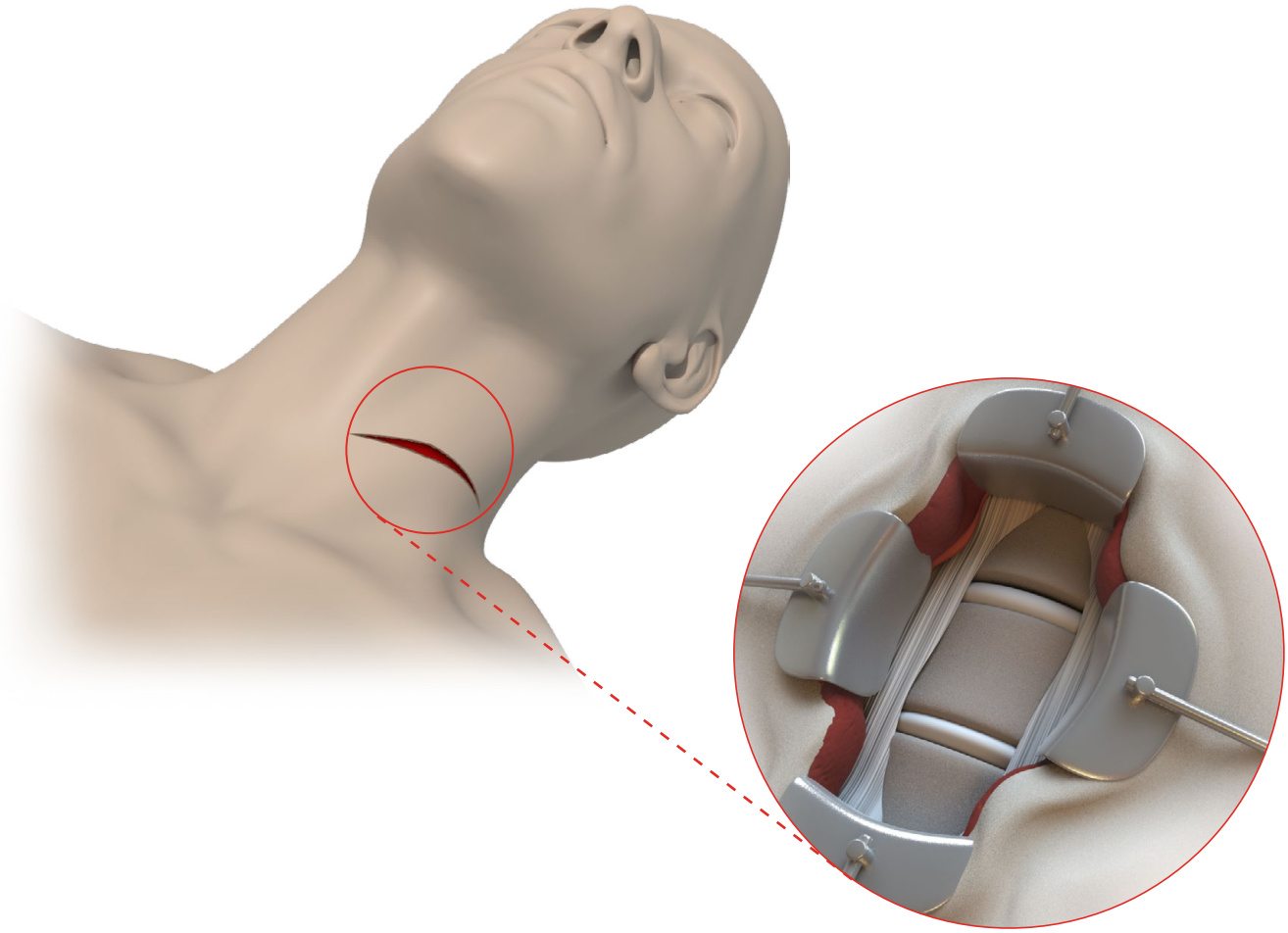
Patient is placed supine, with a small pillow between the shoulders to secure the neck in an extended position. Patient's head is turned in the opposite direction to the planned skin incision. If necessary, skeletal traction or loop may be used. This can be useful at a later stage of the operation, when there is a need for some distraction of cervical spine.

It is advisable to tilt the operating table at about 30° *(Trendelenburg position)* to prevent bleeding and to ensure adequate access to the neck. Confirm intraoperatively the spine level planned for treatment using X-Ray vision. For cosmetic effects, transverse incision is recommended *(the postoperative scar is covert with the natural folds of skin)*. Left-sided access is preferred due to the lower risk of accidental damage to the recurrent laryngeal nerve. The incision should be preformed obliquely from the midline to the posterior edge of sternocleidomastoid muscle.

After reaching the front surface of the vertebrae, the automatic retractor may be applied to retract muscles. Care must be taken to not damage the oesophagus or the neurovascular bundle of neck. Access widening may be performed with appropriate protection of recurrent laryngeal nerve, trachea and esophagus.

The desired treatment level is identified and confirmed with a lateral radiograph. Afterwards, discectomy and resection of osteophytes can be performed.

Removal of the osteophytes is essential for proper placement of a locking plate.



The above description is not detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

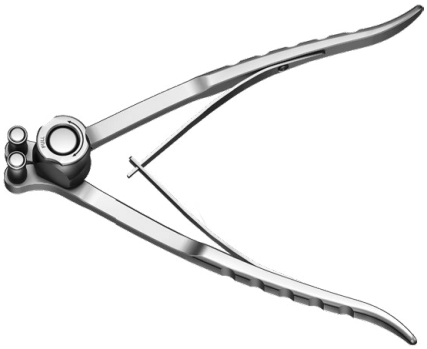
5. SURGICAL TECHNIQUE

5.1. PLATE SELECTION

1 Before spinal decompression and plate implantation, use the plate size measure **[40.4834.100]** to define the proper size of the intervertebral graft or vertebral prosthesis. Implant the device and then use the same measure to choose adequate locking plate.

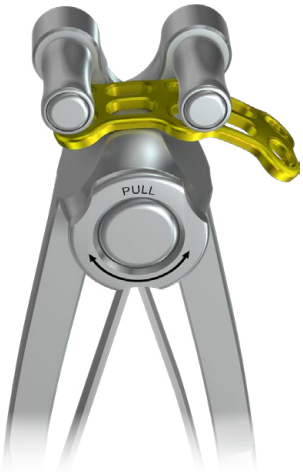
40.4834.100

2 Make sure that factory-made curvature of the selected plate fits anatomical curvature of the spine. If needed, the plate curvature may be modified using the plates bender **[40.4830.000]**.



