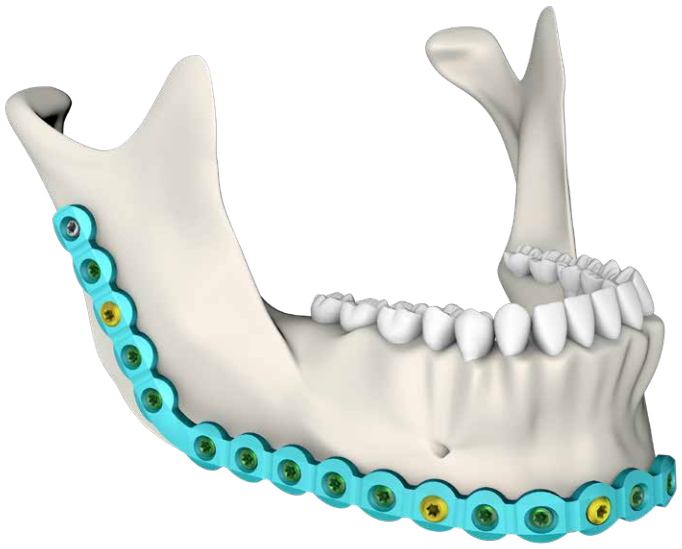
ST/81-271

ChM®

2,7 ChM Micro Plates ChMP system

2.7ChMP RECONSTRUCTION PLATES

- *SURGICAL TECHNIQUE*
- *INSTRUMENT SET 40.8440.000*
- *IMPLANTS*



www.chm.eu

SYMBOLS DESCRIPTION

Ti	Titanium or titanium alloy
Co	Cobalt
L	Left
R	Right
L R	Available versions: left/right
Len	Length
	Torx drive
	Torx drive cannulated
	Hexagonal drive
	Hexagonal drive cannulated
	Cannulated
	Locking
	Diameter [mm]
H	H length [mm]
	Angle
88 - 340	available lengths
4-22	Available number of holes
1.8	Thickness [mm]
1:1	Scale 1:1
	Number of threaded holes in the shaft part of the plate
	Number of locking holes in the plate
VA	Variable angle
C	Cortical
	Cancellous
Ster Non Ster	Available in sterile/ non- sterile condition
	Refer to surgical technique

	Caution - pay attention to a special procedure.
	Perform the activity under X-Ray control.
	Information about the next stages of a procedure.
	Proceed to the next stage.
	Return to the specified stage and repeat the activity.
	Before using the product, carefully read the Instructions for Use. 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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Document No	ST/81-271
Date of issue	21.06.2022
Review date	P-001-28.06.2022

The manufacturer reserves the right to introduce design changes.
Updated INSTRUCTIONS FOR USE are available at the following website: ifu.chm.eu

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1. INTRODUCTION

This surgical technique applies to 2.7ChMP plating system used for fractures stabilization and reconstruction of mandible. The plates are a part of the ChMP plating system developed by **ChM**. Presented range of implants is made of materials in accordance with ISO 5832 standards.

The system includes:

- implants *(plates and screws)*,
- instrument set used in the surgery,
- surgical technique.

Indications

- mandible fractures,
- reconstructive surgery,
- surgical corrections.

Plate selection

The plates are available in different types and lengths. This allows for optimal selection of the implant to the fracture type.

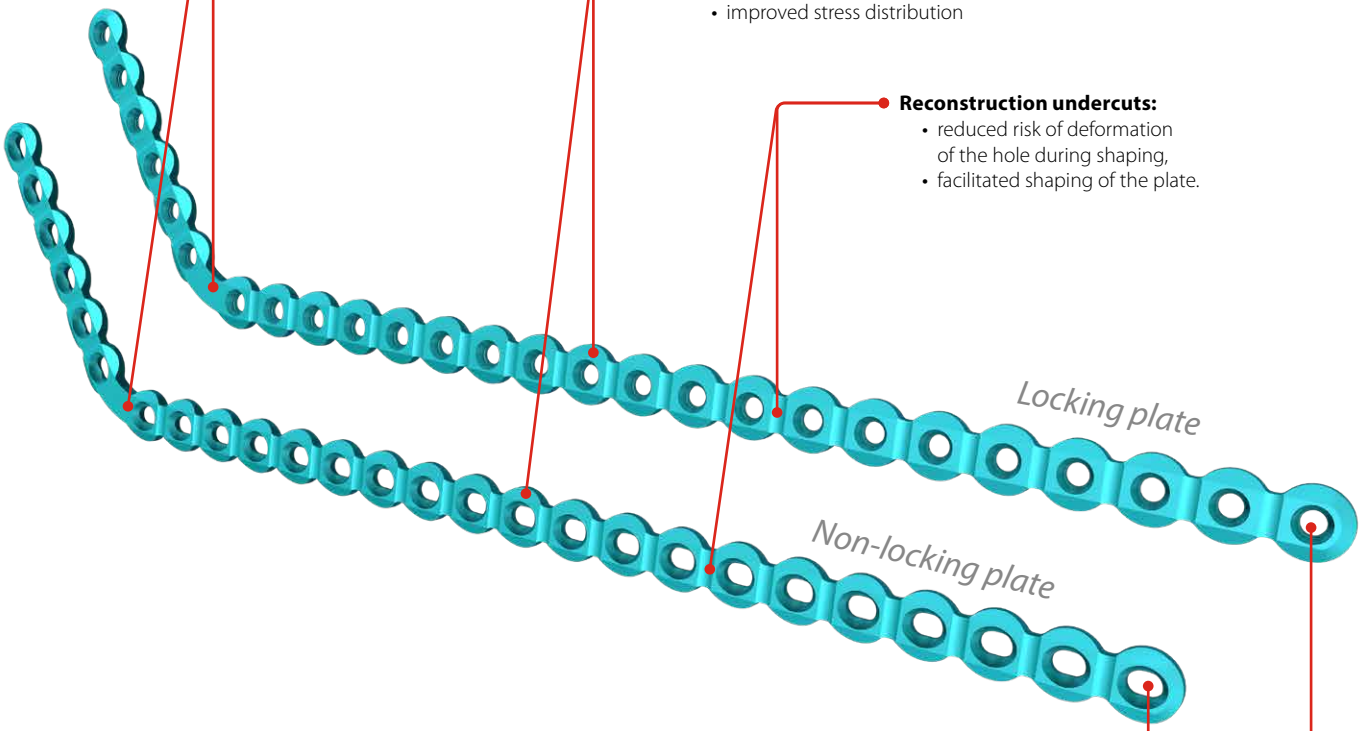
Before using the product, carefully read the Instructions for Use. It contains, among others, indications, contraindications, side effects, recommendations and warnings related to the use of the product.

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

2. IMPLANT DESCRIPTION

ChM Micro Plates ChMP system

Plates are a part of 2.7ChMP system. This system includes also compatible screws.



Anatomical profile:
- fitting the anatomy of the bone,
- 3 options of the non-locking plate thickness,
- 2 options of the locking plate thickness.

Chamfered plate borders:
- minimized soft-tissue irritation
- improved stress distribution

Reconstruction undercuts:
- reduced risk of deformation of the hole during shaping,
- facilitated shaping of the plate.

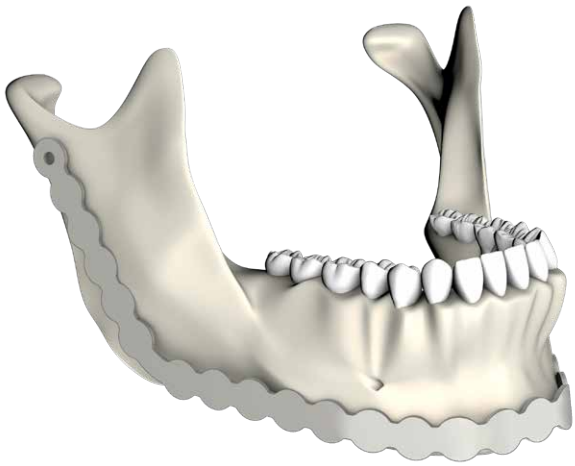
Non-locking holes:
- possibility of fracture compression
- possibility of non-locking screws use.

Locking holes:
- possibility of locking screws use,
- possibility of non-locking screws use,
- possibility VA screw deviation of ±15° from predefined axis of the locking hole.

3. SURGICAL TECHNIQUE

3.1. PATIENT POSITIONING

Patient positioning depends on the surgeon's choice of treatment methods and surgical access point.

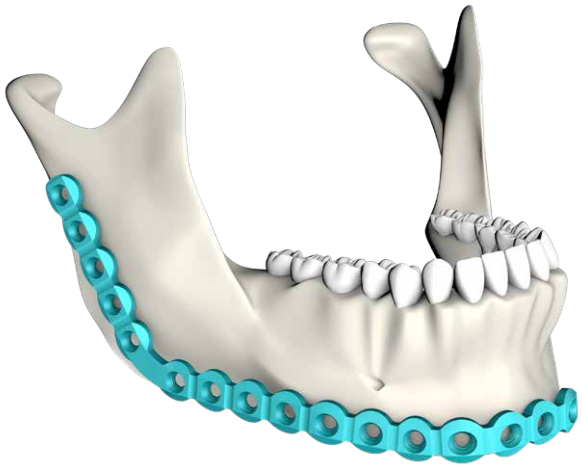


3.2. FRACTURE REDUCTION

Reduce the fracture. If necessary use temporary fixation of the bone fragments.

3.3. IMPLANT SELECTION

Choose implant size accoriding to fracture type, size and bone anatomy.
Use plate trials **[43.6627.020]**; **[43.6629.026]** to establish lenght and shape of the implant. If necessary, shape *(acc. to procedure 4d)* and trim *(acc. to procedure 4e)* the plate.



3.4. PLATE INSERTION

Place the implant in correct position on the bone. If necessary, use temporary fixation with fragment retainers and/or reduction pliers.

3.5. SCREW INSERTION

Insert screws of appropriate lenght into holes of the plate.

- Locking screw 2,4 **[3.5164]** according to procedure 4a,
- VA Locking screw 2,4 **[4.5235]** according to procedure 4b,
- Cortical screw 2,7 **[3.1220]** according to procedure 4c.

3.6. WOUND CLOSURE

Before closing make sure all the screws are properly tightened.
Use appropriate surgical technique to close the wound.