40.4830.000

- The plate shall be bent between the holes designed for screws insertion.
- Multiple bending can cause mechanical weakening or/and the implant damage!

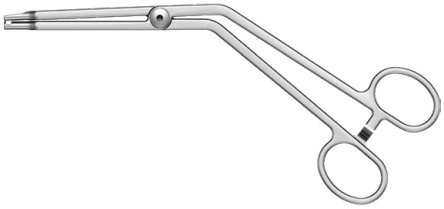


Lordotic curvature increase

Lordotic curvature decrease

5.2. PLATE IMPLANTATION - TEMPORARY LOCKING USING POSITIONING SCREWS

3 Use plate holder **[40.4832.100]** to position the plate on the surface of vertebral bodies.

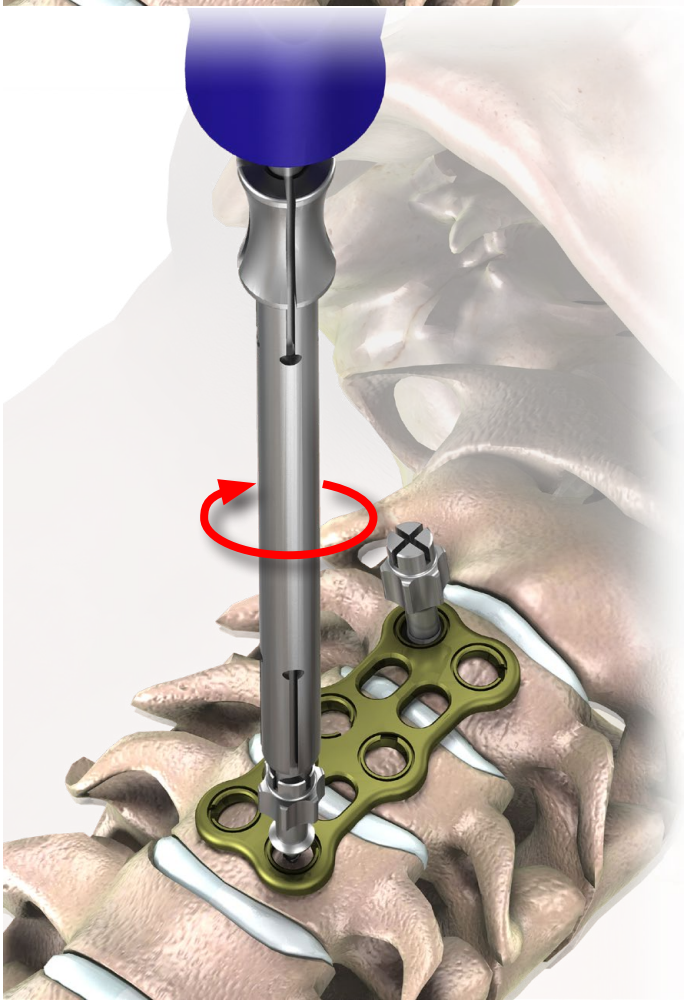


40.4832.100

4 To maintain the desired position of the plate, attach it to the vertebral bodies using one or two positioning screws **[40.4826.225]**. Insert positioning screws using screwdriver for cervical screws - solid **[40.5286.100]** under the image intensifier control.

40.5286.100

The trajectory of the positioning screw forces a subsequent trajectory of the locking screw.



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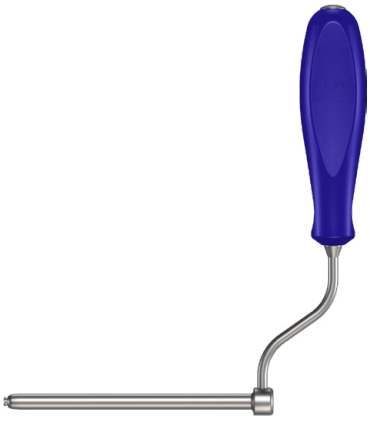
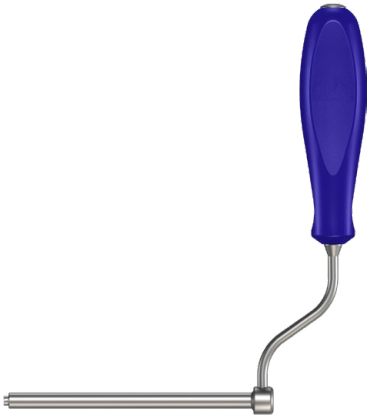
5.3. CORTICAL PENETRATIONS

5 Cortical penetration may be performed using trocar C **[40.4821.100]** which is inserted through the drill guide C **[40.4825.100]** or **[40.4836.100]**. Insert the rounded tip of the drill guide C into the hole of the plate. The drill guide C - rigid **[40.4836.100]** shall be positioned in the axis of the plate hole, while drill guide C - multiangular **[40.4825.100]** is to be positioned angularly, in a desired position. Cortical penetration is obtained by pushing the trocar C until stop, for the depth of about 5 mm.

40.4821.100

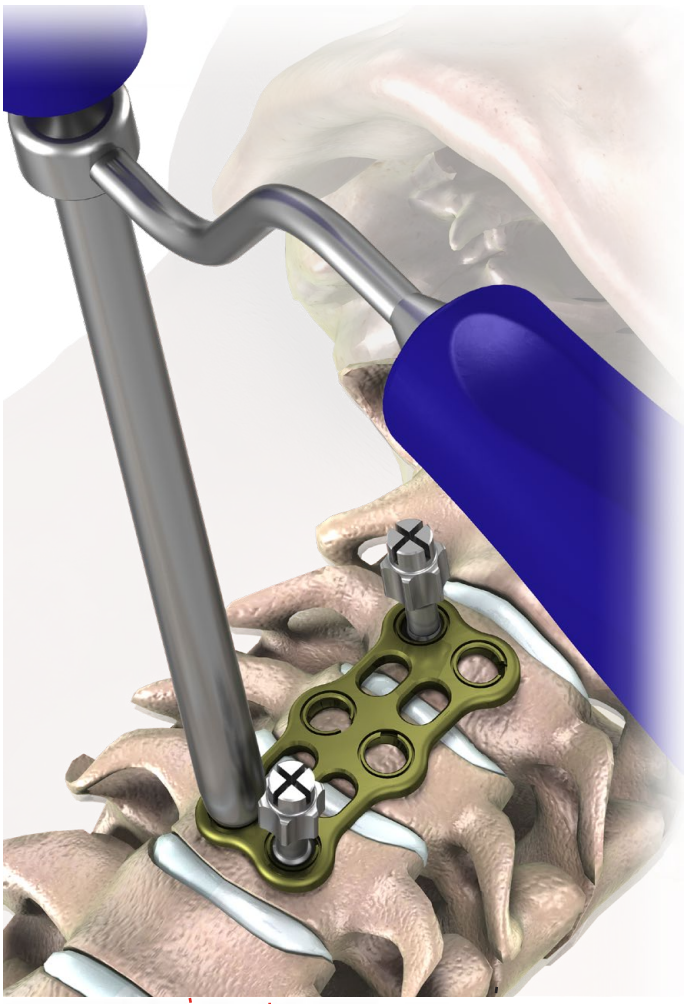


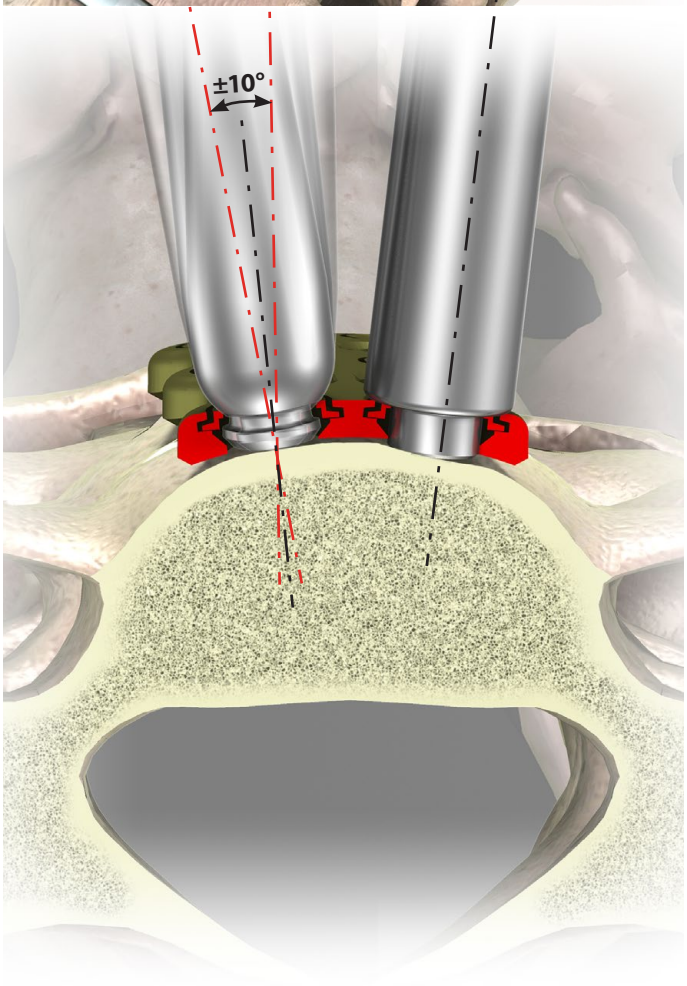
40.4825.100



40.4836.100

The drill guide C - multiangular **[40.4825.100]** is intended for use with variable angle screws, while drill guide C - rigid **[40.4836.100]** for use with fixed angle screws.

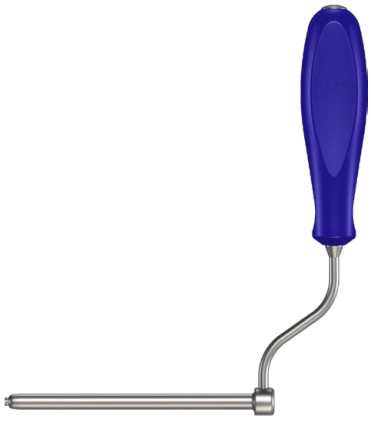




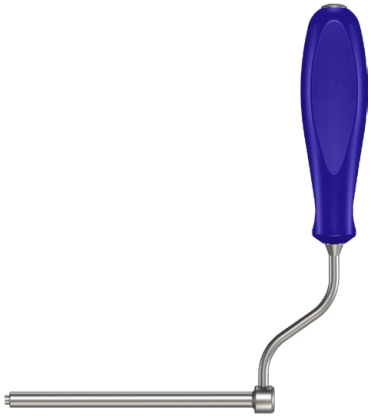
5.4. HOLES DRILLING

6 Should holes drilling be necessary, use a drill with limiter C **[40.4831.0xx]**. Based on X-Ray images, the appropriate drill length shall be chosen *(the drill sizes correspond to the lengths of locking screws)*. Then insert the tip of drill guide C **[40.4825.100]** or **[40.4836.100]** into a hole for the locking screw and then the chosen drill. The drilling process shall be performed under X-Ray control until reaching the limiter of the drill.