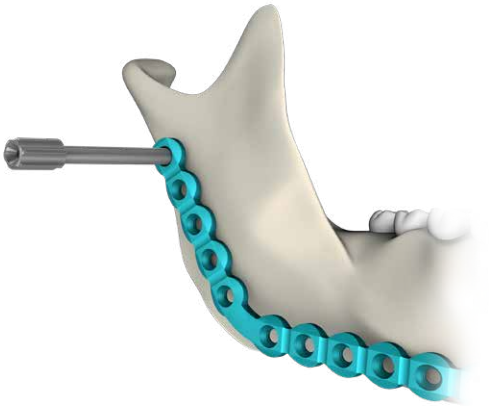
4. SURGICAL PROCEDURES

4a. PROCEDURE OF 4.0ChLP SCREW 2.4 [3.5164] INSERTION

4a.1. PROCEDURE OF 4.0ChLP SCREW 2.4 [3.5164] INSERTION-USING THREADED GUIDES

Threaded guide insertion

Insert threaded guide M3.5/1.8-4.0 **[40.4896.018]** into the threaded hole of the plate.

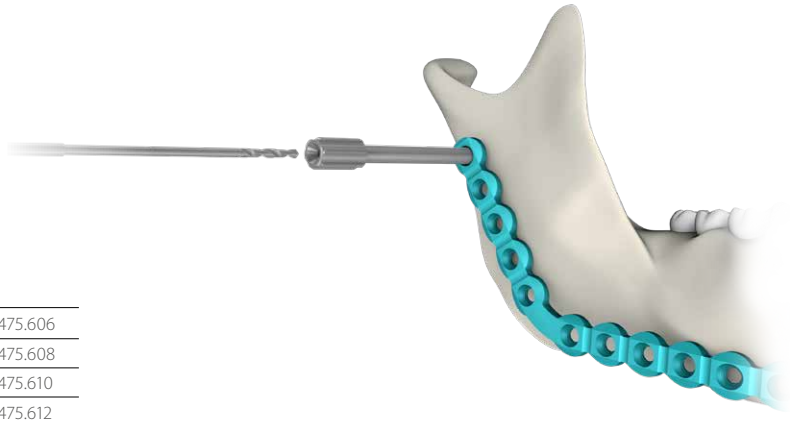


	40.4896.018

Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.



	40.6475.606
	40.6475.608
	40.6475.610
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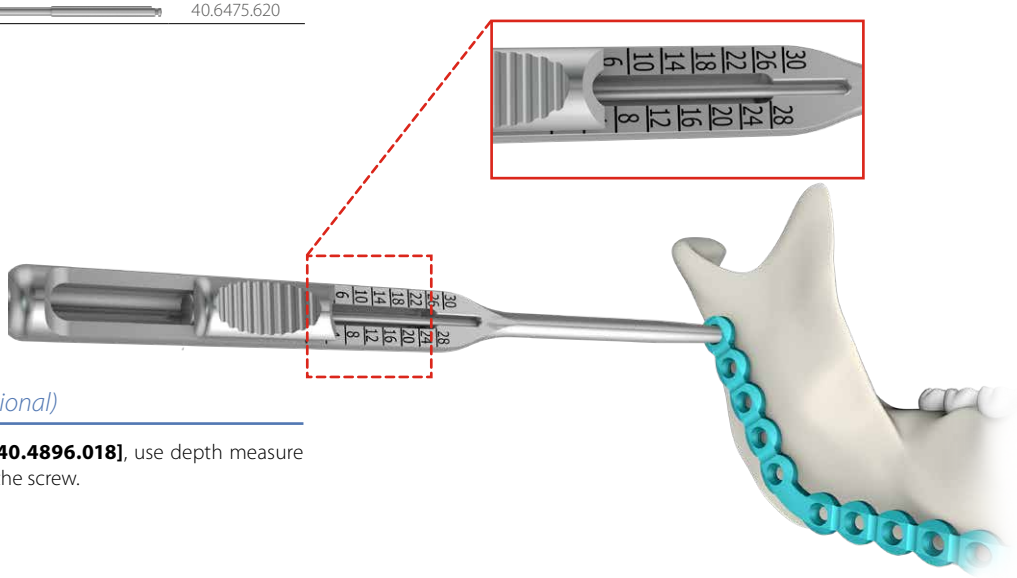
	40.6475.618
	40.6475.620



Measurement of hole depth *(optional)*

Remove the threaded guide M3.5/1.8-4.0 **[40.4896.018]**, use depth measure **[40.8432.000]** to determine the length of the screw.

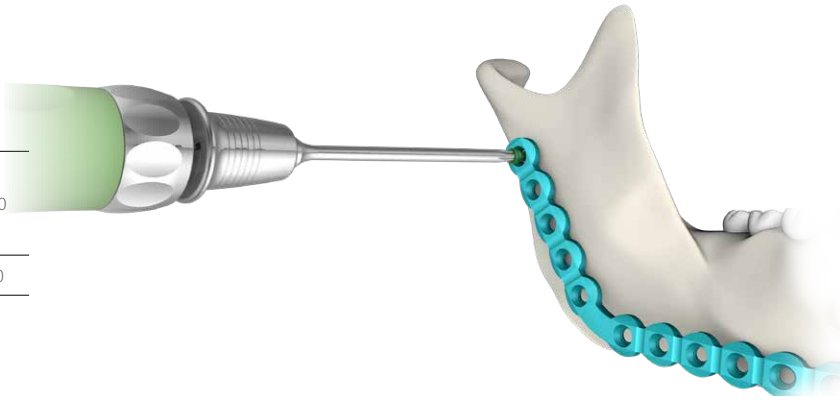
	40.8432.000

Screw insertion

Insert locking screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.


40.6650.000


40.5682.100



4a.2. PROCEDURE OF 4.0ChLP SCREW 2.4 [3.5164] INSERTION-USING TRANSBUCCAL INSTRUMENTS

Protective guide montage

Push the button on **[40.8426.000]** handle and insert protective guide **[40.4631.400]** in to the socket. Check the connetion.

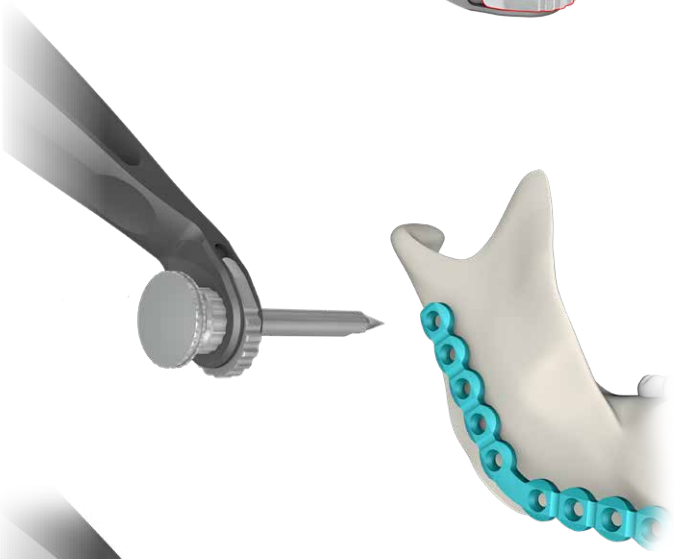

40.8426.000


40.4631.400

Protective guide insertion

Install the trocar **[40.4633.400]**. Make an incision, through which insert the protective guide with the trocar.

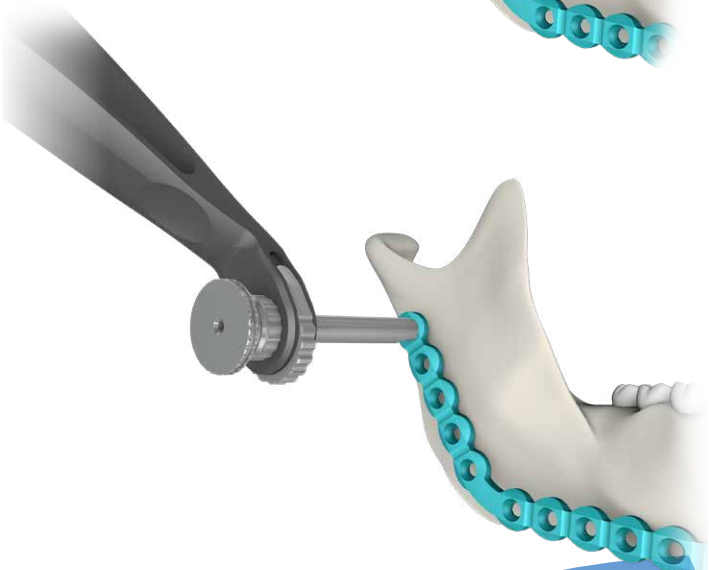

40.4633.400



Drill sleeve screwing

Remove trocar. Insert drill guide M3.5/1.8 **[40.4634.402]** into the threaded hole of the plate.

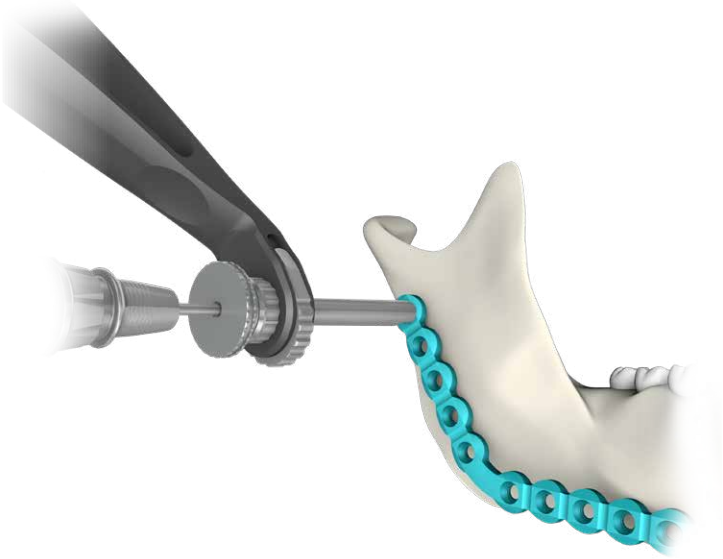

40.4634.402



Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.