40.4831.0xx



40.4825.100

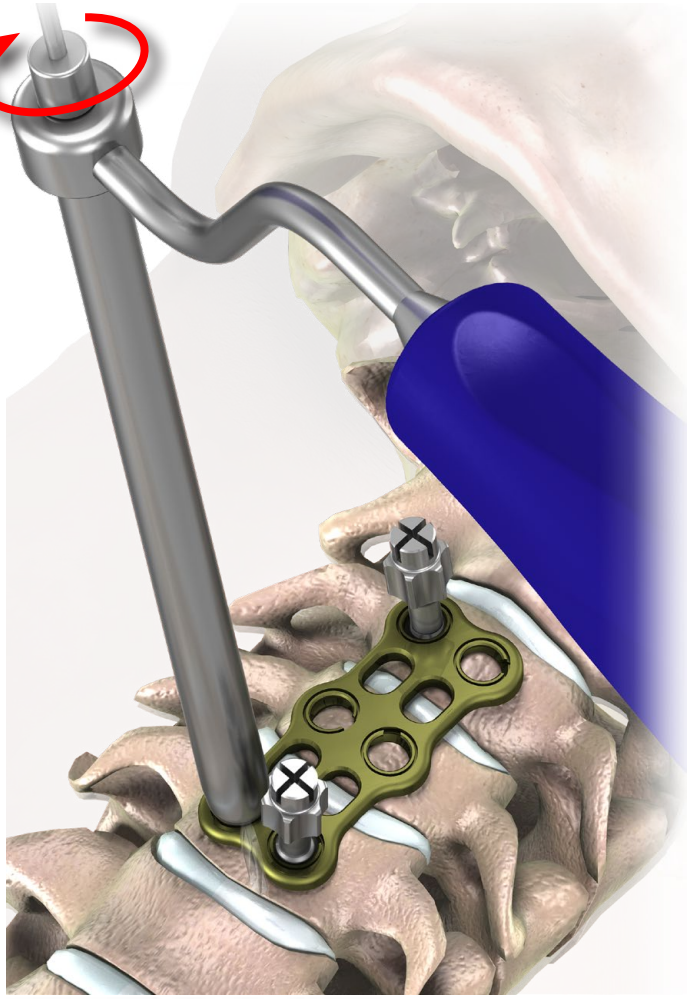


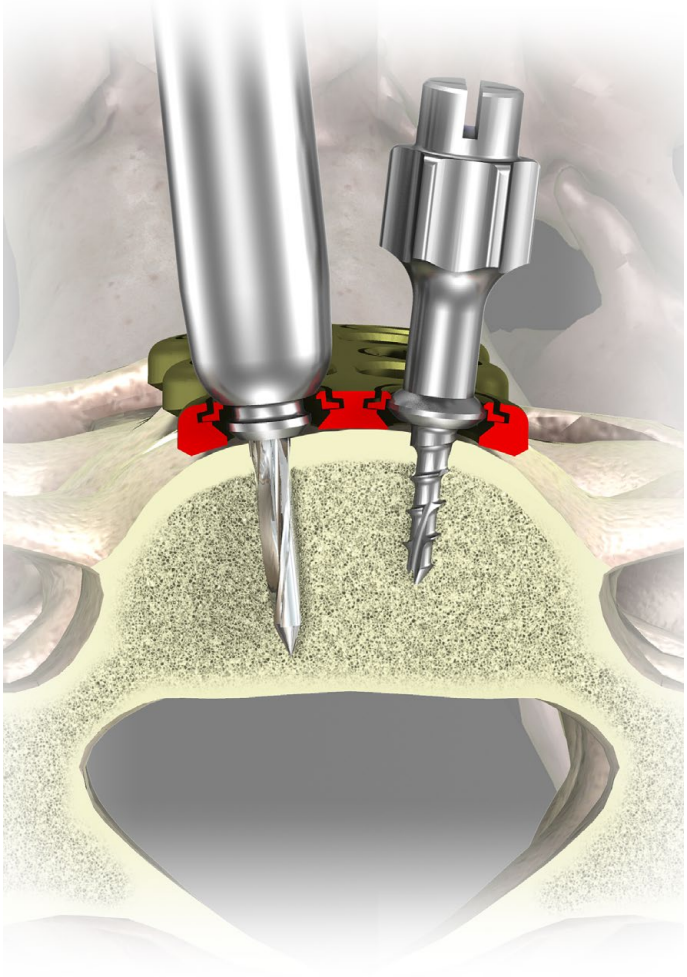
40.4836.100

The drilling process shall be controlled with image intensifier.

The trocar C **[40.4821.100]** and drills **[40.4831.0xx]** shall be used only with drill guides C **[40.4825.100]** or **[40.4836.100]**.

40.4821.100





The above description is not detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

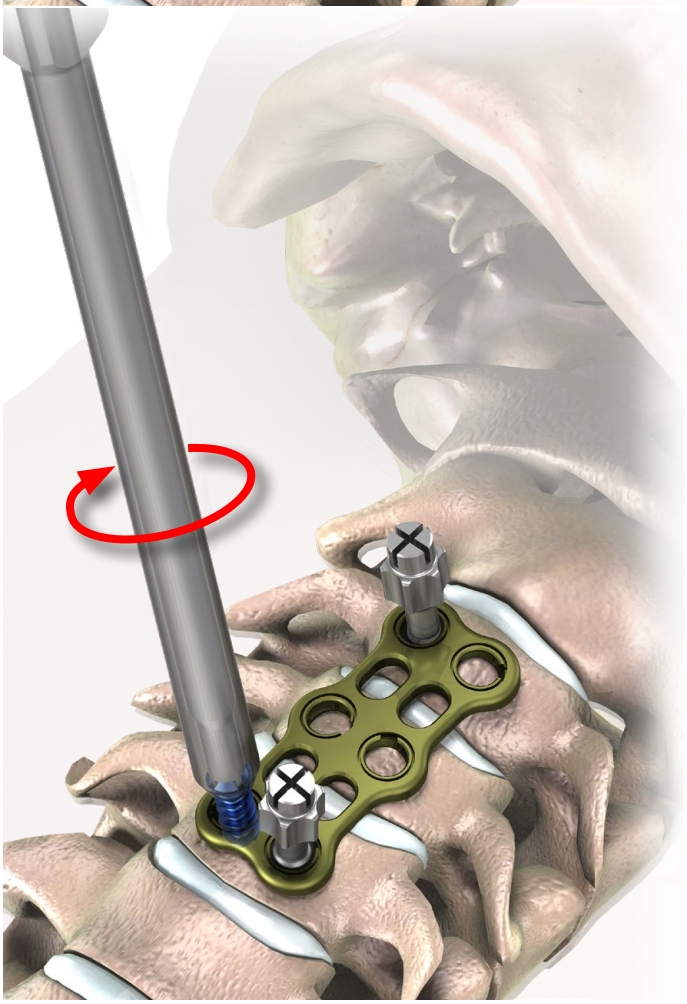
5.5. SCREWS SELECTION AND IMPLANTATION

7 If needed, the drilled hole can be measured using the hole depth measure C **[40.4833.100]**. The tip of the measure shall be inserted into the hole until stop. Read the length of the locking screws on the measure scale. The value indicated on the device corresponds to the length of the locking screw.