40.6475.606


40.6475.608


40.6475.610


40.6475.612


40.6475.614

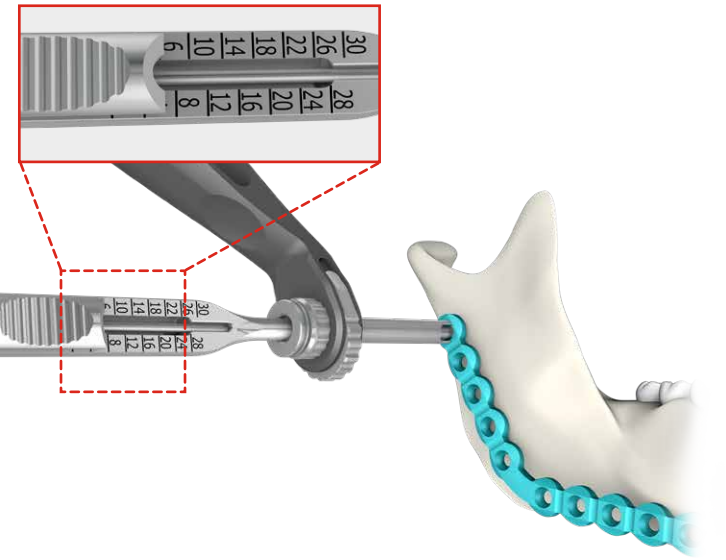

40.6475.616


40.6475.618


40.6475.620

Measurement of hole depth *(optional)*

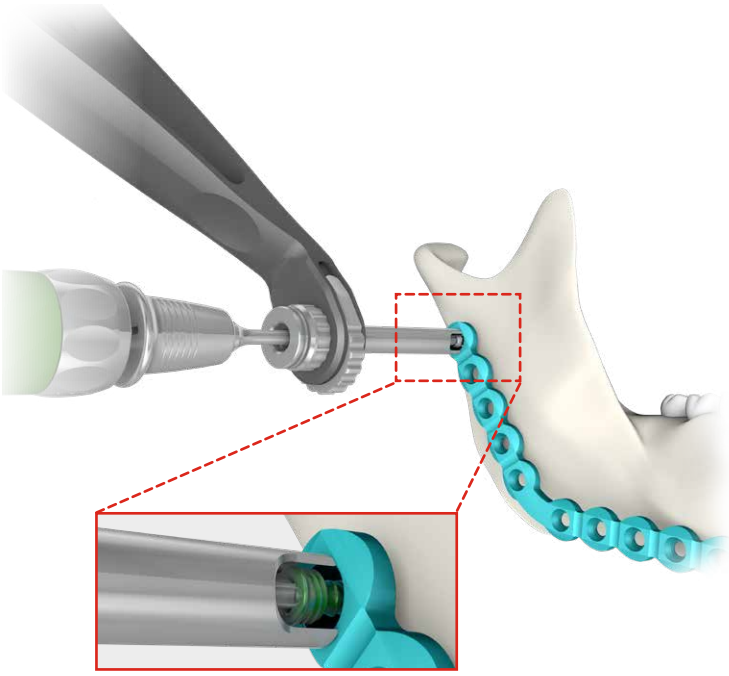
Remove the drill guide M3.5/1.8 **[40.4634.402]**, use depth measure **[40.8432.000]** to determine the length of the screw.




40.8432.000

Screw insertion

Remove drill guide M3.5/1.8 **[40.4634.402]**. Insert locking screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.

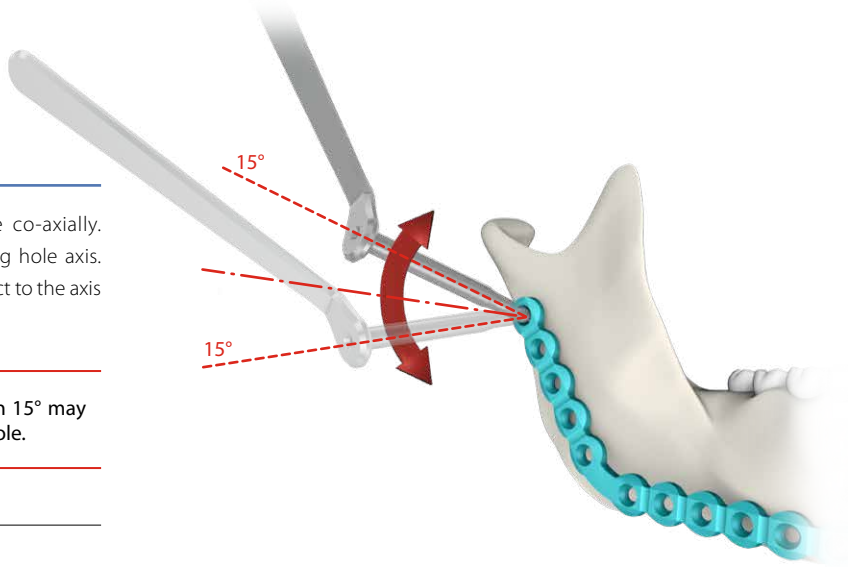



40.6650.000


40.5682.100

4b. PROCEDURE OF 4.0ChLP VA SCREW 2.4 **[4.5235]** INSERTION

4b.1. PROCEDURE OF 4.0ChLP VA SCREW 2.4 **[4.5235]** INSERTION-USING GUIDE VA

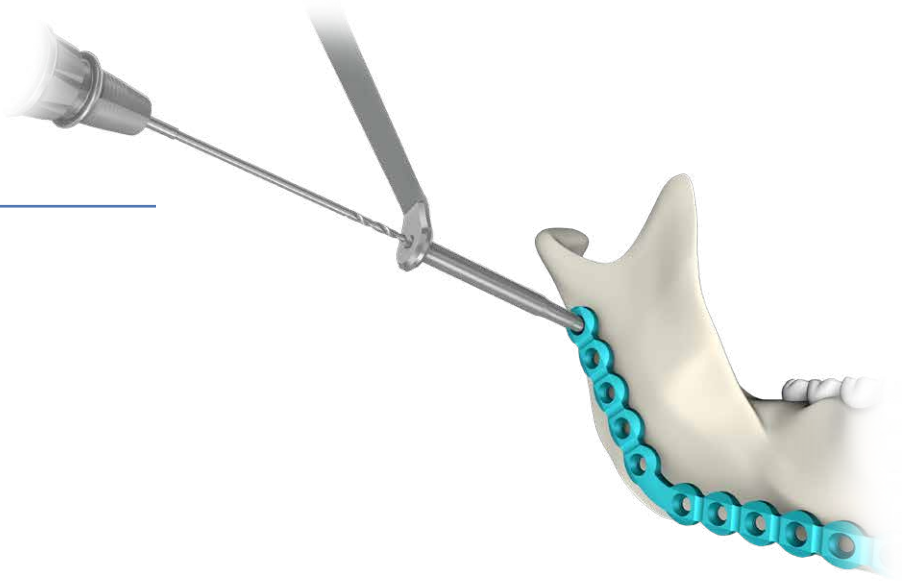


Guide VA positioning

Insert the guide VA 1.8 **[40.5928.018]** into the locking hole co-axially. Set the desired inclination of the guide in relation to the locking hole axis. The guide enables the inclination of 15° in each direction with respect to the axis of the locking hole.

NOTE: Exceeding the inclination angle of more than 15° may prevent proper locking of the VA screw in the plate hole.

40.5928.018



Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.

40.6475.606

40.6475.608

40.6475.610

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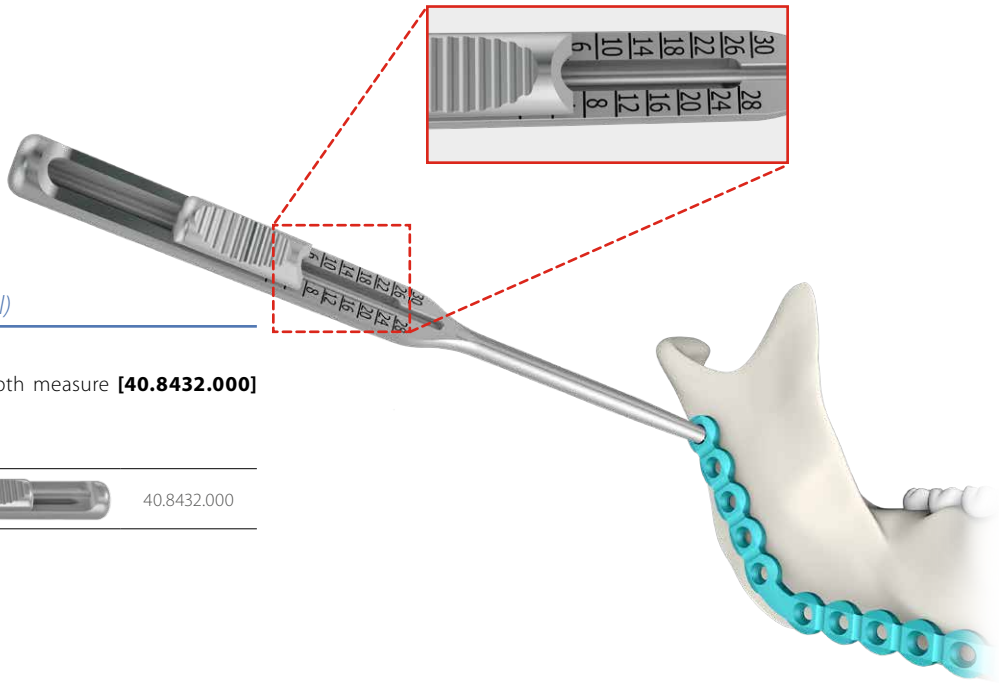
40.6475.616

40.6475.618

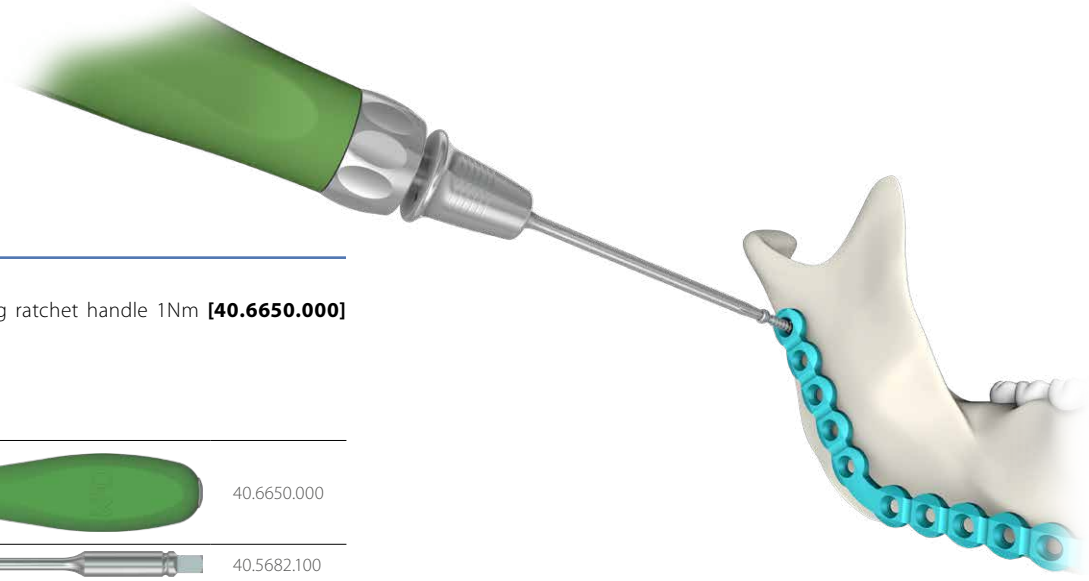
40.6475.620



Measurement of hole depth *(optional)*

Remove guide VA 1.8 **[40.5928.018]**, use depth measure **[40.8432.000]** to determine the length of the screw.

40.8432.000



Screw insertion

Insert VA screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.

40.6650.000

40.5682.100

When using torque limiting handle to tighten the VA screw with large inclination in relation to the axis of the locking hole, the head of the screw may protrude above the plate. In this case, it may be necessary to use a star screwdriver T8 **[40.0669.100]**. Use the instruments carefully to tighten the VA screw. Avoid damaging the screw socket or screwdriver tip. Do not insert the screw too deep into the plate.

Change of the VA screw positioning
It is possible to lock the VA screw three times in the threaded hole of the plate.
The hole in the plate in which the VA screw was locked cannot be used to insert a standard locking screw.

4b.2. PROCEDURE OF 4.0ChLP VA SCREW 2.4 [4.5235] INSERTION-USING TRANSBUCCAL INSTRUMENTS

Protective guide montage

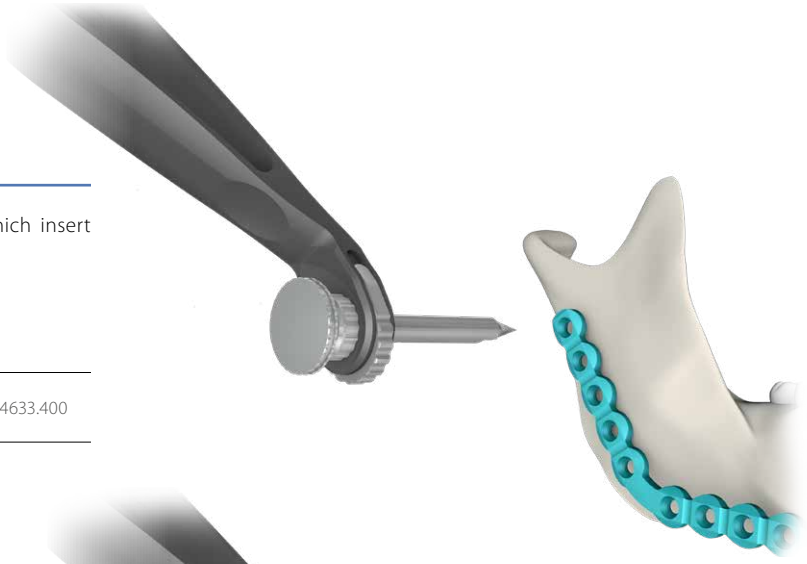
Push the button on **[40.8426.000]** handle and insert protective guide **[40.4631.400]** in to the socket. Check the connetion.

40.8426.000

40.4631.400

Protective guide insertion

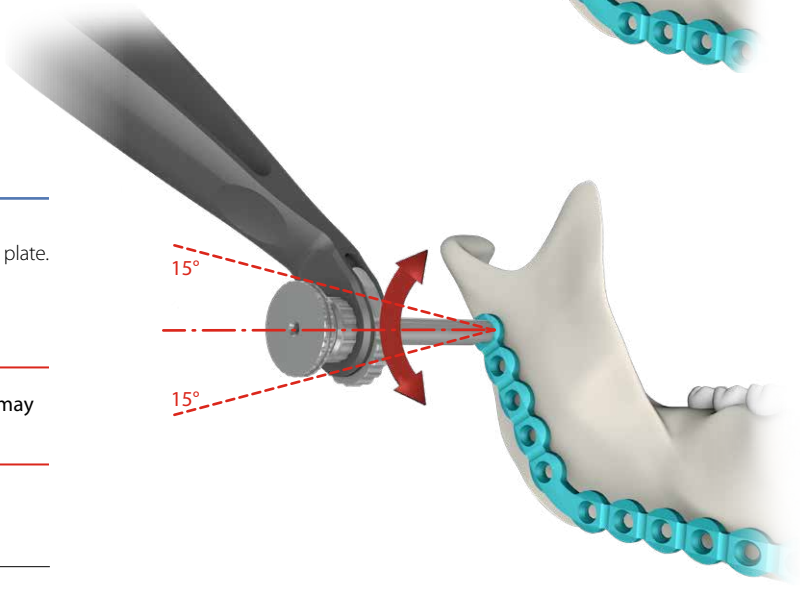
Install the trocar **[40.4633.400]**. Make an incision, through which insert the protective guide with the trocar.



40.4633.400

Drill guide screwing

Remove trocar. Insert drill guide **[40.4634.401]** into the threaded hole of the plate. Set the desired inclination of the guide in relation to the locking hole axis.



NOTE: Exceeding the inclination angle of more than 15° may prevent proper locking of the VA screw in the plate hole.

40.4634.401

Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.

40.6475.606

40.6475.608

40.6475.610

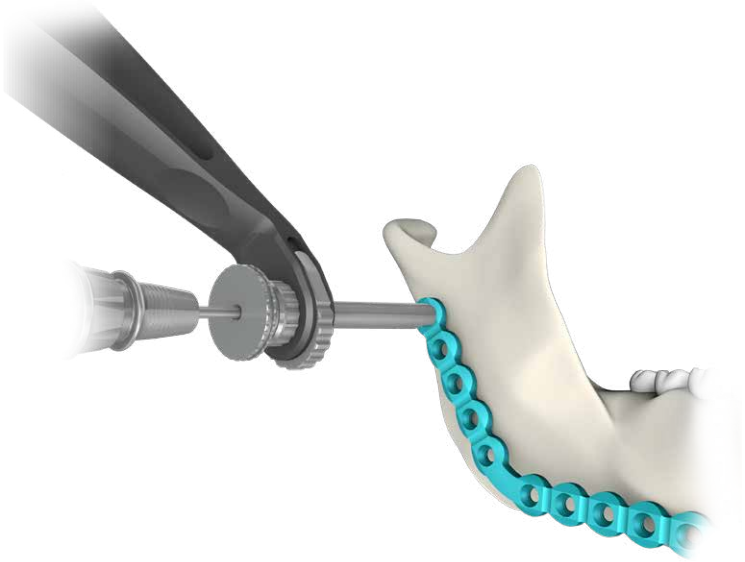
40.6475.612

40.6475.614

40.6475.616

40.6475.618

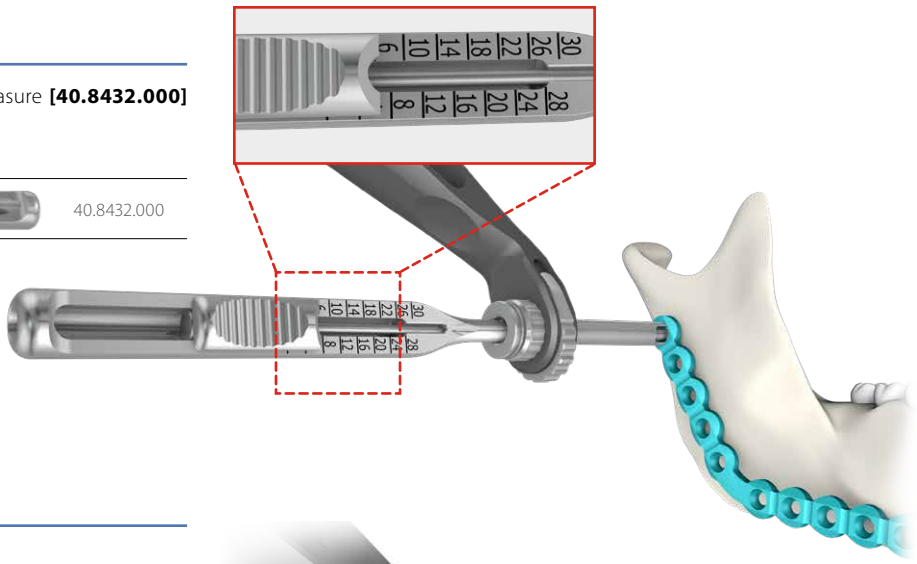
40.6475.620



Measurement of hole depth *(optional)*

Remove the drill guide **[40.4634.401]**, use depth measure **[40.8432.000]** to determine the length of the screw.


40.8432.000



Screw insertion

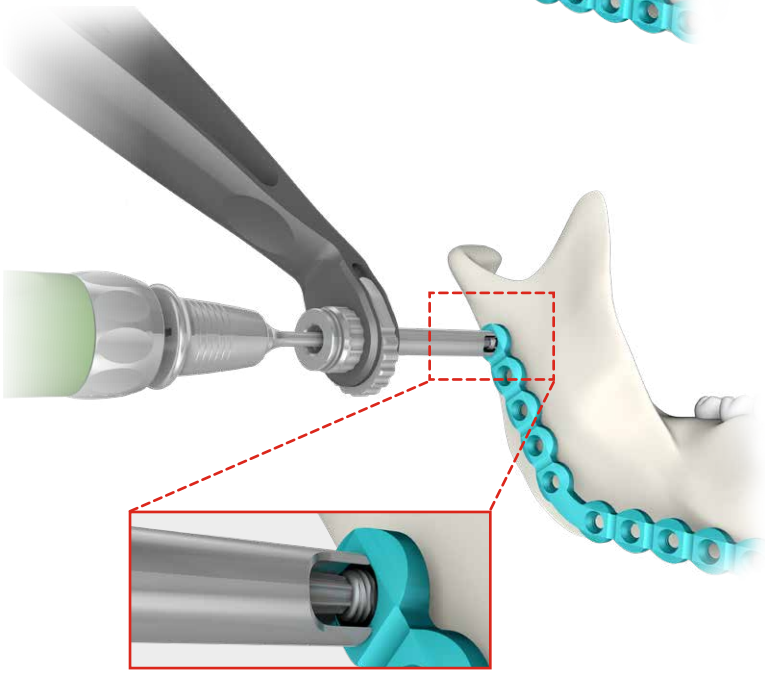
Insert VA screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.