40.4833.100

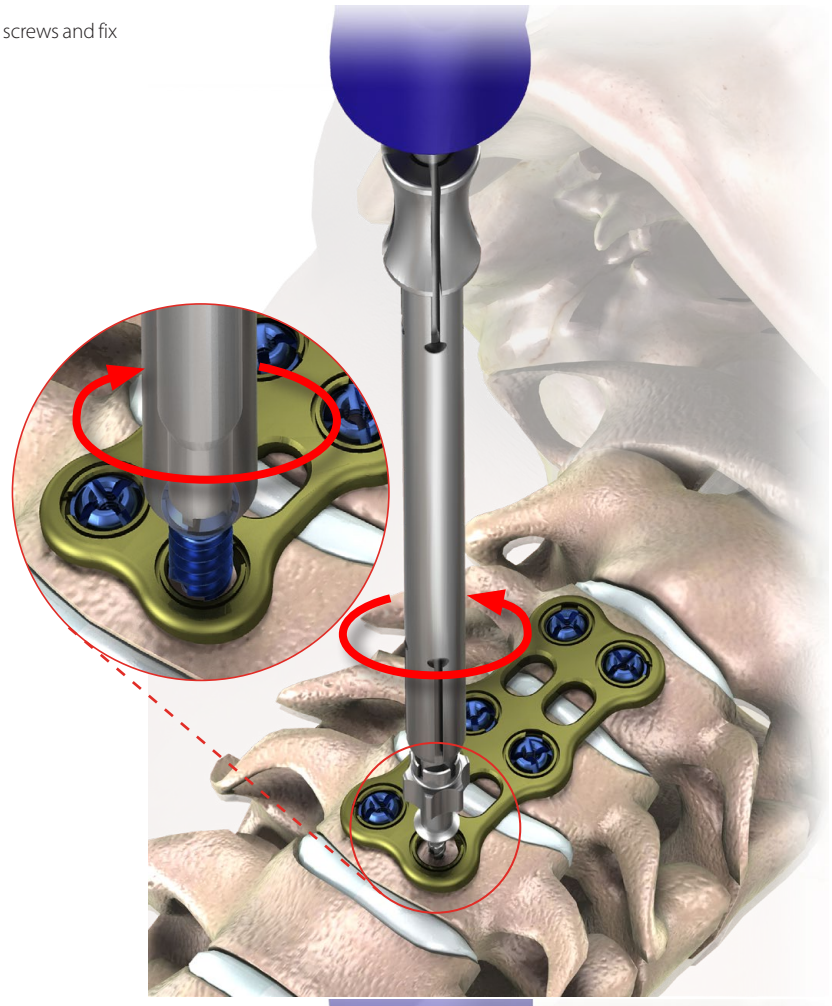
8 The tip of the screwdriver for cervical screws - solid **[40.5286.100]** is inserted into the head of the locking screw that subsequently is secured on the tip by the screwdriver sleeve. The screw is inserted into the plate hole and tightened until 'click' sound is heard *(the safety mechanism integrated with the plate has been activated)*.

40.5286.100



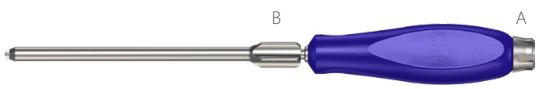
The above description is not detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

9 Having removed positioning screws, insert the other locking screws and fix the plate to the bone.



5.6. SCREWS REMOVAL

10 If plate removal is needed, insert the tip of screwdriver for locking cervical screws **[40.4828.100]** into the screw head and secure it by turning the knob A. Then slide the sleeve B of screwdriver down by rotating it clockwise until the conical end of the sleeve expands elastic locking ring. Continue sliding until the head of sleeve rests on the screw. Remove the locking screw.



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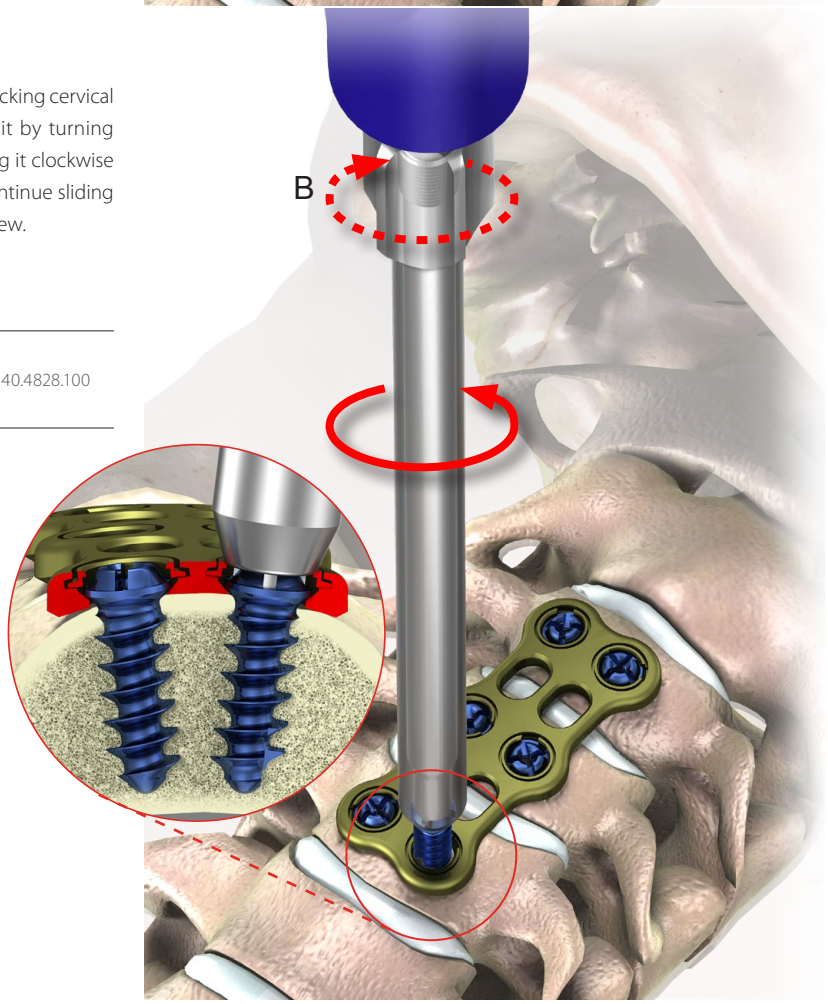

The above description is not detailed instruction of conduct. The surgeon decides about choosing the operating procedure.

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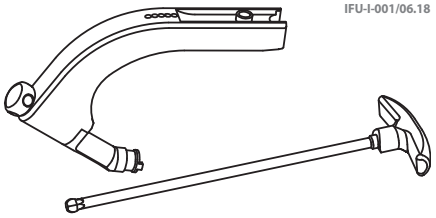
IFU-I-001/06.18



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INSTRUCTIONS FOR USE

REUSABLE ORTHOPAEDIC AND SURGICAL INSTRUMENTS

1 INDICATIONS

1.Surgical and orthopaedic instruments are intended for use only by skilled and trained medical professionals who are familiar with their use and application.