40.6650.000


40.5682.100

When using torque limiting handle to tighten the VA screw with large inclination in relation to the axis of the locking hole, the head of the screw may protrude above the plate. In this case, it may be necessary to use a star screwdriver T8 **[40.0669.100]**. Use the instruments carefully to tighten the VA screw. Avoid damaging the screw socket or screwdriver tip. Do not insert the screw too deep into the plate.

Change of the VA screw positioning
It is possible to lock the VA screw three times in the threaded hole of the plate.
The hole in the plate in which the VA screw was locked cannot be used to insert a standard locking screw.



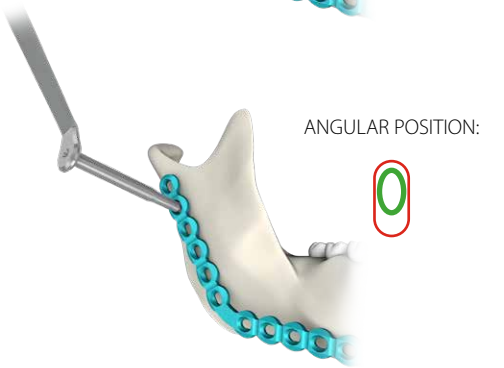
4c. PROCEDURE OF CORTICAL SELF-TAPPING SCREW 2.7 [3.1220] INSERTION

4c.1. PROCEDURE OF CORTICAL SELF-TAPPING SCREW 2.7 [3.1220] INSERTION-USING GUIDE VA

Guide positioning

Position the guide VA 1.8 **[40.5928.018]** in a desired position:

40.5928.018



NEUTRAL POSITION:

Position the guide in the middle of the plate hole. The hole drilled in this position allows to neutral insertion of the screw.

COMPRESSION POSITION:

Move guide to the edge of the compression hole. The hole drilled in this position allows compressive insertion of the screw *(non-locking plate only)*.

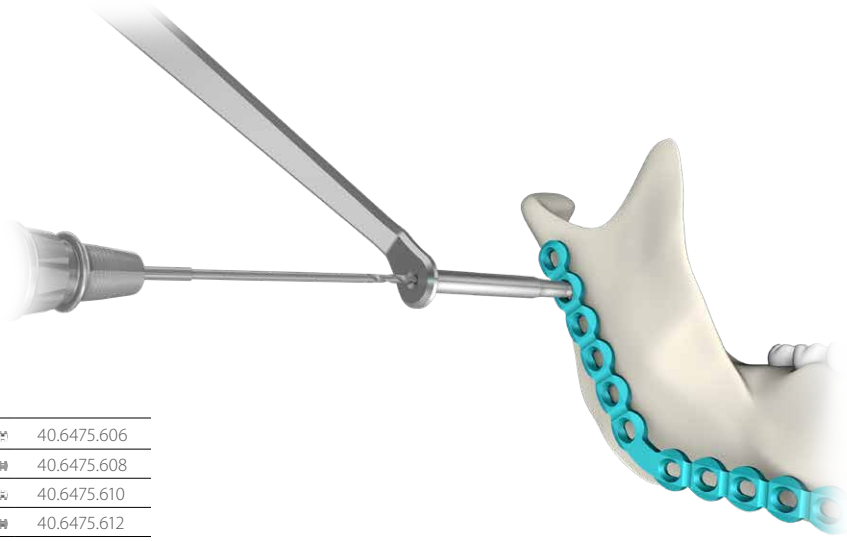
ANGULAR POSITION:

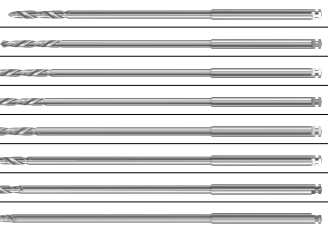
Angular position of the guide may also be applied.

Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.



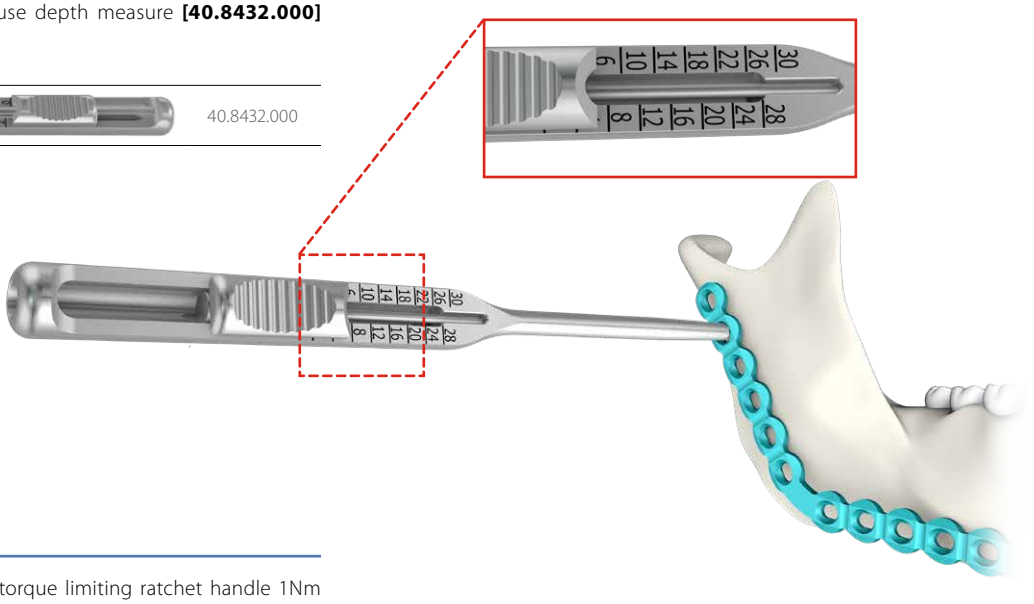


40.6475.606
40.6475.608
40.6475.610
40.6475.612
40.6475.614
40.6475.616
40.6475.618
40.6475.620

Measurement of hole depth *(optional)*

Remove guide VA 1.8 **[40.5928.018]**, use depth measure **[40.8432.000]** to determine the length of the screw.

40.8432.000

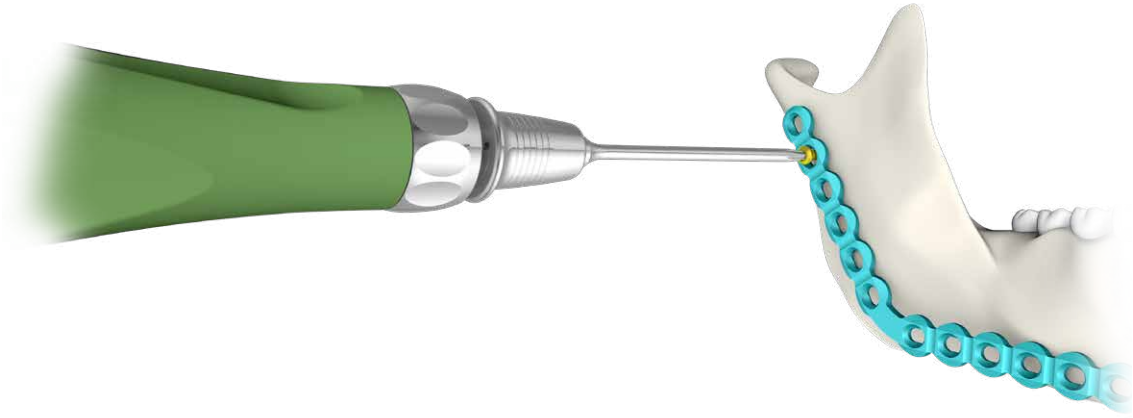


Screw insertion

Insert cortical self-tapping screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.

40.6650.000

40.5682.100



4c.2. PROCEDURE OF CORTICAL SELF-TAPPING SCREW 2.7 [3.1220] INSERTION-USING TRANSBUCCAL INSTRUMENTS

Protective guide montage

Push the button on **[40.8426.000]** handle and insert protective guide **[40.4631.400]** in to the socket. Check the connetion.

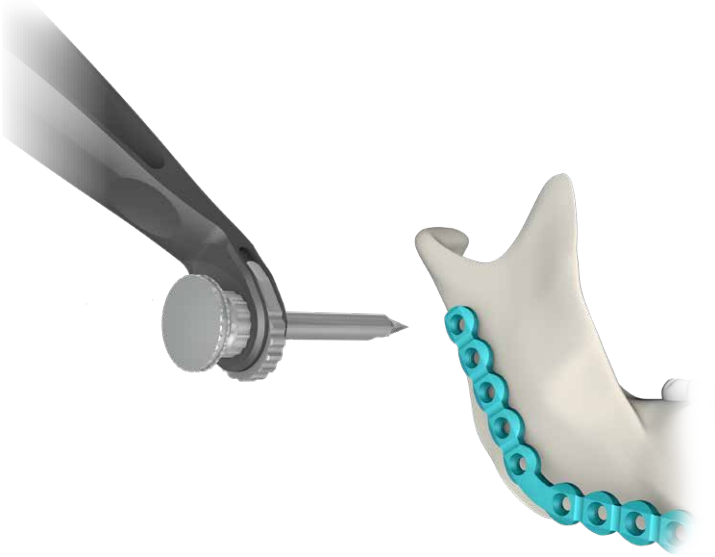
40.8426.000

40.4631.400

Protective guide insertion

Install the trocar **[40.4633.400]**. Make an incision, through which insert the protective guide with the trocar.