2 DESCRIPTION

1.The unit package contains one piece of the product in non-sterile condition. Clear plastic bags are a typical packaging material. The products may also be supplied as a complete set *(arranged on palettes and placed into specially designed sterilization containers)*. This Instructions For Use is attached both to the unit packages and the sets.

2.The package is equipped with the product label. The label *(as a primary label)* contains, among others:
1) Logo ChM and the address of the manufacturer.
2) Catalogue number *(REF)*, e.g.: 40.XXXX.XXX, and device name and size.
3) Production batch number *(LOT)*, e.g. XXXXXXX.
4) NON-STERILE sign - indicates non-sterile product.
5) Information symbols *(described in the footer of this Instructions For Use)*.
6) CE conformity mark.

3.Depending on the size or type of the product, the following information may be marked on its surface: manufacturer's logo, production batch no. *(LOT)*, catalogue no. *(REF)*, type of material and device size.

3 MATERIALS

1.For the production of instruments, ChM sp. z o.o. uses mainly: steel, aluminum alloys and plastics, approved for use in surgical instruments and in accordance with applicable procedures.

2.Instruments are produced of corrosion-resistant steel. The protective layer *(passive layer)* against corrosion is formed on the surface of the device due to high content of chromium.

3.Devices produced of aluminium are mainly stands, palettes, cuvettes and some parts of instruments such as e.g. handles. The protective oxide layer which may be dyed or stays in natural colour *(silvery-grey)* is formed on the aluminium as an effect of electrochemical treatment of its surface.

4.Devices made of aluminium with processed layer have good corrosion resistance. However, the contact with strong alkaline cleaning and disinfecting agents, solutions containing iodine or some metal salts, due to chemical interference with the processed aluminium surface, shall be avoided.

5.Devices produced of plastics are mainly stands, palettes, cuvettes and some parts of instruments such as e.g. handles. Plastics used in the manufacture of instruments are mainly: PPSU *(Polyphenylsulfone)*, PEEK *(Polyetheretherketone)*, teflon *(PTFE - Polytetrafluoroethylene)* and silicone. The above-mentioned materials can be processed *(washed, cleaned, sterilized)* at temperatures not higher than 140°C. They are stable in aqueous solution of washing-disinfecting agents with a pH value from 4 to 10.8.

6.Steel surgical instruments with a hardened insert are more durable than steel products. The advantage of the product is the sintered carbide insert placed in the working part of the instrument. This insert is characterized by great hardness and abrasion resistance.

7.If the material of the device cannot be specified, please contact ChM sp. z o.o. representative.

4 WARNINGS AND PRECAUTIONS

1.Instruments are intended for use only by skilled and trained medical professionals who are familiar with their use and application.

2.Improper, careless and inconsistent with the recommendations provided below handling of the instruments can lead to their chemical, electrochemical or mechanical damage which can adversely affect corrosion resistance and shorten the service life of the devices.

3.Instruments are intended only for specific procedures and must be used strictly according to their intended purpose. Use of instruments not in accordance with their intended purpose may lead to malfunction, accelerated wear and, in consequences, damage to the instrument.

4.The surgeon should be familiar with all components of the device before use and should personally verify if all components and instruments are present before the surgery begins.

5.Before the procedure begins, all instruments should be carefully inspected for their condition and proper functioning. They should be undamaged and without any signs of corrosion. Blades and cutting edges should be sharp and undamaged. Damaged or corroded instruments should be immediately replaced. The use of bent, damaged or corroded instruments is not allowed.

6.Tissue structures close to the operative site must be protected.

7.Collision of the instrument with metal operating equipment, retractor or other device may cause damage that necessitates intraoperative replacement of that instrument.

8.Do not apply excessive force when using the instrument – it may lead to its permanent damage and, in consequences, to mal-function of the device.

9.Instruments are subject to constant wear processes. While rare, intraoperative fracture or breakage of the instrument can occur. Instruments which have been subjected to prolonged use or excessive forces are more susceptible to fractures, depending on care taken during surgery and the number of procedures performed. Should breakage occur, the instrument parts must be removed and disposed of immediately in accordance with valid medical facility procedures.

10.In order to confirm the removal of all undesired metal fragments from the surgical field, intraoperative X-Ray examination is recommended.

11.In the case of suspected or documented allergy or intolerance to metallic materials, surgeon shall find out if the patient develops allergic reaction to the instrument material by ordering appropriate tests.

12.It is extremely important to follow the calibration deadline which is permanently marked on the torque instruments *(see CALIBRATION)*. Use of a torque instrument with an overstepped calibration date may lead to potential injury, implant or device damage, or loss of correction. If there appear any irregularities in device operation, e.g. due to heavy usage, prior to next calibration date, the instrument should be immediately sent to the manufacturer for its re-calibration.

13.Instrument which had contact with tissues or body fluids of another patient cannot be re-used prior to its reprocessing due to a potential risk of cross-infection caused by viruses, bacteria and prions.

14.Middle and working part of the surgical devices with hardened insert shall be used during the surgical procedure. Improper or inconsistent with the intended purpose usage of the product may lead to damage of the working part e.g. damage to the inserts.

5 CLEANING, DISINFECTION, STERILIZATION

1.Prior to use of a non-sterile device, the following rules apply:
1) The device must undergo cleaning, disinfection and sterilization procedures.
2) Effective cleaning is a complicated procedure depending on the following factors: the quality of water, the type and the quantity of used detergent, the technique of cleaning *(manual, automated)*, the proper rinsing and drying, the proper preparation of the device, the time, the temperature and carefulness of the person conducting this process, etc.
3) The hospital facility remains responsible for the effectiveness of the conducted cleaning, packaging and sterilization processes with the use of existing equipment, materials and properly trained personnel.

2.Preparation at the place of use.
1) Immediately after use, remove from instrument blood and other contaminants with disposable cloth or paper towels. Additionally, it is recommended to rinse the instrument under running water or to place it in the aqueous disinfectant solution. Do not let blood, tissues, body fluids or other biological impurities dry out on the surface of the device.
2) In order to prevent blood and debris from drying out on the instrument surface, transport the product to the processing area in a closed container or covered with a damp cloth.
3) In order to avoid contamination during transportation, the dirty instruments should be separated from the clean ones.

3.Preparation for washing and disinfection *(for all methods)*.
1) The used instruments should be reprocessed as soon as possible.
2) If the instrument can be disassembled, it must be done before cleaning processes.
3) Rinse under running water and remove surface debris using a disposable cloth, paper towel or plastic brushes *(nylon brushes are recommended)*. Particular attention should be paid to openings and places difficult to be cleaned. Very dirty devices should be soaked in an aqueous solution of a detergent or a washing-disinfecting agent, e.g. neodisher® MediClean forte, at temperature of 40+/- 2°C and pH of 10.4-10.8 *(follow the information contained in the instructions prepared by the manufacturer of the agent, in respect of temperature, concentration, exposure time and water quality)*.
4) CAUTION: It is forbidden to use brushes made of metal, bristles or materials which could damage the product.

4.Cleaning and disinfection process.
1) This Instructions for Use describes two ChM-approved cleaning and disinfection methods: manual with ultrasound cleaning and automated method. It is recommended to use automated cleaning and disinfection procedures *(in a washer-disinfector)*.
2) The chosen washing and disinfecting agents must be suitable and approved for use with medical devices. It is important to follow the instructions and restrictions specified by the producer of those cleaning agents. It is recommended to use aqueous solutions of washing-disinfecting agents with a pH value between 10.4 and 10.8. ChM used the following materials during the validation process of the described recommendations for cleaning and disinfection. It is allowed to use other materials than those listed below which may also give a comparable effect:
a) detergent - Dr.Weigert *(producer)* neodisher® MediClean forte *(name of the detergent)*;
b) disinfectant - Dr.Weigert *(producer)* neodisher® Septo Active *(name of disinfectant)*.
3) To prevent product damage *(pitting, rust, discoloration)*, do not use aggressive cleaning agents *(NaOH, NaOCl)*, saline solutions and unsuitable cleaning agents.
4) Where possible, it is recommended to use demineralized water to avoid the formation of spots and stains caused by chlorides and other compounds present in ordinary water.
5) Manual with ultrasound cleaning.
a) Equipment and materials: a device for ultrasound cleaning, soft, lint-free cloths, plastic brushes, syringes, aqueous solutions of cleaning agent.
b) Manual cleaning: Initial manual cleaning must be performed prior to ultrasound cleaning.
c) Rinse under running water until the product is visually clean. Use plastic brushes to remove heavy or large debris.
d) Soak the product for at least 10 minutes in an aqueous solution of a detergent at temperature of 40+/- 2°C and pH of 10.4-10.8 *(follow the information contained in the instructions prepared by the manufacturer of the agent, in respect of temperature, concentration, exposure time and water quality)*.
e) Rinse the product under cold water for at least 2 minutes, paying particular attention to the holes and places difficult to be cleaned.
f) Prepare fresh washing solution. Clean the surfaces and gaps of the product, carefully. Use suitable brushes to clean the holes. Clean the product immersed in the solution.
g) Rinse the product thoroughly under warm running water for at least 2 minutes, paying special attention to the gaps, blind holes, hinges and joints. When cleaning, use brushes and perform multiple reciprocating movements on the surface of the product.
h) Visually inspect the entire surface of the product for debris and impurity. Repeat the steps described in subsections c-h until the product is visually clean.
i) Ultrasound cleaning: prepare an aqueous cleaning solution at a temperature of 40 +/- 2°C and pH of 10.4 - 10.8 *(follow the information contained in the instructions prepared by the manufacturer of the cleaning agent, in respect of temperature, concentration, exposure time and water quality)*. Immerse fully the product in the aqueous cleaning solution and have it washed in ultrasounds for 15 minutes.
j) Rinse the product thoroughly under demineralized water, paying particular attention to the holes and places difficult to be cleaned.
k) Visually inspect the entire surface of the product for debris and impurity. Repeat the steps described in subsections c-k until the product is visually clean.
l) Use demineralized water for final rinsing of the device.
m) Dry the device thoroughly using disposable, soft, lint-free cloth or compressed air.
n) Prepare an aqueous solution of disinfecting agent at a temperature of 20+/-2 °C using 20g of the agent per 1 liter of water. Immerse the product in the solution, exposure time – 15min *(follow the information contained in the instructions prepared by the manufacturer of the agent, in respect of temperature, concentration, exposure time and water quality)*.
o) After the exposure time, rinse the product thoroughly under demineralized water, paying particular attention to the holes and places difficult to be cleaned.
p) The cannulated instruments should be treated using a compressed air or air supplied from the syringe.
q) Dry the device thoroughly. It is recommended to dry the product in a dryer at a temperature ranging from 90°C to 110°C.
r) Visually inspect the entire surface of the device.
s) CAUTION: If the obstruction in the cannula cannot be removed as indicated in the Instructions for Use, the device should be considered at the end of its useful life and should be discarded in accordance with facility procedures and guidelines.
6) The automated method using a washer - disinfector.
a) Equipment and materials: a washer - disinfector, aqueous solutions of cleaning agent.
b) Cleaning in the washer-disinfector must be preceded by a manual and ultrasound cleaning, following the procedure described in subsections c-h of paragraph 5.
c) CAUTION: The equipment used for washing/disinfection should meet the requirements of ISO 15883. Procedure of washing in the washer-disinfector shall be performed according to internal hospital procedures, recommendations of the washer-disinfector manufacturer, and instructions for use prepared by the washing-disinfecting agent manufacturer.
d) The device should undergo the process of machine washing in the washer-disinfector using the following cycle parameters: *(1)* - pre-washing in cold tap water, duration – 2min; *(2)* - washing in an aqueous solution of cleaning agent at 55+/-2°C and pH of 10.4 - 10.8, duration – 10min; *(3)* - rinsing under demineralized water, duration – 2min; *(4)* - thermal disinfection in demineralised water at 90°C, minimal duration – 5min; *(5)* - drying at the temperature ranging from 90°C to 110°C, duration - 40min.