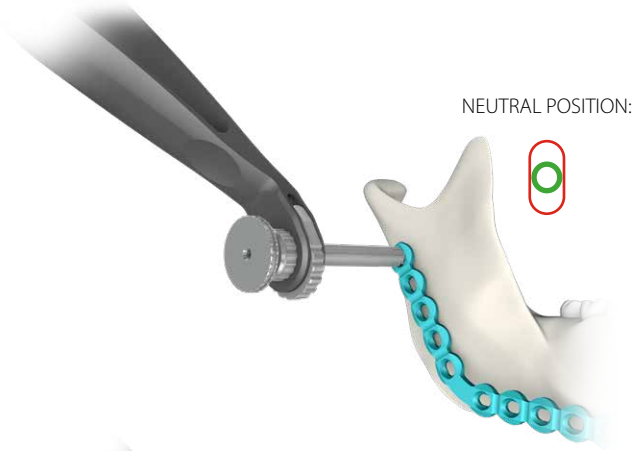
40.4633.400



Drill guide screwing

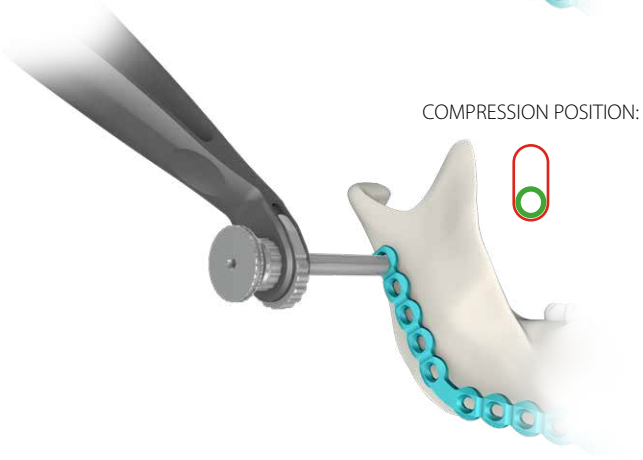
Remove trocar. Position drill guide **[40.4634.401]** in a desired position:

40.4634.401



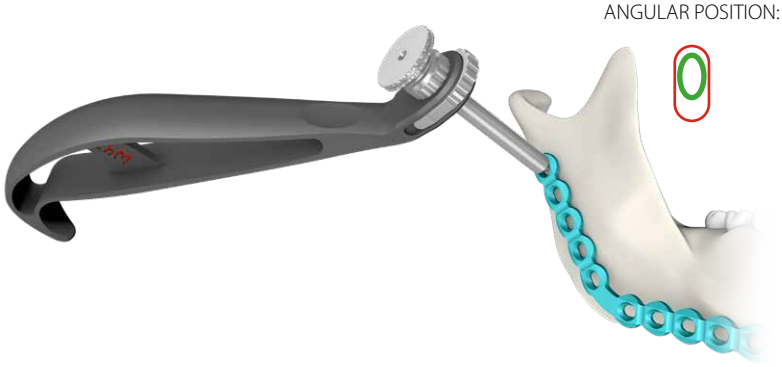
NEUTRAL POSITION:

Position the guide in the middle of the plate hole. The hole drilled in this position allows to neutral insertion of the screw.



COMPRESSION POSITION:

Move guide to the edge of the compression hole. The hole drilled in this position allows compressive insertion of the screw *(non-locking plate only)*.



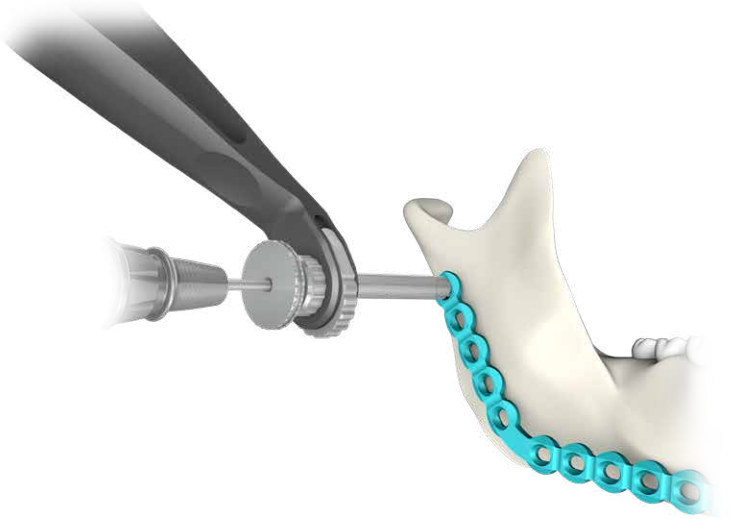
ANGULAR POSITION:

Angular position of the guide may also be applied.

Hole drilling with a stop drill

Drill using:

- drill 1,8/6 **[40.6475.606]** on depth 6mm,
- drill 1,8/8 **[40.6475.608]** on depth 8mm,
- drill 1,8/10 **[40.6475.610]** on depth 10mm,
- drill 1,8/12 **[40.6475.612]** on depth 12mm,
- drill 1,8/14 **[40.6475.614]** on depth 14mm,
- drill 1,8/16 **[40.6475.616]** on depth 16mm,
- drill 1,8/18 **[40.6475.618]** on depth 18mm,
- drill 1,8/20 **[40.6475.620]** on depth 20mm.



40.6475.606

40.6475.608

40.6475.610

40.6475.612

40.6475.614

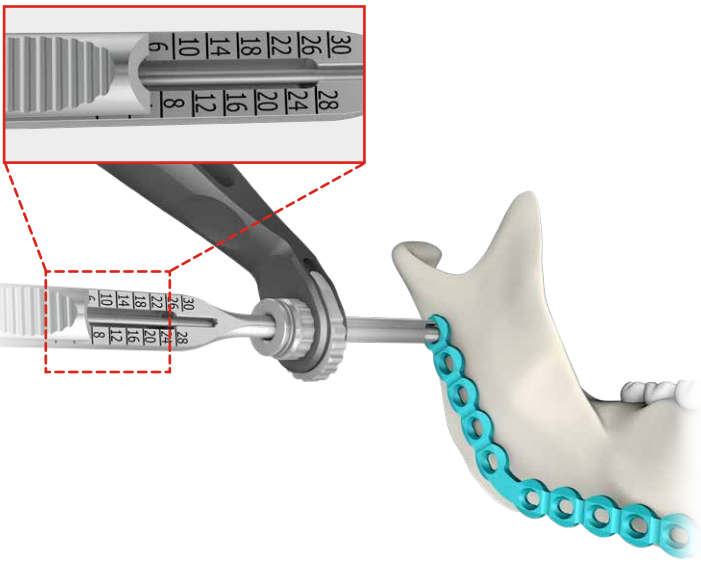
40.6475.616

40.6475.618

40.6475.620

Measurement of hole depth *(optional)*

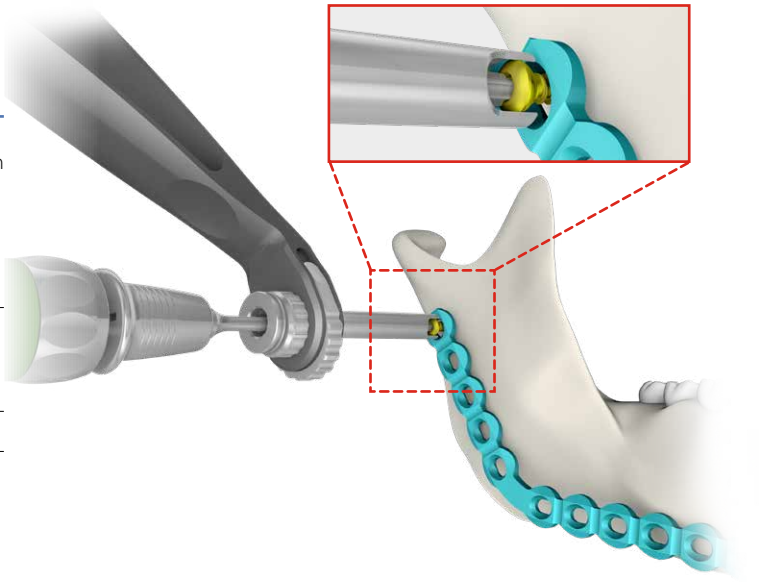
Remove drill guide **[40.4634.401]** use depth measure **[40.8432.000]** to determine the length of the screw.




40.8432.000

Screw insertion

Insert cortical self-tapping screw using torque limiting ratchet handle 1Nm **[40.6650.000]** and screwdriver tip T8 **[40.5682.100]**.




40.6650.000


40.5682.100

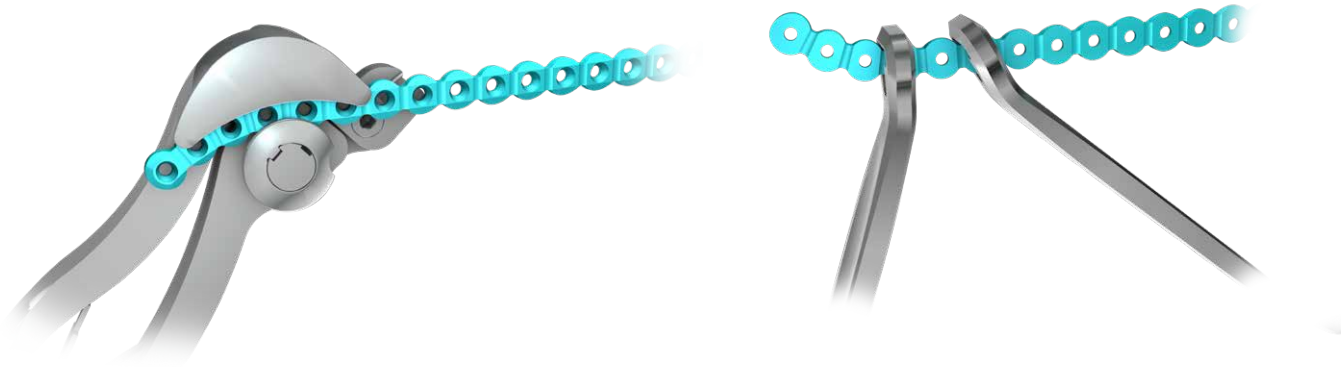
4d. PLATE SHAPING

Shaping of the plates should only be performed with the use of plates bender **[40.8431.000]** or multiplane bender **[40.6413.100]**.

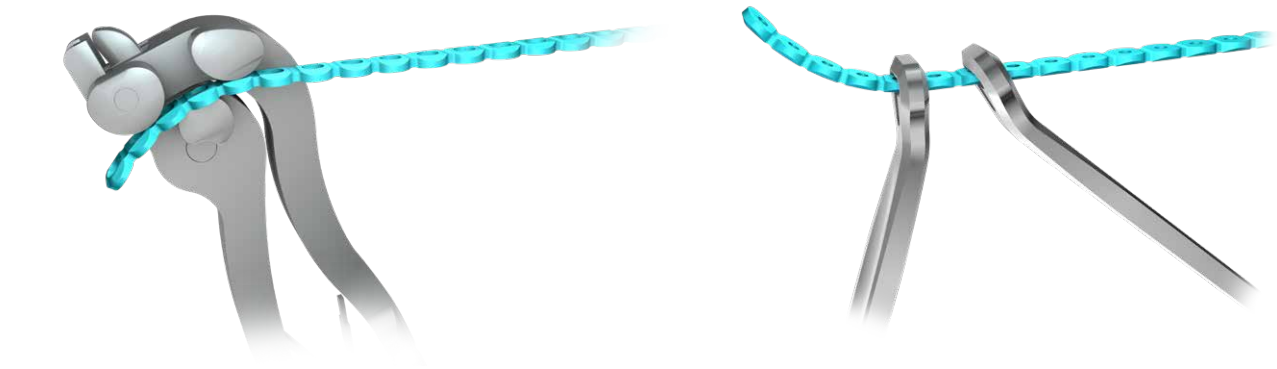
40.6413.100

40.8431.000

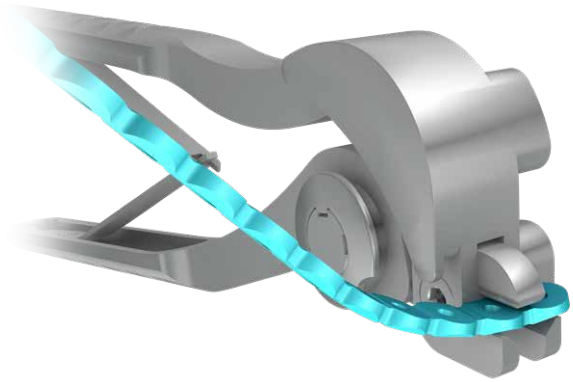
In-plane bending



Out-of-plane bending



Last hole bending

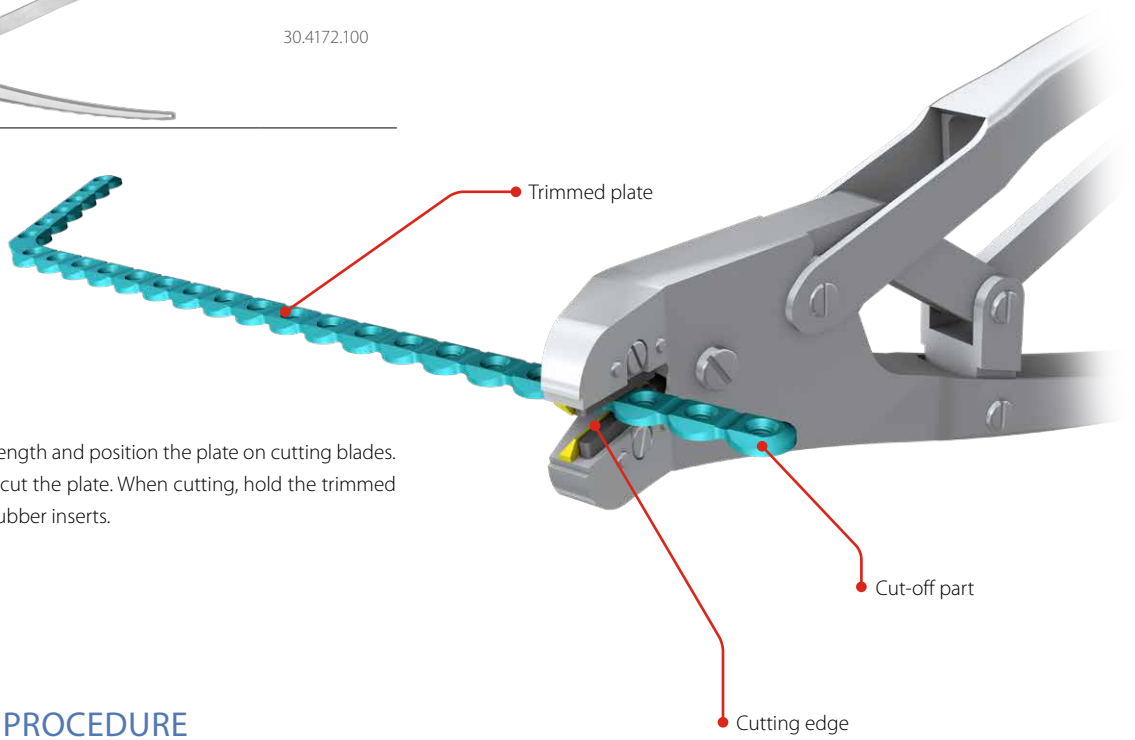


Bend the plate as required, but do not exceed 20° ÷ 25°

4e. PLATE TRIMMING

For trimming, only the HERCULES forceps for wire cutting **[30.4172.100]** can be used.

30.4172.100



Determine the required implant length and position the plate on cutting blades. Close the arms of the forceps to cut the plate. When cutting, hold the trimmed plate. Cut-off part will remain in rubber inserts.

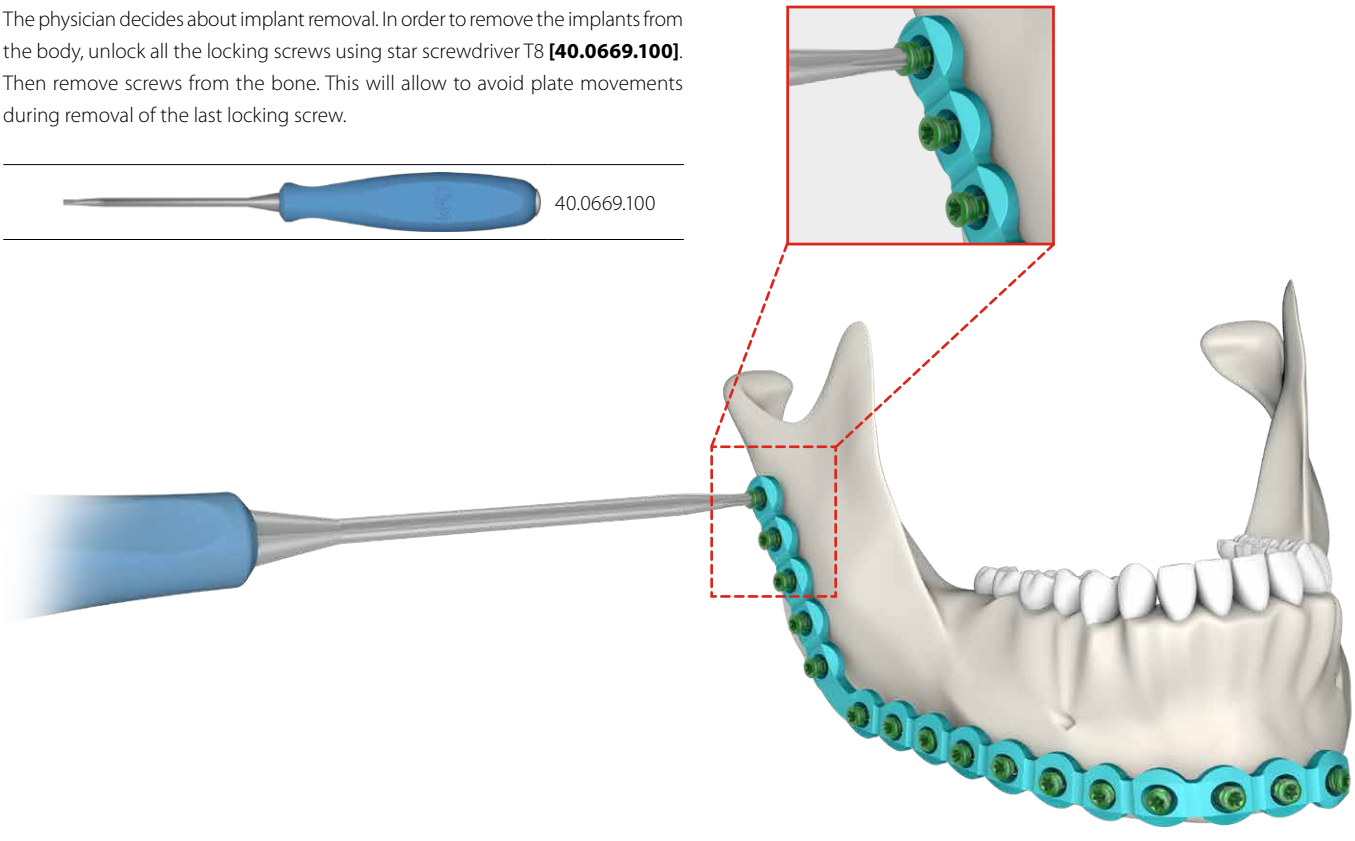
5. POSTOPERATIVE PROCEDURE

Introduce appropriate postoperative treatment that is determined by the physician.

6. IMPLANT REMOVAL

The physician decides about implant removal. In order to remove the implants from the body, unlock all the locking screws using star screwdriver T8 **[40.0669.100]**. Then remove screws from the bone. This will allow to avoid plate movements during removal of the last locking screw.