5.Inspection
1) Each time before re-use and re-sterilization, all medical devices should be inspected.
2) All parts of the product should be checked for visible dirt and corrosion. Particular attention should be paid to:
b) Holes, grooves and gaps the debris could have been pressed into during use.
a) Places where dirt can be found, such as joints, latches, etc.
3) Generally unmagnified visual inspection under good light conditions is sufficient.
4) Each time before re-use and re-sterilization, the functional check of the product should be performed, consisting of:
a) Verifying the connections in the mating instruments, such as tips, shafts and quick coupling devices.
b) Verifying the correct functioning of mechanisms, e.g. screw, ratchet, snap mechanism, etc.
c) Verifying all rotating devices for straightness *(this can be simply achieved by rolling the device on a flat surface)*.
d) Verifying cutting edges for sharpness.
e) Verifying instruments for damage to material structure *(cracks, dents, peels, etc.)*.
5) Damaged or defective product cannot be approved for further use.
6) Prior to storage, the instrument must be checked for dryness.
7) CAUTION:
a) The ChM sp. z o.o. does not define the maximum number of uses appropriate for re-usable medical instruments. The useful life of these devices depends on many factors including the method and duration of each use, and the handling between uses. Careful and proper use reduces the risk of damage to the product and extends its serviceable life.
b) The manufacturer does not recommend using any preservatives on medical devices.

6.Packaging
1) Washed and dried devices shall be stored *(if possible)* in suitable stands placed in special sterilization containers. Separate items should be packed in a packaging intended for the recommended steam sterilization. Sterilization containers, item packaging and packaging process itself have to meet the requirements of ISO 11607 standards. The packaging procedure must be performed in controlled purity conditions. The device must be packed so that during its removal from the packaging, when used, there is no risk for its re-contamination

7.Sterilization
1) Washed, disinfected, and dried device shall undergo the sterilization process. The recommended method of sterilization is vacuum-type steam sterilization *(with water vapor under overpressure)*:
a) temperature: 134°C,
b) minimum exposure time: 7 min,
c) minimum drying time: 20 min.
2) CAUTION:
a) The sterilization process must be validated and routinely monitored in accordance with the requirements of EN ISO 17665-1.
b) Sterilization must be effective and in accordance with requirements of the EN 556-1 standard to ensure the required level of guaranteed sterility SAL 10^{-6} *(where SAL stands for Sterility Assurance Level)*.
c) Device must not be sterilized in the packaging in which it was delivered, except specially designed sterilization containers.
d) The method of sterilization using ethylene oxide, gas plasma and dry heat should not be used, unless the Instructions for Use for the product contains sterilization recommendations using these methods.
e) The sterilization temperature for plastic products *(PPSU, PEEK, PTFE, silicone)* cannot be higher than 140°C.

6 STORAGE

1.The devices should be properly stored. When storing surgical instruments, it is recommended that they never be stacked together. It may lead to damage of cutting edges *(nick or dull)* and/or initiation of corrosion centers. Instruments should be stored in a clean and dry room, at room temperature and off the direct sunlight. If possible, instruments should be stored in suitable palettes placed into specially designed sterilization containers.

7 CALIBRATION

1.Regular calibration is required in case of torque wrenches, handles and connectors. Torque instruments are factory-calibrated, the nominal torque of a calibrated instrument is marked on the device *(e.g. 4 Nm)*. To maintain a high level of safety and accuracy of operation of a torque instrument, it is necessary to follow the calibration deadline which is marked on the device.

2.Instrument calibration is performed by the manufacturer. Any attempt of unauthorized modifications to the construction or factory setting of the torque devices can lead to a potential injury or damage to the product and is prohibited.

8 COMPATIBILITY

1.ChM specialist instrument sets are designed for insertion of ChM implants. A specific, illustrated operating technique that describes the proper use of instruments included in the instrument set that is designed for particular implant system, is provided together with such instrument set. It is not allowed to combine ChM instruments with products from other manufacturers. The physician bears all responsibility for the use of the ChM instruments together with implants and instruments from other manufacturers.

If this instructions appears unclear, please contact the manufacturer, who shall provide all required explanations.

Updated INSTRUCTIONS FOR USE are available on the following website: **www.chm.eu**

IFU-I-001/06.18; Date of verification: June 2018

SYMBOL TRANSLATION • OBJAŚNIENIA SYMBOLI • ПОЯСНЕНИЕ ОБОЗНАЧЕНИЙ • EXPLICACIÓN DE LOS SÍMBOLOS • SYMBOLERKLÄRUNG • SYMBOLY PŘEKLADY • TRADUZIONE SIMBOLI

	Do not reuse • Nie używać powtórnie • Не использовать повторно • No reutilizar • Nicht wiederverwenden • Nepoužívejte opakovaně • Non riutilizzare
STERILIZE	Do not resterilize • Nie sterylizować ponownie • Не стерилизовать повторно • No reesterilizar • Nicht resterilisieren • Nepoužívejte resterilizaci • Non risterilizzare
	Do not use if package is damaged • Nie używać jeśli opakowanie jest uszkodzone • Не использовать при поврежденной упаковке • No utilizar si el envase está dañado • Nicht verwenden falls Verpackung beschädigt ist • Nepoužívejte, pokud je obal poškozen • Non utilizzare se la confezione è danneggiata
	Consult Instructions for Use • Zajrzyj do instrukcji używania • Обратитесь к инструкции по применению • Consultar instrucciones de uso • Siehe die Gebrauchsanweisung • Řiďte se návodem k použití • Consultare le instruzioni per l'uso
NON STERILE	Non-sterile • Niesterylny • Не стерильно • No estéril • Unsteril • Nesterilní • Non sterile
	Caution • Ostrzeżenie • Осторожно • Advertencia • Vorsicht • Varování • Avvertenza
STERILE R	Sterilized using irradiation • Sterylizowany przez napromieniowanie • Радиационная стерилизация • Esterilizado mediante radiación • Sterilisiert durch Bestrahlung • Sterilizovat zářením • Sterilizzato mediante irradiazione
STERILE VH2O2	Sterilized using hydrogen peroxide • Sterylizowany nadtlenkiem wodoru • Стерилизован перекисью водорода • Esterilizado con peróxido de hidrógeno • Sterilisiert mit Wasserstoffperoxid • Sterilizováno s peroxidem vodíku • Sterilizzato mediante perossido di idrogeno
REF	Catalogue number • Numer katalogowy • Номер по каталогу • Número de catálogo • Katalognummer • Katalogové číslo • Numero di catalogo
LOT	Batch code • Kod partii • Код партии • Código de lote • Chargennummer • Číslo šarže • Codice del lotto
Mat:	Material • Materiał • Материал • Material • Materiál • Materiál • Materiale
Qty:	Quantity • Ilość • Количество • Cantidad • Menge • Množství • Quantita'
	Use by • Użyć do • Использовать до • Usar antes de • Verwenden bis • Použijte do • Da utilizzare entro il

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