40.0669.100

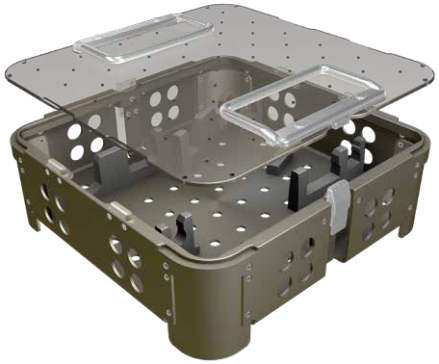


7. CATALOGUE PAGES

7a. INSTRUMENT SET

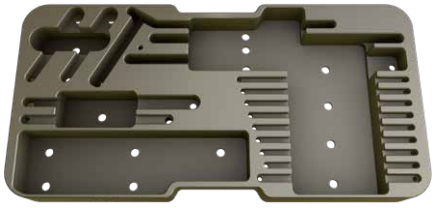
2,7 ChM Micro Plates ChMP system

ChMP instruments set — 40.8440.000

	Name	Catalogue No.	Pcs
	Palette for ChMP instrument set	40.8441.000	1
	Insert with ChMP instruments	40.8442.001	1
	Insert with ChMP instruments	40.8442.002	1
	Torque limiting ratchet handle1.0Nm	40.6650.000	1
	Star screwdriver T8	40.0669.100	1
	HERCULES forceps for wire cutting	30.4172.100	1
	Plates bender	40.8431.000	2
	Multiplane bender	40.6413.100	1

2,7 ChM Micro Plates ChMP system

Insert with ChMP instruments 40.8442.001

	Name	Catalogue No.	Pcs
	Insert for ChMP instruments	**40.8443.001**	1
	Threaded guide M3.5/1.8 -4,0	**40.4896.018**	2
	Guide VA 1.8	**40.5928.018**	1
	Screwdriver tip T8.0	**40.5682.100**	1
	Screwdriver tip T8.0	**40.8429.080**	1
	Dissecting forceps Standard 14.5cm	**30.3303.000**	1
	Depth measure	**40.8432.000**	1
	Drill 1.8/6	**40.6475.606**	1
	Drill 1.8/8	**40.6475.608**	1
	Drill 1.8/10	**40.6475.610**	1
	Drill 1.8/12	**40.6475.612**	1
	Drill 1.8/14	**40.6475.614**	1
	Drill 1.8/16	**40.6475.616**	1
	Drill 1.8/18	**40.6475.618**	1
	Drill 1.8/20	**40.6475.620**	1
	Drill 2.7/85	**40.8430.685**	1

2,7 ChM Micro Plates ChMP system

Insert with ChMP instruments

40.8442.002

	Name	Catalogue No.	Pcs
	Insert for ChMP instruments	**40.8443.002**	1
	Protective guide	**40.4631.400**	1
	Trocar	**40.4633.400**	1
	Drill guide	**40.4634.401**	1
	Drill guide M3.5/1.8	**40.4634.402**	1
	Protective guide	**40.6474.100**	1
	U type jaw	**40.4632.300**	1
	Handle	**40.8426.000**	1

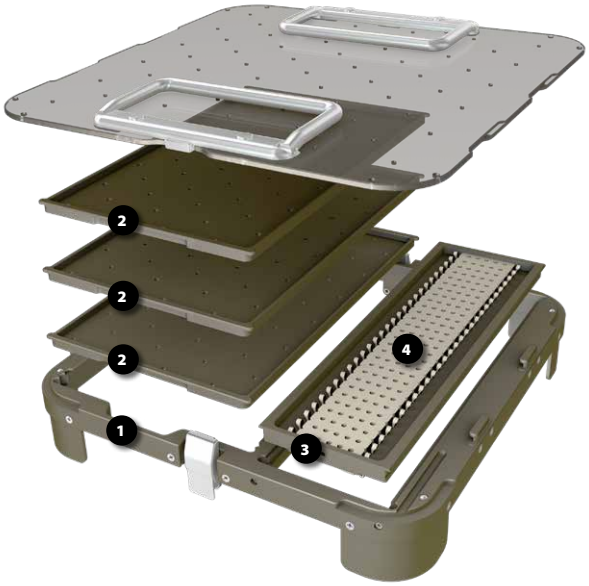
SET ARRANGEMENT EXAMPLE

EXAMPLE OF SET ARRANGEMENT FOR MANDIBULAR RECONSTRUCTION

ChMP INSTRUMENTS SET

Name	Catalogue No.
ChMP instruments set	**40.8440.000**

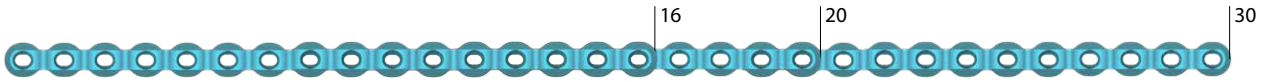
STAND FOR IMPLANTS



	Name	Catalogue No.
1	ChMP palette	**40.6444.000**
2	Insert for ChMP plates 2/2	**40.6446.002**
3	Module for ChMP screws 10/10	**40.6445.004**
4	Module for ChLP screws	**40.8264.xxx**

NON-LOCKING IMPLANTS

1:2

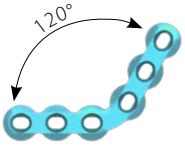


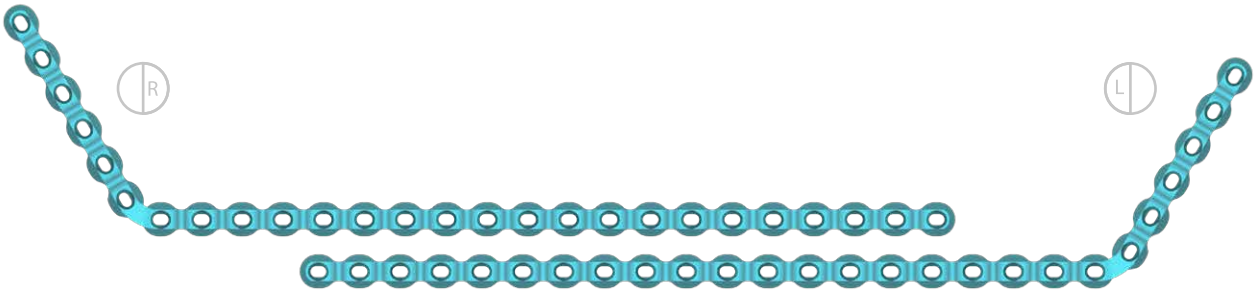
thickness	**1,6**	**3.6842.016**	**3.6842.020**	**3.6842.030**
	2,0	-	**3.3862.020**	**3.3862.030**
	2,5	-	**3.3863.020**	**3.3863.030**
holes		16	20	30

thickness	**1,6**	**3.6843.008**
holes		8

thickness	**1,6**	**3.6844.008**
holes		8

thickness	**1,6**	**3.6845.006**
holes		6



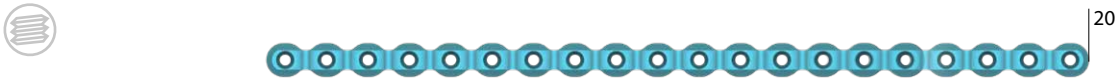


L R

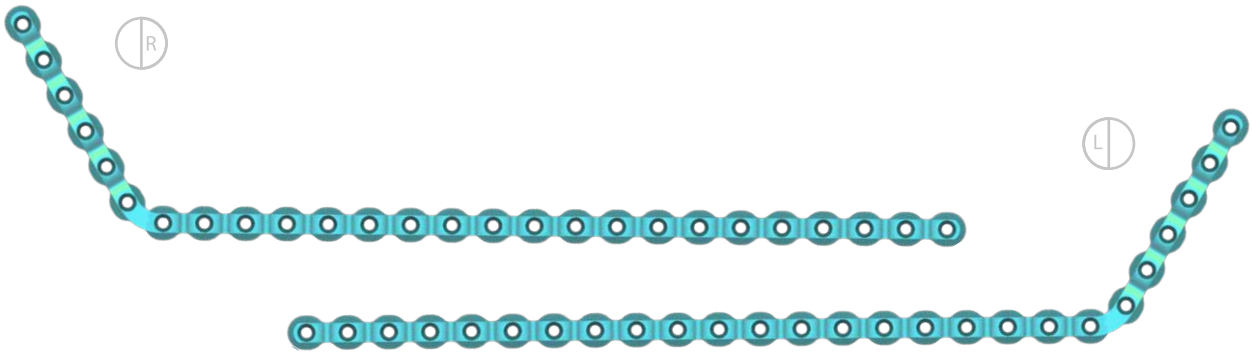
thickness	**1,6**	**3.3865.026**	**3.3864.026**
	2,0	**3.3867.026**	**3.3866.026**
	2,5	**3.3869.026**	**3.3868.026**
holes		26	26

LOCKING IMPLANTS

1:2



thickness	**2,0**	**3.6614.020**
	2,5	**3.6627.020**
holes		20



thickness	**2,0**	**3.6616.026**	**3.6615.026**
	2,5	**3.6628.026**	**3.6629.026**
holes		26	26

Trial

thickness	**1,0**	**43.6627.020**
plate trial		3.6614.020/3.6627.020

Trial

thickness	**1,0**	**43.6629.026**
plate trial		3.6615.026/3.6616.026/3.6628.026/3.6629.026

7c. SCREWS

4.0ChLP screw 2.4

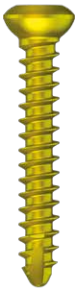
Len	TiA T8	
8	3.5164.008	3.5164.508
10	3.5164.010	3.5164.510
12	3.5164.012	3.5164.512
14	3.5164.014	3.5164.514
16	3.5164.016	3.5164.516
18	3.5164.018	3.5164.518
20	3.5164.020	3.5164.520
Pcs	1	5

4.0ChLP screw VA 2.4

Len	TiA T8	
8	4.5235.008	4.5235.508
10	4.5235.010	4.5235.510
12	4.5235.012	4.5235.512
14	4.5235.014	4.5235.514
16	4.5235.016	4.5235.516
18	4.5235.018	4.5235.518
20	4.5235.020	4.5235.520
Pcs	1	5

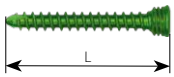
Cortical screw 2.7

Len	TiA T8	
6	3.1220.006	3.1220.506
8	3.1220.008	3.1220.508
10	3.1220.010	3.1220.510
12	3.1220.012	3.1220.512
14	3.1220.014	3.1220.514
16	3.1220.016	3.1220.516
18	3.1220.018	3.1220.518
Pcs	1	5



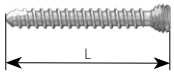
Module for ChLP screws

LOCKING 2,4 — 40.8264.0xx

	3.5164.010÷020 					
	40.8264.010	40.8264.012	40.8264.014	40.8264.016	40.8264.018	40.8264.020
L [mm/мм]	10	12	14	16	18	20
Szt.	5	5	5	5	5	5

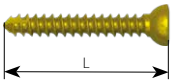
* Stand does not include implants

VA LOCKING 2,4 — 40.8264.1xx

	4.5235.010÷020 					
	40.8264.110	40.8264.112	40.8264.114	40.8264.116	40.8264.118	40.8264.120
L [mm/мм]	10	12	14	16	18	20
Szt.	5	5	5	5	5	5

* Stand does not include implants

CORTICAL 2,7 — 40.8264.2xx

	3.1220.006÷018 						
	40.8264.206	40.8264.208	40.8264.210	40.8264.212	40.8264.214	40.8264.216	40.8264.218
L [mm/мм]	06	08	10	12	14	16	18
Szt.	5	5	5	5	5	5	5

* Stand does not include implants

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